International Civil Aviation Organization
CAR/SAM Planning and Implementation Regional Group (GREPECAS)
Second Meeting of the Programmes and Projects Review Committee (PPRC/2)
(Lima, Peru , 16 = 18 July 2013)

Agenda Item 3: Review of GREPECAS Programmes and Projects

3.4 Projects under the ground-ground and ground-air communication infrastructure programme

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 *ATN Architecture* (D1) and *ATN ground-ground and air-ground applications* (D2) of the *Ground-ground/air-ground communication infrastructure* programme for the SAM Region and of project *ATN infrastructure in the CAR Region and its ground-ground and ground-air (D) applications for the CAR Region.*

References

- Report of the first meeting of the Programmes and Projects Review Committee (PPRC/1) (Mexico City, Mexico, 25-27 April 2012);
- Report of the meetings/workshops of the SAM Implementation Group (SAM/IG/9, Lima, Peru, 14-18 May 2012; SAM/IG/10, Lima, Peru, 1-5 October 2012; and SAM/IG/11, Lima, Peru, 13-17 May 2013);
- Seventh meeting of the Central American Air Navigation Experts Working Group (CA/ANE/WG/7);
- Thirty-third meeting of the Eastern Caribbean Working Group (E/CAR/WG/33);
- Ninth meeting of the Central Caribbean Working Group (C/CAR/WG/9);
- ICAO/FAA workshop/meeting on the follow-up to the implementation of the ATS message handling system (AMHS) in the NAM/CAR Regions (Miami, FL, United States, 10-12 April 2012) and GREPECAS Project D (ATN infrastructure in the CAR Region and its ground-ground and ground-air applications (Miami, FL, United States, 12-13 April 2012); and
- Teleconferences on CAR AMHS and its implementation.

ICAO Strategic Objectives:	*A – Safety* *C- Environmental protection and sustainable development of air transport*

1. Introduction

1.1 The first meeting of the Programmes and Projects Review Committee (PPRC/1) reviewed the status of implementation of project activities under the *Ground-ground/air-ground communication infrastructure Programme* (D) concerning the implementation of the aeronautical telecommunication network (ATN) and its ground-ground and ground-air applications.

1.2 The PPRC/1 meeting considered that project activities under Programme D had been performed as scheduled and in coordination with the other Programmes. It also identified delays in the implementation of some project tasks under Programme D due to the shortage of experts available for the planned deliverables.

1.3 The PPRC/1 praised the programme and project coordinators for their work in the development of the projects, recognising that these could be improved over time. Likewise, it emphasized the fact that project description would include a field for defining goals in easily quantifiable terms and with target dates. Based on this information, the PPRC would be able to assess the effectiveness and success of the efforts made in each project and take appropriate action.

2. Discussion

2.1 Progress made to date in project activities under Programme D for the CAR and SAM Regions since the PPRC/1 meeting is shown in the project description documents and the GANTT chart contained in **Appendix A** for the CAR Region and in **Appendices B and C** for the SAM Region.

2.2 In the SAM Region, project coordinators analysed the corresponding Aviation System Block Improvements (ASBU) Block 0 modules approved at the Twelfth Air Navigation Conference (AN-Conf/12) (Montreal, Canada, 19-30 November 2012), and which will be part of the new Global Air Navigation Plan (Fourth Edition). In this regard, they felt that project activities under Programme D were aligned with ASBU Block 0 modules.

2.3 Pursuant to PPRC/1 instructions on goal definition, a field has been added to the project description documents contained in the appendices for defining project goals, in addition to the information on objectives, scope, metrics, strategy, rationale, related projects, deliverables, responsible parties, required resources, start and end dates.

2.4 Follow-up of activities was coordinated between the project coordinator and the experts designated by States to conduct project activities, through teleconferences and face-to-face meetings within the context of the meetings scheduled in each Regional Office.

2.5 The achievements and difficulties of project implementation include the following:

CAR Region

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

2.6 The MEVA Technical Management Group (TMG) has conducted the technical study of the CAR networks for the implementation of the ATN, as reflected in the MEVA III tender document, which includes the requirements for the interconnection between MEVA and the REDDIG and the Eastern Caribbean network. The bidding process for the MEVA III network will take place in the remainder of 2013, for implementation in 2014.

2.7 The first AMHS interconnections are being tested in accordance with the CAR regional implementation plan. The process for AMHS implementation in Mexico has started. Two Phase 1 AIDC services have been implemented through CPL-LAM messages.

