



**Agenda Item 6: Assessment of operational requirements in order to determine the implementation of communications and surveillance (CNS) capabilities improvement for en-route and terminal area operations**

**ACTIVITIES PERFORMED UNDER THE SAM ATN ARCHITECTURE PROJECT**

(Presented by the Coordinator of the SAM ATN Architecture Project)

SUMMARY	
The purpose of this working paper is to inform participants about the status of the deliverables foreseen for the SAM ATN Architecture Project.	
<b>REFERENCES:</b>	
<ul style="list-style-type: none"><li>• CAR/SAM ATN Architecture Project (D1);</li><li>• Report of the Second Meeting of the CNS/ATM Subgroup (Mexico City, Mexico, 16-19 November 2010);</li><li>• Report of the Eighth Meeting of the GREPECAS Administration Coordination Group - ACG/8 (Mexico City, Mexico, 26-27 January 2011);</li><li>• Sixteenth Meeting of the CAR/SAM Planning and Implementation Group - GREPECAS/16 (Punta Cana, Dominican Republic, 28 March-1 April 2011);</li><li>• Eighth Workshop/Meeting of the SAM Implementation Group (SAM/IG/8) RLA/06/901 Project (Lima, Peru, 10-14 October 2011);</li><li>• Study for the Implementation of a New South American Digital Network (REDDIG); and</li><li>• Technical Specifications for REDDIG II.</li></ul>	
<b>ICAO strategic objectives:</b>	<i>A – Safety C - Environmental Protection and Sustainable Development of Air Transport</i>

**1. Background**

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

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

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

1.3 The Ground-Ground and Air-Ground Communications Infrastructure Programme encompassed two Projects, as follows:

- a) CAR/SAM ATN Architecture (D1); and
- b) ATN ground-ground and ground-air applications (D2).

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

1.5 The GREPECAS/16 Meeting noted that the CNS/ATM Subgroup was already using a programme and project management approach, on which the other Subgroups should base their activities.

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

1.7 Another decision adopted by the GREPECAS/16 Meeting was to use a regional approach to project management. Everything that was being done by the CNS/ATM Subgroup for the CAR/SAM Regions was broken down by subject, and assigned to one or the other Region.

1.8 In practical terms, insofar as the CAR/SAM Infrastructure Project (D1) is concerned, the SAM/IG/7 meeting created a SAM Infrastructure Project, for which the D1 Project Coordinator was maintained to deal with matters pertaining strictly to the SAM Region.

1.9 A basic change made with regard to the original Project is that all tasks having indications with the CAR Region were eliminated.

1.10 It should be highlighted that in the beginning, the CAR/SAM ATN Architecture Project ended with the selection of the optimum IP-based platform for the CAR and SAM Regions. In that manner, it did not deal with the implementation of the new network (REDDIG II), to replace the current structure.

1.11 On the basis of the above paragraph, the Programme and Project D1 Coordinators reviewed all the deliverables involved and arrived to the conclusion that the Project should be extended to include the monitoring tasks pertaining to REDDIG II implementation, to happen on 2013.

1.12 This working paper describes all of the documents involved, the changes and adjustments made in the original documents for the CAR/SAM Infrastructure Project (D1) and the activities that were carried out in to date.

## 2. Analysis

2.1 The new Project Coordinators for the SAM Region were appointed at the SAM/IG/7 meeting, with Mr. Athayde Licério Vieira Frauche (Brazil), an expert who was already working on the tasks for the CAR/SAM Region, being retained as Coordinator for the SAM Architecture Project.

2.2 Changes were then made in all of the original documents to provide for the tasks involving only the SAM Region, as described in the body of this working paper.

## 2.3 Project Documents

2.3.1 The SAM Region Project took advantage of all of the documents that were being handled by the CAR/SAM ATN Architecture Project.

2.3.2 The documents that make up the SAM ATN Architecture Project are:

- a) Working Programme;
- b) Project Description (DP);
- c) Project File; and
- d) Detailed Working Structure (EDT).

2.3.3 To the original deliverables assigned to the CAR/SAM ATN Architecture Project, and which were taken into account for the specific SAM Region Project, the monitoring of REDDIG II implementation was added, which is described under Deliverable D 1.8. The Table shown in **Appendix A** contains the updated work programme.

