REDDIG RTO/09

INTERNATIONAL CIVIL AVIATION ORGANIZATION

RLA/03/901

NINTH TECHNICAL MEETING- OPERATION OF THE REDDIG II DIGITAL NETWORK

(RTO/09)

FINAL REPORT

(Virtual, October 13th and 14th, 2022)

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ÍNDICE

MEETING OVERVIEW

PLACE AND PERIOD OF THE MEETING

The Ninth REDDIG II Technical-Operational Meeting (RTO/09) was held virtually on October 13 and 14, 2022, they were recorded sessions, using the Zoom platform for such purposes.

OPENING

Eng. Cristian Javier Vittor, REDDIG Administrator, opened the event.

The participants were welcomed to the RTO/09 meeting, highlighting the great growth that the network has had after 19 years of its implementation (on the eve of its 20th anniversary), the growth, the constant technological adaptation, and the quality of the work of each one of the professionals that integrate it, which has been reflected in the high quality of the services provided to international civil aviation. Success was predicted for the deliberations, opening the meeting.

In addition, the REDDIG Administrator thanked each of the States for the participation of their specialists in the meeting, highlighting the work of all and in particular of the NCC Manaus staff, in particular to the vicissitudes during the pandemic. Highlighting the growth of new technologies (AMHS, AIDC, ASTERIX, MET, ADS-C/CPDLC, ADS-B, IWXXM), with an undeniable tendency to use REDDIG II as a multi-service platform, which has allowed the appearance of new entrants, such as the FAA (Federal Aviation Administration), COCESNA, Spain, South Africa, Panama, SITA and AIREON.

SCHEDULE

Cuestión 1 del orden del día:	Desempeño de la REDDIG II hasta la fecha
Cuestión 2 del Orden del día:	Revisión y actualización de los procedimientos para el mantenimiento y operación de la REDDIG II
Cuestión 3 del orden del día:	Análisis de los requerimientos para la mejora de la prestación de la REDDIG II
Cuestión 4 del orden del día:	Otros asuntos

HORAS (Lima)	Jueves 13 de Octubre	HORAS (Lima)	Viernes 14 de Octubre
0750 0800	Registro de participantes	0800 0925	Cuestión 2 del Orden del Día
0800 0810	Apertura de la Reunión		
0810 0925	Cuestión 1 del Orden del Día		
0925 0940	Pausa de 15 min	0925 0940	Pausa 15 min
0940 1100	Cuestión 1 del Orden del Día	0940 1100	Cuestión 3 del Orden del Día
1100 1150	Pausa de 50 min	1100 1150	Pausa de 50 min
1150 1330	Cuestión 2 del Orden del Día	1150 1330	Cuestión 4 del Orden del Día

WORKING LANGUAGES

The working languages were Spanish, English and Portuguese.

In this sense, it was reported that there was a simultaneous interpretation service for Spanish-English and English-Spanish.

PARTICIPANTS AND ORGANIZATION

14 Member States and one Organization (Argentina, Bolivia, Brazil, Colombia, Chile, Ecuador, Guyana, French Guyana, Paraguay, Peru, Suriname, Trinidad & Tobago, Uruguay, Venezuela, and COCESNA) participated in the meeting with 57 participants. , the REDDIG Administrator, interpretation staff and assistants from the Regional Office. The list of participants appears on page iii-1.

Engineer Mr. Cristian Javier Vittor, REDDIG II Administrator, acted as Moderator and speaker of the meeting, and the meeting was recorded.

INTERNATIONAL CIVIL AVIATION ORGANIZATION
South American Regional Office

RLA/03/901 REDDIG
Ninth Technical/Operational Meeting of the REDDIG II Digital Network (RTO/09)

(Virtual, October 13 and 14, 2022)