2.8 Most of the activities contemplated in this project have been implemented as scheduled. However, several deliverables have been rescheduled due to delays in the definition of operational requirements. Several implementation plans have been completed and are being used by the CAR Implementation Groups.

2.9 The group has deeply regretted the withdrawal of Mrs. Susan Pfingtler, representative of IATA, from its original membership, as well as the reduced number of experts to develop the deliverables.

SAM Region

Project D1 - ATN architecture

2.10 The activities contemplated under project D1 have been completed almost entirely. Only the monitoring of REDDIG II implementation, foreseen to be completed by the third quarter of 2014, is still pending.

2.11 The activities under this project have been conducted without any difficulties, the bidding process for the implementation of the ATN in the SAM Region (REDDIG II) has been completed, and the implementation process has been started.

2.12 Furthermore, the safety guides for IP network implementation and the routing policies for the SAM Region have been developed and submitted to the SAM/IG/11 meeting and circulated to the States of the Region for their analysis.

2.13 Mr. Athayde Frauche, coordinator of Project D1, will continue performing his duties as such until late June 2013. Consequently, a new project coordinator will need to be designated.

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

2.14 Regarding the activities under Project D2 scheduled for execution after the PPRC/1 meeting, the following has been completed: a new AMHS interconnection between the Quito (Ecuador) and Lima (Peru) MTAs, and the first AMHS interconnection between AMHS systems of different manufacturers. The problem preventing completion of the interconnection between some AMHS systems was identified. In this regard, in accordance with RFC standard 1006: "ISO transport service in the upper part of the TCP", the OSI/TCP adaptation in the transport layer must be done using the TP0 protocol. Accordingly, all the States of the Region that had not implemented the TP0 protocol were urged to proceed with its implementation.

2.15 In this sense, Brazil informed the SAM/IG/11 meeting that it was coordinating with ISODE to modify its AMHS system in accordance with the aforementioned paragraph. This same activity is also required from Argentina, Paraguay, and Venezuela.

2.16 Guidelines for AIDC implementation in the SAM Region were developed and submitted to the SAM/11 meeting and circulated to the States for their analysis.

2.17 No progress has been made in AIDC integration between adjacent ACCs. Consequently, SAM States that had AIDC systems installed were urged to complete the integration of their AIDC system with those of the adjacent ACCs in order to reduce errors in flight transfer procedures between adjacent FIRs.

2.18 Mr. Omar Gouarnalusse, coordinator of Project D2, informed that he could no longer continue in that position. The SAM/IG/11 meeting designated Mr. Gustavo Chiri of Argentina to replace him.

3. **Suggested action**

3.1 The Meeting is invited to:

a) take note of the information provided in this working paper;
b) review the project description document and the GANTT chart for each of the projects described in Appendices A, B, and C, in order to approve the planning, development and execution thereof; and
c) discuss other related issues it may deem appropriate.

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APPENDIX A

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)	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 (using VDL2 and FMC WPR) applications, taking into account Doc GOLD		
Metrics	• Percentage of implementation of ATN architecture and routers • Number of AMHS/AIDC 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 States : • 100% routers implementation in Central America as part of ATN network for the end of 2014 • 100% routers implementation in Eastern Caribbean as part of ATN network for the end of 2013 • 50% networks based on routers implementation in Central Caribbean for the end of 2014 • Implementation of MEVA III IP Network in mid-2015 • 6 AMHS (MTA-MTA) interconnections in CAR Region for the end of 2014 • 5 AIDC communications between ACCs in the CAR Region for the end of 2014 • Complete on time the guidance guides planned for ATN and its applications.
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 B (ATFM) and C (Situational Awareness)

Project Deliverables	**Relationship with the regional performance-based plan (PFF)**	**Responsible**	**Status of Implementation**[1]	**Date of delivery**	**Comments**
Performance assessment of the MEVA II REDDIG interconnection	RPO 9, NAM/CAR RPBANIP	Project D		Completed	Assessments made during MEVA TMG meetings
Technical study of CAR networks for ATN implementation	RPO 9, NAM/CAR RPBANIP	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 9, NAM/CAR RPBANIP	Project D		Completed	Completed in 2010
Study for the configuration of an IP backbone network	RPO 3,9, 11, 12 NAM/CAR RPBANIP	Dom. Rep/ COCESNA		December 2013	This delivery was rescheduled due to the need to review the currently IPv4 address allocation