2.3.4 El EDT, mostrado en el **Apéndice D**, es una estructura jerárquica en forma de árbol cuyos terminales (ramos) son los entregables involucrados en la consecución del proyecto. El documento mejora la exactitud de la estimación de tiempo y recursos y la relación entre los entregables principales y sus subdivisiones en los subordinados.

2.3.5 As a result of the analysis made, the deliverables of the SAM ATN Architecture Project are enumerated in the Project Description document in **Appendix B**. The document contains a summary of the main project phases, from inception to the completion of its full activities.

2.3.6 The Project file, set forth in **Appendix C**, allows for the management of all project variables, such as: scope, time, resources, quality, human resources and other elements.

2.3.7 The EDT, shown in **Appendix D**, is a hierarchical tree-shaped structure whose terminals (branches) are the deliverables and tasks related to the implementation of the project. The document improves the time and resource estimates, as well as the relationship between the main deliverables and its subdivisions.

## 2.4 Progress of the Activities

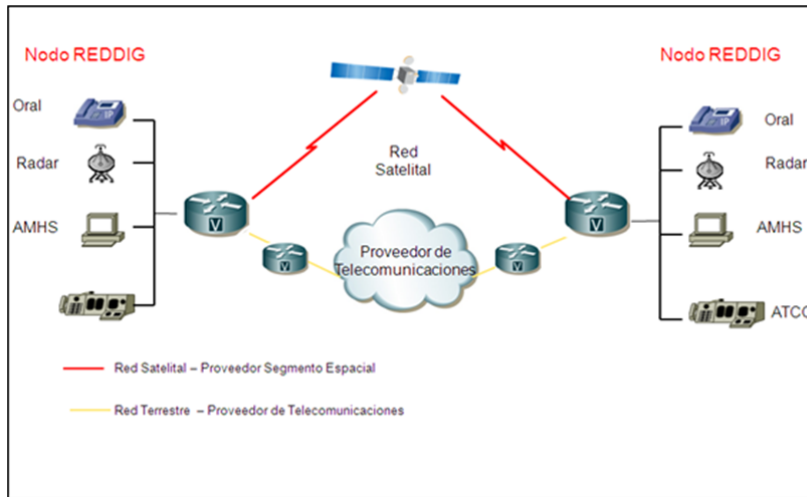
2.4.1 The fifth workshop/meeting of the SAM Implementation Group (SAM/IG/5) considered the possibility of conducting studies on the implementation of a new regional satellite, ground or mixed (satellite and ground) digital network to serve as the backbone for the SAM Aeronautical Telecommunications Network (SAM ATN). This new network would have to be designed to support current fixed aeronautical requirements for voice and data transmission and exchange of radar data and flight plans, together with the new ATN ground-ground applications between States/Territories in the SAM Region that are planned for implementation in the short and medium terms.

2.4.2 At the SAM/IG/6 meeting, the studies for the choice of the IP backbone for the SAM Region were completed and submitted for evaluation to States in the Region.

2.4.3 The elaboration, in August 2011, of the technical specifications for modernizing the REDDIG envisaged the natural evolution of all elements presented in the deliverables.

2.4.4 Emphasis is made on the fact that the specifications documents were presented and approved at the Twelfth Meeting of Civil Aviation Authorities of the SAM Region (RAAC/12), held in Lima, Peru, from 3 to 6 October 2012.

2.4.5 REDDIG II will be composed by satellite (main) and ground backbones, which are to work in parallel to increase availability and flexibility of the new applications in the network. Figure 1 shows the future REDDIG II architecture.



**Figure 1: REDDIG II Architecture**

### 3. Action suggested

#### 3.1 The Meeting is invited to:

- a) Take note of the information that has been presented;
- b) Review the activities of the SAM ATN Infrastructure Project that are described in Section 2 of this working paper, including Appendices A, B, C and D, in the light of the adjustments made to the original CAR/SAM D1 Project Documents; and
- c) Examine the progress made with the deliverables of Project described in Appendix E.