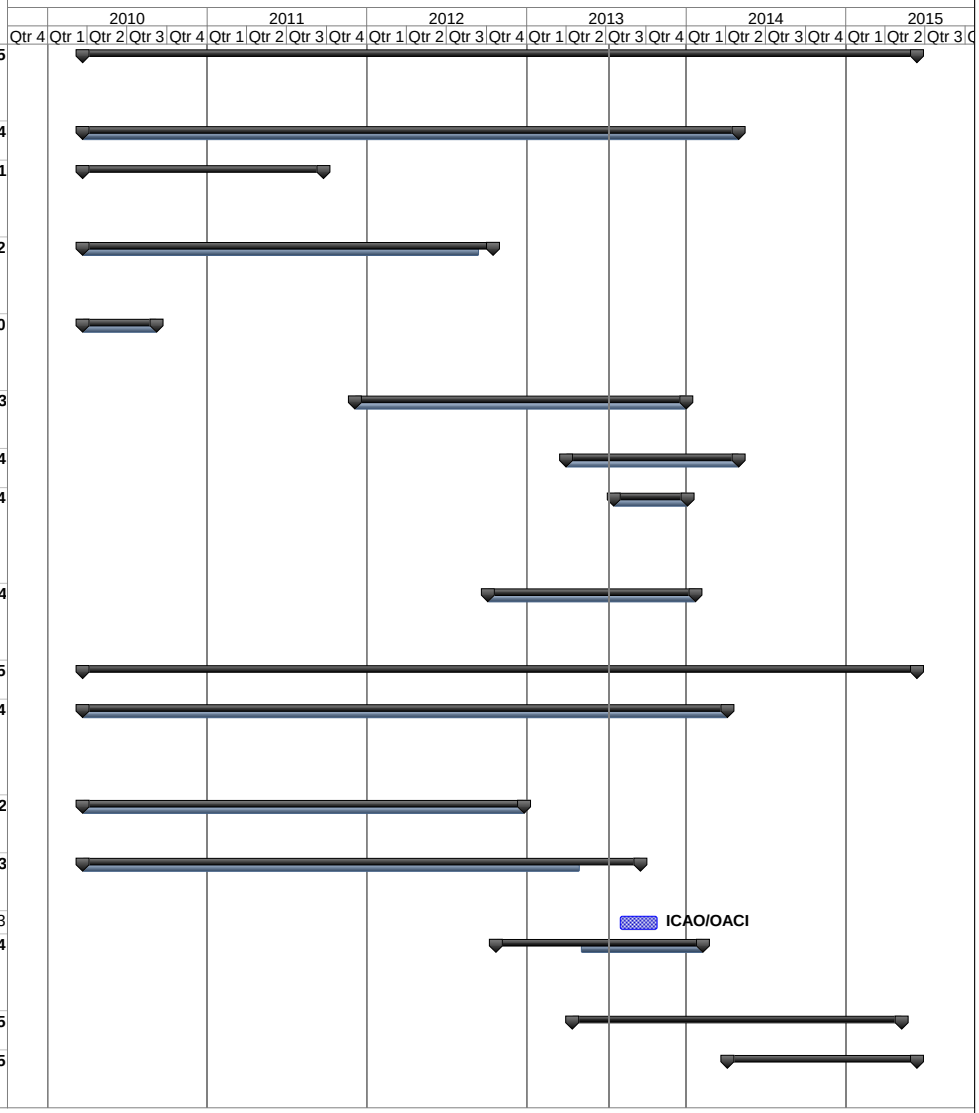
[1] *Grey* *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but expected to be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible	Status of Implementation[1]	Date of delivery	Comments
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 1,3,4,5,9,11 and 12 NAM/CAR RPBANIP	United States/COCESNA		April 2014	
AMHS addressing plan	RPO 9, NAM/CAR RPBANIP	States/ Territories/ International Organisations		Completed	
Plan for the implementation of ATN ground-ground applications (AMHS)	RPO 1,3,5,9,11, 12 NAM/CAR RPBANIP	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.
Plan for the implementation of ATN ground-ground applications (AIDC)	RPO 9 NAM/CAR RPBANIP	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 9, NAM/CAR RPBANIP	United States/COCESNA/ Trinidad and Tobago		May 2015	
Plan for the transition of ATN ground-air applications	RPO 9, NAM/CAR RPBANIP	Project D		June 2015	

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible	Status of Implementation[1]	Date of delivery	Comments
Monitoring of the implementation of available technology for ATN ground-air applications	RPO 9, NAM/CAR RPBANIP	ICAO/ States/ Territories		June 2015	
Resources needed	Designation of experts and activities execution by the group of experts (WGs).				

CAR/SAM REGIONAL PLANNING AND IMPLEMENTATION GROUP / GRUPO REGIONAL CAR/SAM DE PLANIFICACION Y EJECUCION (GREPECAS)

ID	Task Name	Duration	Start	Finish
1	**PROJECT: ATN INFRASTRUCTURE FOR THE CAR REGION AND ITS G/G AND A/G APPLICATIONS/ INFRAESTRUCTURA ATN EN LA REGION CAR Y SUS APLICACIONES TIERRA-TIERRA Y TIERRA-AIREAUTOMATIZACIÓN**	**1365 days**	**Mon 3/22/10**	**Fri 6/12/15**
2	**ATN INSTRUCTURE FOR CAR REGION/INFRAESTRUCTURA ATN PARA LA REGION CAR**	**1073 days**	**Mon 3/22/10**	**Wed 4/30/14**
3	**1.1 Guide the interconnection/integration of Communications digital networks/Guiar la interconexion/integracion de redes digitales de comunicaciones**	**395 days**	**Mon 3/22/10**	**Fri 9/23/11**
6	**1.2 Technical revision of Regional Telecommunication Network for ATN implementation /Revision Tecnica de la red de telecomunicaciones para la implementacion ATN**	**671 days**	**Mon 3/22/10**	**Mon 10/15/12**
11	**1.3 Trial implementation to determine ATN bandwidth to support ground application/Implementacion de ensayos para determinar ancho de banda ATN para aplicacion Tierra**	**121 days**	**Mon 3/22/10**	**Mon 9/6/10**
14	**1.4 Study for an IP ATN CAR backbone network configuration / Estudio para configuracion del backbone de la red ATN IP CAR**	**542 days**	**Mon 12/5/11**	**Tue 12/31/13**
17	**1.5 Update of CAR/SAM Router Plan / Actualizacion del Plan de enrutadores CAR/SAM**	**283 days**	**Mon 4/1/13**	**Wed 4/30/14**
20	**1.6 Analyze proposals for data Communications infrastructure in support of ATFM implementation/ Analizar propuestas para infraestructura de comunicaciones de datos para apoyar la implementacion ATFM**	**121 days**	**Fri 7/19/13**	**Fri 1/3/14**
25	**1.7 Elaborate a CAR plan for the COM needed for the migration to aeronautical MET messages exchange (METAR/SPECI and TAF)/ Elaborar un Plan CAR para establecer COM para migracion de Mensajes OPMET**	**339 days**	**Thu 10/4/12**	**Tue 1/21/14**
30	**ATN GROUND-GROUND AND AIR-GROUND APPLICATIONS/ Aplicaciones T-T y T-A del ATN**	**1365 days**	**Mon 3/22/10**	**Fri 6/12/15**
31	**2.1 Review, update and complete initial transition plan for the evolutionary development of ATN and applications / Revisar, actualizar y completar el plan de transición inicial para el desarrollo evolutivo de la ATN y sus aplicaciones**	**1055 days**	**Mon 3/22/10**	**Fri 4/4/14**
36	**2.2 Implementation Plan for ATN Ground-ground applications (AMHS) / Plan de implantación de las Aplicacion tierra-tierra del ATN (AMHS)**	**722 days**	**Mon 3/22/10**	**Tue 12/25/12**
41	**2.3 Implementation Plan for ATN Ground-ground applications (AIDC) / Plan de implantación de las aplicaciones tierra-tierra del ATN (AIDC)**	**912 days**	**Mon 3/22/10**	**Tue 9/17/13**
46	**Update proposal for CNS Table 1Bb**	60 days	Fri 8/2/13	Fri 10/25/13
47	**2.4 Coordination and test for ATN ground applications implementation / Coordinación y prueba para aspecto de implantación de aplicaciones tierra tierra de la ATN**	**339.5 days**	**Mon 10/22/12**	**Fri 2/7/14**
50	**2.5 Promote A-G ATN applications/ Promover las Aplicaciones ATN A-T**	**540 days**	**Mon 4/15/13**	**Fri 5/8/15**
55	**2.6 Initial transition plan of ground/air ATN application / Plan de transición inicial de las aplicaciones tierra-aire de la ATN**	**310 days**	**Fri 4/4/14**	**Fri 6/12/15**



PC = Project Coordinator / Coordinador de Proyecto
PM = Project Members / Miembros de Proyecto
S/T = States/Territories / Estados/Territorios

APPENDIX B

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: Athayde Licério Vieira Frauche (Brazil)* *Contributing experts: Omar Gouarnalusse (Argentina), Michel Areno (France), Jose Luis Paredes (Peru), Aldo Pereira (Paraguay and Murilo Albuquerque Loureiro (Brazil)*	May 2010	September 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		
Metrics	• Drafting of a study for an IP backbone network for the SAM Region • 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