-----

## APPENDIX A / APÉNDICE A

SAM/IG/8-NE/13 – WP/13

**PROGRAMME/PROGRAMA:** GROUND-GROUND AND AIR-GROUND TELECOMMUNICATIONS INFRASTRUCTURE/  
INFRAESTRUCTURA DE COMUNICACIONES TIERRA-TIERRA Y TIERRA-AIRE  
**PROJECT/PROYECTO:** SAM ATN ARCHITECTURE / ARQUITECTURA DE LA ATN SAM  
**PROJECT COORDINATOR/  
COORDINADOR DEL PROYECTO:** Athayde Frauche

No.	Tarea/Task	Inicio Fin / Start End	Responsable / Responsible	Estado/Status	Deliverable/Entregable
1	2	3	4	5	6
D 1.1	Guide the interconnection/integration of Communications digital networks  Guiar la interconexión/ integración de redes digitales de comunicaciones	Marzo - Dic 2010/ March - Dec 2010	OACI Administración REDDIG Grupo MEVA TMG/  ICAO REDDIG Administration MEVA TMG Group	Valid/Válida	Evaluación del desempeño de la interconexión MEVA II REDDIG/ Evaluation of the performance of the interconnection of MEVA II/REDDIG
D 1.2	Technical revision of Regional Telecommunication Network for ATN implementation  Revisión técnica de redes regionales de telecomunicaciones para la implantación de la ATN	Junio 2009- Julio 2011 June 2009-July 2011	OACI Administración REDDIG  ICAO REDDIG Administration	Valid/Válida	Estudio técnico de las redes MEVA II y REDDIG para la implementación de la ATN  Technical study of MEVA II and REDDIG networks for ATN implementation
D 1.3	Trial implementation to determine ATN bandwidth to support ground application  Implantación de pruebas para determinar el ancho de banda de la ATN para soportar las aplicaciones terrestre	2009 - Sep 2010/ 2009 - Sep 2010	Proyecto SAM/SAM Project	Valid/Válida	Evaluación de los resultados de las pruebas preliminares para determinar ancho banda requerido para la red ATN en la Región SAM  Evaluation of the preliminary results on the definition of the SAM ATN bandwidth requirement

No.	Task/Task	Inicio Fin / Start End	Responsible / Responsible	Estado/Status	Deliverable/Entregable
1	2	3	4	5	6
D 1.4	Study for an IP ATN SAM backbone network configuration  Estudio para la configuración de una red modular IP para las Región SAM	2009 - Dic 2011 / 2009 - Dec 2011	Proyecto SAM/SAM Project	Valid/Válida	Estudio para la configuración de una red modular IP  Study for the configuration of an IP backbone network
D 1.5	Update of SAM Router Plan  Actualización del plan regional SAM de encaminadores	Enero 2012 January 2012	OACI/ICAO	Valid/Válida	Actualización al Plan regional SAM de encaminadores del ATN  Update to SAM Regional Plan on ATN Routers
D 1.6	Analyze proposals for data Communications infrastructure in support of ATFM implementation This activity supports the activity <i>Support PBN and ATFM implementation, optimization of ATM routes and guidance for ATM service automation</i> covered in the communication area.  Analizar las propuestas de infraestructura de comunicaciones de datos en apoyo de la implantación de la ATFM Esta actividad apoya la actividad <i>Soporte a la implantación del PBN el ATFM, optimización de las rutas ATM y guías para el servicio de automatización ATM</i> cubierta en el área de comunicaciones.	2009 - Dic 2011 2009 - Dec 2011	Proyecto SAM/SAM Project Note: Coordination needed with Program A (PBN), B (ATFM) and C (Situational Awareness)	Valid/Válida	Estudio de requerimientos de ancho de banda para las comunicaciones para soportar la implantación de la ATFM  Study of communication bandwidth requirements to support ATFM implantation