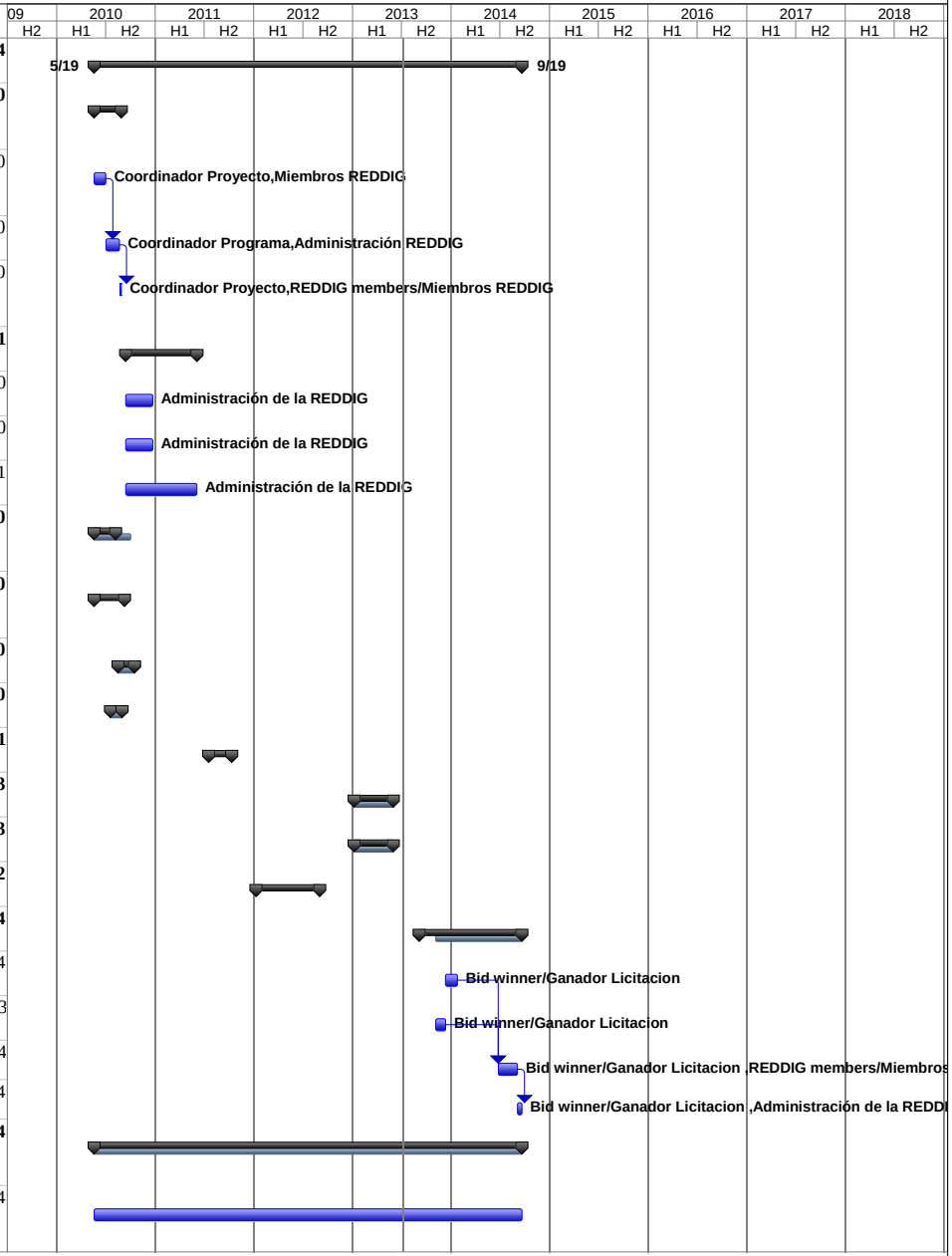
1 ***Gray**: Activity has not started*
***Green**: Activity has or will deliver planned milestone as scheduled*
***Yellow**: Activity is behind schedule on milestone, but still within acceptable parameters to deliver milestone on time*
***Red**: Activity has failed to deliver milestone on time, mitigation 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 and approved by REDDIG Member States
Drafting of safety guideline for implementation of IP networks	PFF SAM CNS 01	REDDIG Administration		May 2013	Completed for presentation at SAM/IG/11 meeting
Drafting of routing policy document for the SAM Region	PFF SAM CNS 01	Project Coordinator		May 2013	Completed for presentation 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 Administration, Project Coordinator, Omar Gouarnalusse (Argentina) and REDDIG II focal points		November 2013-September 2014	This activity is scheduled to start at the end of 2013
Monitor the ATN architecture project activities in the SAM Region		ICAO		March 2010-September 2014	
Resources necessary	Economic contribution necessary for the implementation of REDDIG II				

ID	Nombre de la tarea	Duration	Start	Finish
1	**ATN ARQUITECTURE IN THE SAM REGION / ARQUITECTURA DE LA ATN EN LA REGION SAM SAM**	**1132.88 days**	**Wed 5/19/10**	**Fri 9/19/14**
2	**Analysis of the SAM communitations network (REDDIG) current situation /Análisis de la situación actual de la red de comunicaciones SAM (REDDIG)**	**72.88 days**	**Wed 5/19/10**	**Fri 8/27/10**
3	Collection of information from each of the REDDIG nodes / Recoleccion de informacion desde cada uno de los nodos REDDIG	31 days	Wed 5/19/10	Thu 7/1/10
4	Review of information by REDDIG Administration / Revisión de la información por parte de la Administración de la REDDIG	40.38 days	Fri 7/2/10	Fri 8/20/10
5	Delivery of revised information with indications on the current situation / Entrega de la información revisada con la información de la situación actual	5 days	Mon 8/23/10	Fri 8/27/10
6	**Analysis of MEVAII/REDDIG current situation / Análisis de la situación actual de la interconexión MEVAII/ REDDIG**	**190 days**	**Mon 9/13/10**	**Fri 6/3/11**
7	Analysis of the current interconnection infrastructure / Análisis de la Infraestructura actual de interconexión	72 days	Mon 9/13/10	Tue 12/21/10
8	MEVA II/REDDIG interconnection performance analysis / Análisis del desempeño de la interconexión MEVA II / REDDIG	72 days	Mon 9/13/10	Tue 12/21/10
9	Analysis of the bandwidth used in the interconneciton / Análisis del ancho de banda utilizado en la interconexión	190 days	Mon 9/13/10	Fri 6/3/11
10	**Analysis on the AMHS band with impact over the current REDDIG satellite infrastructure / Análisis del impacto del ancho de banda de AMHS en la infraestructura actual satelital REDDIG**	**58 days**	**Wed 5/19/10**	**Fri 8/6/10**
17	**Long term applications requirements for the SAM Region/ Requerimientos de aplicaciones a lo largo del tiempo en la Región SAM**	**81 days**	**Wed 5/19/10**	**Thu 9/9/10**
19	**Estudio comparativo de los modelos de red satelital, terrestre y mixta (satelital y terrestre) basados en IP para la Región SAM**	**45 days**	**Mon 8/16/10**	**Fri 10/15/10**
25	**Complete the IPv4 addressing plan for the SAM Region / Completar el plan de direccionamiento IPv4 para la Región SAM**	**31 days**	**Mon 7/19/10**	**Mon 8/30/10**
27	**Draft the REDDIG II technical specifications / Elaborar las especificaciones técnicas para la REDDIG II**	**61 days**	**Mon 7/18/11**	**Mon 10/10/11**
30	**Draft the safety guide for the implementation of IP networks/ Elaborar guía de seguridad para la implantacion de redes IP**	**105 days**	**Mon 1/7/13**	**Fri 5/31/13**
35	**Draft the IP routing policy document / Elaborar el documento IP Routing Policy**	**105 days**	**Mon 1/7/13**	**Fri 5/31/13**
40	**Support in the bidding process and offer assessment / Soporte en el proceso de licitación y de la evaluación de las ofertas**	**170 days**	**Mon 1/9/12**	**Fri 8/31/12**
44	**Support REDDIG II implementation / Soportar la implantación de la REDDIG II**	**272 days**	**Thu 9/5/13**	**Fri 9/19/14**
45	Purchasing and integration of VSAT equipment / Adquisición e integración equipos VSAT	31.88 days	Wed 12/11/13	Thu 1/23/14
46	Preparation of ground backbone network / Preparación red medular terrestre	27 days	Tue 11/5/13	Wed 12/11/13
47	On-site installation activities / Actividades de instalación en el sitio	51 days	Wed 6/25/14	Wed 9/3/14
48	Puesta en operacion de la REDDIG II /Set in operation of REDDIG II	12 days	Thu 9/4/14	Fri 9/19/14
49	**Supervise the ATN arquitecture project in the SAM Region / Monitorear las actividades del proyecto de arquitectura de la ATN en la Región SAM**	**1133 days**	**Wed 5/19/10**	**Fri 9/19/14**
50	Supervise the ATN arquitecture project in the SAM Region / Monitorear las actividades del proyecto de arquitectura de la ATN en la Región SAM	1132.88 days?	Wed 5/19/10	Fri 9/19/14