No.	Tarea/Task	Inicio Fin / Start End	Responsable / Responsible	Estado/Status	Deliverable/Entregable
1	2	3	4	5	6
D 1.7	<p>Elaborate a SAM plan for the establishment of the communications system needed for the migration towards aeronautical MET messages exchange (METAR/SPECI and TAF) in the new format to be defined</p> <p>Elaborar un plan SAM para establecer el sistema de comunicaciones necesario para la migración hacia el intercambio de mensajes aeronáuticos MET (METAR/SPECI y TAF) en el nuevo formato a definirse</p>	<p>Junio 2011- Junio 2012 June 2011 - June 2012</p>	<p>OACI Note: Coordination needed with MET Subgroup</p>	Valid/Válida	<p>Estudio de requerimientos de comunicaciones para soportar la migración al nuevo formato OPMET</p> <p>Study of communication requirement to support the migration to new OPMET format</p>
D 1.8	<p>Install de new REDDIG network, called REDDIG II</p> <p>Instalar la nueva red REDDIG, llamada REDDIG II</p>	<p>Junio 2012 – Dic 2013 July 2012 – Dec 2013</p>	OACI/ICAO	Valid/Válida	<p>Accompany the bid and the installation of the network REDDIG II</p> <p>Acompañar la licitación y la instalación de la REDDIG II</p>

- - - - -

## APPENDIX B1

## PROJECT ATN ARCHITECTURE IN THE SAM REGION

SAM Region	PROJECT DESCRIPTION (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  <i>Project Coordinator: Athayde Licério Vieira Frauche (Brazil)</i> <i>Contributing experts: Omar Gouarnalusse (Argentina), Michel Areno (France), Jose Luis Paredes (Peru), Jesús Bolívar (Venezuela), Christian Amaris de León (Colombia) and Hernando Lara (Bolivia)</i>	March 2010	June 2013
<b>Objective</b>	Study and implementation of optimum architecture for an IP protocol backbone network (REDDIG II) for the SAM Region		
<b>Scope</b>	<p>Study and implementation of an IP backbone network for the SAM Region, including an optimum configuration and considering, among other deliverables, the following:</p> <ul style="list-style-type: none"> <li>• Technical review of the regional telecommunications networks (ground, satellite or mixed) for the implementation of ATN under a cost-benefit analysis</li> <li>• Holding of trials to determine the ATN bandwidth necessary to support ground applications</li> <li>• 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</li> <li>• Support in the bidding process by TCB (Montreal) and in the implementation of the IP backbone network for the SAM Region</li> </ul>		
<b>Metrics</b>	<ul style="list-style-type: none"> <li>• Percentage concluded of the study for an IP backbone network for the SAM Region</li> <li>• Drafting of technical specifications for REDDIG II</li> <li>• REDDIG II implementation percentage</li> </ul>		
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• All tasks will be conducted by experts nominated by States of the SAM Region members of the project <i>ATN Architecture in the SAM Region</i>, 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</li> <li>• 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</li> </ul>		



<b>Justification</b>	<ul style="list-style-type: none"> <li>• A study on an ATN IP backbone network for the SAM Region will permit defining the optimum communications network architecture for said Region, currently mainly based on REDDIG (satellite digital communications network).</li> <li>• To arrive to the conclusion on the better network infrastructure, the determining of the current applications demand in terms of band width is considered very important. In this respect, States are carrying out tests, mainly AMHS, to determine the associated space segment. The action is considered as the beginning of the network's cost-benefit relationship research.</li> <li>• In addition, the increasing band width requirements for new services such as automation, surveillance, ATFM and meteorology. Also, 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</li> <li>• After developing all tasks necessary for determining the better network infrastructure, technical specifications for the purchasing and implementation of the SAM backbone network (REDDIG II) will be drafted</li> <li>• This project ends once the SAM IP backbone network (REDDIG II) is implemented</li> <li>• This project contributes to the implementation of SAM PFF CNS 01, CNS04, ATM 05, ATM 06, MET 04 and AIM 02 of the <i>Air Navigation System Performance-Based Implementation Plan for the SAM Region (SAM PBIP)</i></li> </ul>
<b>Related Projects</b>	<ul style="list-style-type: none"> <li>• Air Navigation Systems in Support of PBN</li> <li>• Automation</li> <li>• Improve ATM Situational Awareness</li> <li>• Implementation of the ICAO New Flight Plan Format</li> <li>• ATN Ground-ground and Air-ground Applications</li> </ul>