APPENDIX C

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: Omar Gouarnalusse (Argentina)* *Contributing experts: Javier Vittor (Argentina), Ruben Guillermo Silva (Argentina) Andres Jansen (Brazil)*	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		

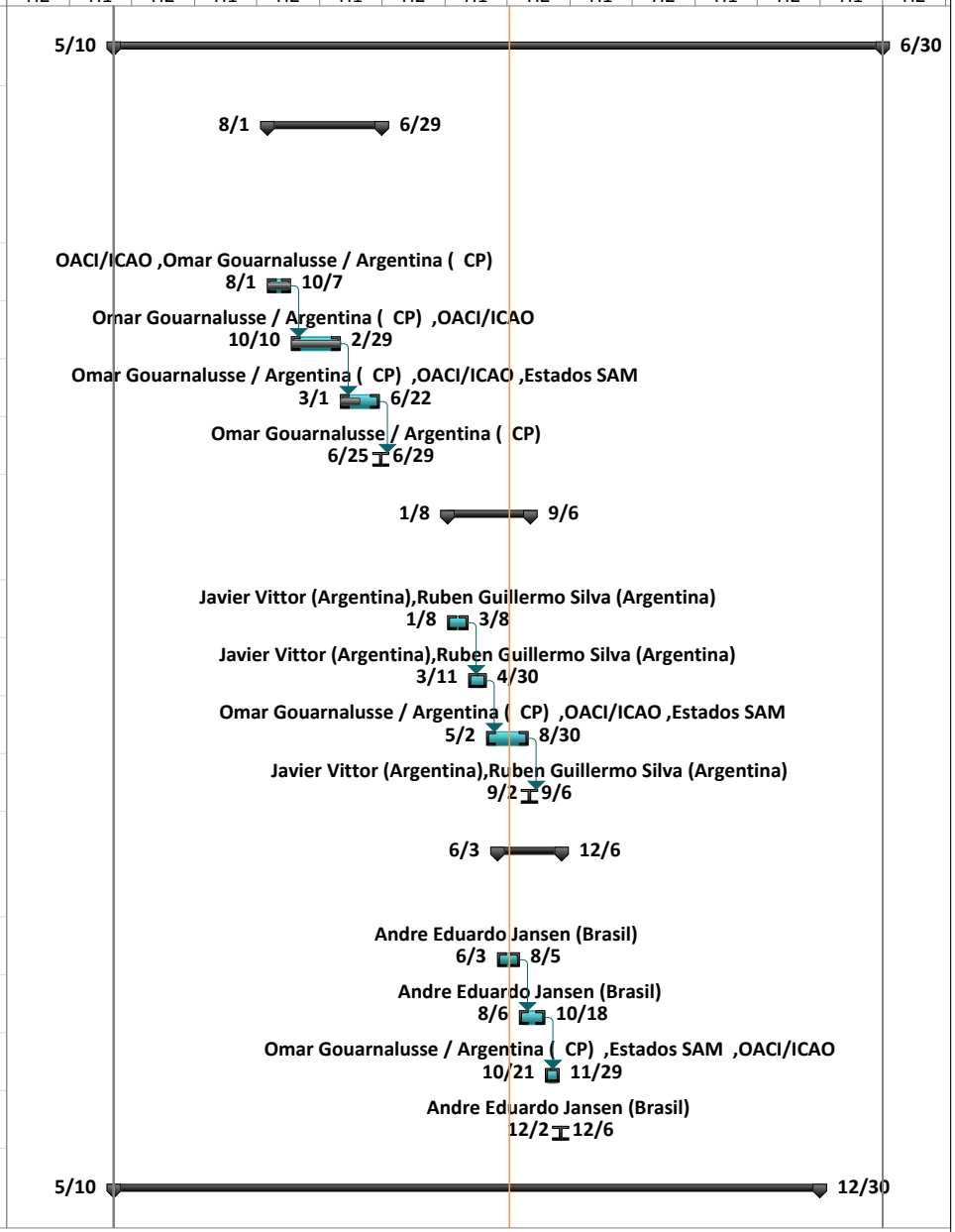
Goals	• Complete all AMHS interconnections by December 2015 • Complete the drafting of MoU for the interconnection of AMHS by mid-2013 • Complete the migration towards the implementation of AMHS interconnection through IP protocol by December 2015 • Complete AIDC installation between adjacent ACCs by mid-2016 • Complete the drafting of MoU for AIDS systems interconnection by the end of 2013 • 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	The guideline was drafted 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	The guideline will be based on the Brazilian experience in the implementation of ground-air data links. In same, DATIS, DVOLMET and DCL, as well as CPDLC service through VDL, among others, will be included.

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 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. Other States are in the process of implementation, having drafted and signed MoUs to this end Follow-up to the implementation of AMHS integration is carried out at SAM/IG meetings
Operational integration of AIDC service between adjacent ACCs	PFF SAM CNS 01 ATM 06 B0 FICE	States / Project Coordinator / Programme Coordinator		June 2016	To date no AIDC interconnection trials have been held between the Ezeiza and Cordoba ACCs. The integration is still not being used operationally Many States of the Region have drafted and signed MoUs to carry out the integration
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				

ID	Task Name	Duration	Start	Finish
1	Aplicaciones Tierra–tierra y Aire–tierra de la ATN en la Región SAM / ATN Ground-ground and Air-ground Applications in the SAM Region	1604 days	Mon 5/10/10	Thu 6/30/16
2	Documento de estrategia regional para la implantación de aplicaciones tierra - tierra y aire – tierra de la Región SAM/ Regional strategy document for the implementation of ground-ground and air-ground applications in the SAM Region	240 days	Mon 8/1/11	Fri 6/29/12
3	Recolectar información / Collect information	50 days	Mon 8/1/11	Fri 10/7/11
4	Entrega de propuesta de borrador / Delivery of draft proposal	103 days	Mon 10/10/11	Wed 2/29/12
5	Revision de la propuesta borrador / Review of draft proposal	82 days	Thu 3/1/12	Fri 6/22/12
6	Entrega documento final / Delivery of final document	5 days	Mon 6/25/12	Fri 6/29/12
7	Guía de orientación para el uso del AIDC con la finalidad de reducir errores de coordinación / Guideline for the use of AIDC with the aim of reducing coordination errors	174 days	Tue 1/8/13	Fri 9/6/13
8	Recolectar información / Collect information	44 days	Tue 1/8/13	Fri 3/8/13
9	Entrega de propuesta de borrador / Delivery of draft proposal	37 days	Mon 3/11/13	Tue 4/30/13
10	Revision de la propuesta borrador / Review of draft proposal	87 days	Thu 5/2/13	Fri 8/30/13
11	Entrega documento final / Delivery of final document	5 days	Mon 9/2/13	Fri 9/6/13
12	Guía de orientación para el establecimiento de enlaces de datos tierra-aire en la Región SAM / Guideline for the establishment of ground-air data links in the SAM Region	135 days	Mon 6/3/13	Fri 12/6/13
13	Recolectar información / Collect information	46 days	Mon 6/3/13	Mon 8/5/13
14	Entrega de propuesta de borrador / Delivery of draft proposal	54 days	Tue 8/6/13	Fri 10/18/13
15	Revision de la propuesta borrador / Review of draft proposal	30 days	Mon 10/21/13	Fri 11/29/13
16	Entrega documento final / Delivery of final document	5 days	Mon 12/2/13	Fri 12/6/13
17	Integración operacional del servicio AMHS entre Estados / Operational integration of AMHS among States	1473 days	Mon 5/10/10	Wed 12/30/15



GRUPO REGIONAL CAR/SAM DE PLANIFICACION Y EJECUCION / CAR/SAM REGIONAL PLANNING AND IMPLEMENTATION GROUP (GREPECAS)

ID	Task Name	Duration	Start	Finish
18	AMHS operational integration / Implantacion de la integración operacional de sistemas AMHS	1473 days	Mon 5/10/10	Wed 12/30/15
19	Integración operacional del servicio AIDC entre ACC´s adyacentes / Operational integration of AIDC service between adjacent ACCs	1230 days	Fri 10/14/11	Thu 6/30/16
20	AIDC operational integration / Implantación de la integración operacional del AIDC	1230 days	Fri 10/14/11	Thu 6/30/16
21	Monitorear las actividades de implantación de las aplicaciones tierra–tierra y aire–tierra de la ATN en la Región SAM / Monitor the implementation of ATN ground-ground and air-ground applications activities in the SAM Region	1604 days	Mon 5/10/10	Thu 6/30/16
22	Monitorear las actividades de implantación de las aplicaciones tierra–tierra y aire–tierra de la ATN en la Región SAM / Monitor the implementation of ATN ground-ground and air-ground applications activities in the SAM Region	1604 days	Mon 5/10/10	Thu 6/30/16