Project Deliverables	Relationship with Performance Based Regional Plan (PFF)	Responsible	Status of Implementation <sup>1</sup>	Delivery Date	Remarks
Analysis of the current SAM communications network (REDDIG)	PFF SAM CNS01	REDDIG Administration, Project Coordinator and Omar Gouarnalusse (Argentina)		August 2010	Completed
Analysis of the current MEVA II/ REDDIG interconnection	PFF SAM CNS01	REDDIG Administration		June 2011	Completed
Analysis of the AMHS band width impact on the current REDDIG satellite infrastructure	PFF SAM CNS01	Project Coordinator and Omar Gouarnalusse (Argentina)		September 2010	Completed
Long term applications requirements in the SAM Region	PFF SAM CNS01 PFF SAM CNS 04 PFF SAM MET 04 PFFs SAM ATM 05 and 06 PFF SAM AIM 02	ICAO		September 2010	Completed

<sup>1</sup>**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 <sup>1</sup>	Delivery Date	Remarks
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
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 CNS01 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 guidelines for REDDIG	PFF SAM CNS 01	REDDIG Administration		May 2012	An initial document has been drafted

Project Deliverables	Relationship with Performance Based Regional Plan (PFF)	Responsible	Status of Implementation <sup>1</sup>	Delivery Date	Remarks
Drafting of IP Routing Policy	PFF SAM CNS 01	Project Coordinator		October 2013	An initial document has been drafted
Support in the bidding process and in the offer evaluation		Project Coordinator, Omar Gouarnalusse (Argentina), Michel Areno (France), José Luis Paredes (Peru), Jesus Bolívar (Venezuela), Hernando Lara (Bolivia), Christian Amaris (Colombia) and REDDIG Administration		April 2012	The bidding will be 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		REDDIG Administration, Project Coordinator and Omar Gouarnalusse (Argentina)		November 2012- December 2013	This activity is scheduled to start at the end of 2012
Monitor the ATN architecture project activities in the SAM Region		ICAO		March 2010- December 2013	
Resources necessary	Economic contribution necessary for the implementation of REDDIG II				

ID	Nombre de la tarea	2009		2010		2011		2012		2013		2014	
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
1	ATN ARCHITECTURE IN THE SAM REGION / ARQUITECTURA DE LA ATN EN LA REGION SAM SAM			19/03								30/01	
2	PROJECT MANAGEMENT PROCESS PROCESOS DE GERENCIAMIENTO DEL PROYECTO			19/03	12/07								
3	FORMALIZATION OF THE PROJECT FORMALIZACIÓN DEL PROYECTO			19/03	12/07								
4	DP (Description of the Project / Descripción del Proyecto)			19/03	12/07								
20	EAP												
25	PROCESS FOR THE STUDY OF A SAM ATN INFRASTRUCTURE / PROCESOS DE ESTUDIOS DE UNA INFRAESTRUCTURA DE LA ATN SAM			02/06	09/07								
26	START OF THE PROJECT / INICIO DEL PROYECTO			19/05								24/12	
27	Collect and analyze current networks infrastructure and applications/services / Levantar y Analizar la infraestructura y Aplicaciones/Servicios de las Redes Actuales			19/05	29/07								
28	Analysis of the current SAM communications network (REDDIG) / Analisis de la situación actual de la red de comunicaciones SAM (REDDIG)			19/05	29/07								
29	Analysis of REDDIGs current infrastructure / Análisis de la Infraestructura actual de la REDDIG			O. Gouarnalusse, A. Frauche									
30	Analysis of bandwidth used in REDDIG / Análisis del ancho de banda utilizado en la REDDIG			19/05	03/08								
31	Analyze bandwidth for AFTN service / Analizar el ancho de Banda para el Servicio AFTN			O. Gouarnalusse, A. Frauche, Administración REDDIG									
32	Identify and analyze traffic generated by the application / Identificar e analizar el tránsito generado por la aplicación			19/05	22/06								
33	Analysis of the bandwidth used by the application / Análisis del ancho de banda utilizado por la aplicación			O. Gouarnalusse, A. Frauche									
34	Analyze band for voice over frame relay / Analizar Banda para Voz Over Frame Relay			19/05	26/07								
35	Identify and analyze traffic generated by the application / Identificar y analizar el tránsito generado por la aplicación			O. Gouarnalusse, A. Frauche, Administración REDDIG									
36	Analysis of the bandwidth used with DAMA / Análisis del ancho de banda utilizado con la utilización de DAMA			19/05	26/07								
37	Analysis of the bandwidth used with PAMA / Análisis del ancho de banda utilizado con la utilización de PAMA			19/05	26/07								
38	Analyze band for surveillance/automated systems / Analizar banda para sistema de vigilancia/automatizados			19/05	26/07								

ID	Nombre de la tarea	2009		2010		2011		2012		2013		2014	
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
39	Identify and analyze traffic generated by the application / Identificar e analizar el tránsito generado por la aplicación			O. Gouarnalusse, A. Frauche, Administración REDDIG 19/05	26/07								
40	Analysis of the bandwidth used by the application / Análisis del ancho de banda utilizado por la aplicación			O. Gouarnalusse, A. Frauche, Administración REDDIG 19/05	26/07								
41	Identify possible logistical problems in terms of equipment discontinuity / Identificar posibles problemas logísticos en términos de discontinuidad de equipos			O. Gouarnalusse, A. Frauche, Administración de la REDDIG 23/06	14/07								
42	Final report / Informe Final			O. Gouarnalusse, A. Frauche, Administración de la REDDIG 27/07	03/08								
43	<b>Analysis of the current MEVA II/REDDIG interconnection / Análisis de la situación actual de la Interconexión MEVA II/REDDIG</b>				13/09		03/06						
44	Analysis of the current interconnection infrastructure / Análisis de la Infraestructura actual de interconexión				Administración REDDIG 13/09		21/12						
45	MEVA II/REDDIG interconnection performance analysis / Análisis del desempeño de la interconexión MEVA II /				Administración REDDIG 13/09		21/12						
46	<b>Analysis of the bandwidth used in the interconeciton / Análisis del ancho de banda utilizado en la interconexión</b>				13/09		22/04						
47	<b>Analysis of bandwidth for AFTN service / Analizar el ancho de Banda para el Servicio AFTN</b>				13/09		22/04						
48	Identify and analyze traffic generated by the application / Identificar y analizar el tránsito generado por la aplicación				Administración REDDIG 13/09		21/12						
49	Analysis of the bandwidth used by the services / Análisis del ancho de banda utilizado por los servicios				Administración REDDIG 13/09		22/04						
50	<b>Analyze band for voice over frame relay / Analizar Banda para Voz Over Frame Relay</b>				13/09		21/12						
51	Identify and analyze traffic generated by the application / Identificar e analizar el tránsito generado por la aplicación				Administración REDDIG 13/09		21/12						
52	Analysis of the bandwidth used with DAMA / Análisis del ancho de banda utilizado con la utilización de DAMA				Administración REDDIG 13/09		21/12						
53	Analysis of the bandwidth used with PAMA / Análisis del ancho de banda utilizado con la utilización de PAMA				Administración REDDIG 13/09		21/12						
54	<b>Analyze band for surveillance/automated systems / Analizar Banda para Sistema de Vigilancia/automatizados</b>				13/09		21/12						
55	Identify and analyze traffic generated by the application / Identificar y analizar el tránsito generado por la aplicación				Administración REDDIG 13/09		21/12						
56	Analysis of the bandwidth used by the application / Análisis del ancho de banda utilizado por la aplicación				Administración REDDIG 13/09		21/12						

ID	Nombre de la tarea	2009		2010		2011		2012		2013		2014	
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
57	Identify possible logistical problems in terms of equipment discontinuity / Identificar posibles problemas logísticos en términos de discontinuidad de equipos					Administración REDDIG 22/12	12/01						
58	Final report / Informe Final					Administración de la REDDIG 25/04	30/05						
59	Remittance of information to Programme Coordinator / Envío de las Informaciones al Coordinador de Programa					Administración REDDIG 03/06	03/06						
60	Consolidated report on the survey and analysis of the current network infrastructure and applications/services / Informe Consolidado del levantamiento y análisis de la infraestructura e Aplicaciones/Servicios de la Red Actual					Coordinador Proyecto 06/06	29/07						
61	<b>DESARROLLO DEL PROYECTO</b>												
62	<b>Comunicaciones de datos en apoyo a la ATM</b>												
63	<b>Trials to determine the ATN bandwidth to support ATM applications / Pruebas para Determinar el Ancho de Banda de la ATN para Soportar Aplicaciones ATM</b>												
64	<b>Trials guideline for AMHS bandwidth / Guía de pruebas de Ancho de Banda AMHS</b>												
65	Study the message statistics among States /Estudiar las estadísticas de mensajes entre Estados					Coordinador Proyecto 19/05	26/05						
66	Prepare the simulation script / Preparar el "script" para la simulación					Coordinador Proyecto 19/05	26/05						
67	Trials schedules / cronogramas de pruebas					O. Gouarnalusse, A. Frauche 15/07	16/07						
68	Trials types / Tipos de pruebas					A. Frauche 15/07	27/07						
69	Carry out trials between Argentina (Ezeiza) and Brazil (Manaos) / Realizar las Pruebas entre Argentina (Ezeiza) y Brasil (Manaos)					O. Gouarnalusse, A. Frauche 28/07	04/08						
70	<b>Analysis of the data and AMHS bandwidth determination / Análisis de los Datos y Determinación del Ancho de Banda para AMHS</b>												
71	Analysis of the trials AMHS data between Argentina (Ezeiza) nad Brasil (Manaus) Análisis de los datos de las pruebas de AMHS entre Argentina (Ezeiza) y Brasil (Manaos)					O. Gouarnalusse, A. Frauche 05/08	16/08						
72	Final report on bandwidth necessary for AMHS / Informe Final de la determinación del ancho de banda necesario para AMHS					Coordinador Proyecto 25/08	01/09						
73	<b>Análisis del impacto del ancho de banda en la infraestructura actual satelital</b>												
74	Inform REDDIG Administration of the trial results between Ezeiza and Manaos / Informar a la Administración de la REDDIG los resultados de las pruebas entre Manaos y Ezeiza					Coordinador Proyecto, Coordinador Programa 01/09	02/09						
75	<b>Bandwidth in REDDIG / Ancho de Banda en la REDDIG</b>												

ID	Nombre de la tarea	2009		2010		2011		2012		2013		2014	
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
76	Study the bandwidth necessary for AMHS under current configuration / Estudiar el ancho de banda necesario para AMHS con la configuración actual			O. Gouarnalusse, A. Frauche 02/09	23/09								
77	Determine the costs increase for AMHS / Determinar el incremento de costos para AMHS			O. Gouarnalusse, A. Frauche 23/09	30/09								
78	<b>Study and analysis of bandwidth in the MEVAII/REDDIG interconexion / Estudio y analisis de la utilización de ancho de banda em la interconexión de las redes MEVA II/ REDDIG</b>				01/11	10/01							
79	Study the bandwidth necessary for AMHS under current configuration / Estudiar el ancho de banda necesario para AMHS con la configuración actual			Administración REDDIG 01/11	31/12								
80	Determine the costs increase for AMHS in the MEVAII/REDDIG / Determinación de los costos para el incremento de banda en la MEVAII/REDDIG			Administración REDDIG 03/01	10/01								
81	<b>Identify and study the new services and applications in the SAM Region / Identificar y estudiar los nuevos servicios e aplicaciones ATN en la Región SAM</b>			19/05	08/09								
82	<b>Long term applications requirements for the SAM Region / Requerimientos de Aplicaciones a lo largo del tiempo em la Región SAM</b>			19/05	08/09								
83	<b>ATM AUTOMATION AND SITUATIONAL AWARENESS / AUTOMATIZACION ATM Y CONPRENSION SITUACIONAL</b>			19/05	08/09								
84	<b>Automation (systems interconnection) / Automatización (Interconexión de Sistemas)</b>			19/05	30/06								
85	Analysis of bandwidth requirements for AIDC/OLDI application / Analizar los requerimientos de ancho de banda para la aplicación AIDC/OLDI.			Coordinador Proyecto, Coordinador Programa 19/05	30/06								
86	Analizar los requerimientos de ancho de banda para la aplicación de datos radar.			Coordinador Proyecto, Coordinador Programa 19/05	30/06								
87	<b>Improvement to the situational awareness / Mejora a la Comprensión Situacional</b>			28/07	08/09								
88	Analysis of bandwidth requirements for ADS application / Analizar los requerimientos de ancho de banda para las aplicación ADS			Coordinador Proyecto, Coordinador Programa 28/07	08/09								
89	Analysis of bandwidth requirements for Multilateration application / Analizar los requerimientos de ancho de banda para la aplicación Multilateración.			Coordinador Proyecto, Coordinador Programa 28/07	08/09								
90	<b>AIM</b>			19/05	30/06								
91	Analyze the bandwidth requirements for related applications / Analizar los requerimientos de ancho de banda para las aplicaciones relacionadas			Coordinador Proyecto, Coordinador Programa 19/05	30/06								
92	<b>ATFM</b>			19/05	30/06								



ID	Nombre de la tarea	2009		2010		2011		2012		2013		2014	
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
93	Analysis of bandwidth requierements for applications in support of ATFM implementation / Analizar los requerimientos de ancho de banda para las aplicaciones em apoyo de la Implantación de la ATFM			Coordinador Proyecto,Coordinador Programa 19/05 30/06									
94	<b>MET</b>			19/05 30/06									
95	Analizar los requerimientos de ancho de banda para las aplicaciones MET			Coordinador Proyecto,Coordinador Programa 19/05 30/06									
96	Consolidated report on the study for new services and ATM/ATN applications in the SAM Region / Informe Consolidado del Estudio de Nuevos Servicios y Aplicaciones ATM / ATN em la Región SAM			Coordinador Proyecto,Coordinador Programa 23/08 06/09									
97	<b>Study of the desired scenario /Estudio del escenario deseado</b>			16/08 22/10									
98	<b>SAM Network / Red SAM</b>			16/08 22/10									
99	<b>Infrastructure of a satellite network / Infraestructura de una Red Satélite</b>			16/08 06/09									
100	Study on a SAM satellite IP network structure / Estudiar una estructura de rede IP SAM satelital			O. Gouarnalusse,A. Frauche,Administración de la REDDIG 16/08 30/08									
101	Determination of SAM satellite network costs / Determinación de los costos de Red SAM Satelital			O. Gouarnalusse,A. Frauche,Administración de la REDDIG 23/08 06/09									
102	<b>Infrastructure of a ground network / Infraestructura de una Red Terrestre</b>			16/08 06/09									
103	Study on a SAM ground IP network structure / Estudiar una estructura de rede IP SAM Terrestre			O. Gouarnalusse,A. Frauche,Administración de la REDDIG 16/08 30/08									
104	Determination of SAM ground network costs / Determinación de los costos de Red SAM Terrestre			O. Gouarnalusse,A. Frauche,Administración de la REDDIG 23/08 06/09									
105	<b>Infrastructure of a mixed network (satellite + ground) / Infraestructura de una Red Mixta (Satélite + Terrestre)</b>			16/08 06/09									
106	Study on a SAM mixed IP network structure (satellite + ground) / Estudiar una estructura de rede IP SAM Mixta (terrestre y satélite)			O. Gouarnalusse,A. Frauche,Administración de la REDDIG 16/08 30/08									
107	Determination of SAM mixed network costs / Determinación de los costos de Red SAM Mixta			O. Gouarnalusse,A. Frauche,Administración de la REDDIG 23/08 06/09									
108	Comparative analysis between network infrastructures / Análisis comparativo entre las infraestructuras de red.			O. Gouarnalusse,A. Frauche 08/09 06/10									
109	Analysis of desired platform implementation costs / Análisis de costos de implementación de la plataforma deseada			O. Gouarnalusse,A. Frauche,Administración REDDIG 06/09 04/10									
110	Definition of desired platform / Definición de la Plataforma deseada			Miembros REDDIG,Administración de la REDDIG 06/10 22/10									
111	<b>Drafting of guide on development of information security / Elaborar Guía de Desarrollo de Seguridad de la Información</b>							10/01 31/05					
112	Completion of guide on REDDIG network communications security / Completar el guía de seguridad para la red de comunicación REDDIG					Coordinador Proyecto,Administración de la REDDIG 10/01 31/05							