LIST OF PARTICIPANTS

No.	Country/Region Nam	First Name	Last Name	Organization	Job Title
1	Argentina	Laura Amalia	Paluci	EANA S.E	Técnica CNS Ezeiza- Cecodi- Argentina
2	Argentina	Hernan Gabriel	CANNA	EANA	Responsable nodo REDDIG Argentina
3	Bolivia	Hernan	Tito	NAABOL	REDDIG - LA PAZ
4	Bolivia	Javier	Astorga	NAABOL	Técnico Telecomunicaciones
5	Bolivia	Luis Alberto	Mamani Ramos	NAABOL	Tecnico Telecomunicaciones
6	Brazil	Emmanuel	Gonçalves	FAB/CINDACTA III	Telecommunications Technician
7	Brazil	Ricardson	Feitoza	FAB/CINDACTA III	Head of The Links Section
8	Brazil	Jefferson	Cheron	CINDACTA II	Engenheiro de Telecomunicações
9	Brazil	Emmanuel	Cordova	NCC REDDIG Manaus	Assistente técnico
10	Brazil	Thiago	de Melo Maia	Força Aérea Brasileira - CINDACTA I	Segundo Sargento - Técnico mantenedor da REDDIG Brasília
11	Brazil	Eraldo	Menezes da Silva	Cindacta 4	Técnico
12	Brazil	Emerson	Zuckert Nunes	CINDACTA II	Encarregado da TTIR
13	Brazil	Bruno	Pacheco Santos Azevedo Costa	DECEA	Chefe da Seção de Infraestrutura de Redes
14	Chile	Christian	Vergara	DGAC	Electrónico Aeronáutico
15	Chile	Claudio	Riffo	DGAC	Electronico Aeronautico
16	Chile	Nicolas	Vasquez	DGAC	Electrónico Aeronáutico
17	Colombia	ROBINSON	QUINTERO LADINO	AEROCIVIL COLOMBIA	Ingeniero de Comunicaciones
18	Colombia	William orlando	Fonseca roa	AEROCIVIL	Grupo Manto Sistemas Comunicaciones y Redes
19	Colombia	ANDRES	COLMENARES	AERONÁUTICA CIVIL DE COLOMBIA	INGENIERO ATSEP (COMUNICACIONES)
20	Costa Rica	Gabriel	Quirós Pereira	COCESNA	Gerente Técnico
21	Ecuador	Washington	Quinde	Dirección General de Aviación Civil - Ecuador	Analista CNS para la Navagación aérea 1
22	Ecuador	TAMARA	AYALA	DGAC ECUADOR	ANALISTA AFS
23	Ecuador	Néstor	Nieto	Dirección General de Aviación Civil	Analista CNS para la Navegación Aérea
24	Ecuador	Lauro	Gallardo	Dirección General de Aviación Civil	Comunicaciones Satelitales estación Monjas (COMSAT)
25	Ecuador	Franklin Xavier	Cañadas Ortiz	DGAC	COMSAT
26	El Salvador	Rubén	Cornejo	COCESNA	Ingeniero de mantenimiento
27	El Salvador	Josue Ulises	Palma	COCESNA	Técnico Aeronáutico
28	French Guiana	Serge	CUPOLI	DGAC	Chef de Subdivision Technique
29	Guyana	Sewchan	Hemchan	Guyana Civil Aviation Authority	Supervisor CNS
30	Guyana	Matthew	Maycock	Guyana Civil Aviation Authority	CNS Technician II
31	Guyana	Troy	Gittens	Guyana Civil Aviation Authority	CNS Technician
32	Honduras	Roger	Perez	COCESNA	Gerente Senior ACNA
33	Honduras	Jesus	Escoto	COCESNA	Tecnico Aeronautico
34	Honduras	Mario	Pinel	COCESNA	Gestor Tecnico
35	Panama	Daniel	De Avila	Autoridad Aeronautica Civil	Jefe de Gestion CNV
36	Paraguay	Alexander	Aguayo	DINAC	Jefe de Departamento Comunicaciones
37	Paraguay	Carlos	Castro Jara	Dinac	Jefe de Seccion
38	Peru	RICARDO JOSE	ARTEAGA CHAVEZ	CORPAC S.A.	ESPECIALISTA CNS
39	Peru	Moisés	Canicela Quispe	CORPAC SA.	Técnico ATSEP del Nodo REDDIG - REDAP Lima - PERÚ
40	Peru	YUNNIOR ALEXSANDER	LEVANO PALOMINO	CORPAC S.A	Especialista ATSEP
41	Peru	Dora	Dueñas	ICAO	Programme Assistant
42	Spain	gerardo martin	korschewski	EANA S.E	EZEIZA
43	Spain	PEDRO	PASTRIAN	DGAC	INGENIERO MANTENMIENTO
44	Suriname	Jurgen	Cicilson	CADSUR	acting chief CNS
45	Trinidad and Tobago	Veronica	Ramdath	Trinidad and Tobago Civil Aviation Authority	Manager CNS
46	Trinidad and Tobago	Rupnarine	Baboolal	Trinidad and Tobago Civil Aviation Authority	CNS Eng. (Ag.)
47	Trinidad and Tobago	Naresh	Seeparsad	TTCAA	CNS Supervisor (Ag.)
48	Trinidad and Tobago	Satnarine	Maharaj	Trinidad and Tobago Civil Aviation Authority	CNS Technician 2
49	Trinidad and Tobago	Adam	Khan	TTCAA	CNS TECHNICIAN 2
50	Trinidad and Tobago	Richard	Halliday	Trinidad and Tobago Civil Aviation Authority	CNS Engineer
51	United States	Steve	Saroop	TTCAA	CNS Engineer (Ag.)
52	Uruguay	MIGUEL	VERA	DINACIA	Responsable Nodo REDDIG
53	Uruguay	LEONARDO	RODRIGUEZ	DINACIA	TECNICO ELECTRONICA
54	Venezuela	SABRINA	RODRIGUEZ	INAC-VENEZUELA	Encargada de AMHS area Tecnica
55	Venezuela	Luis Eduardo	Escobar	INAC/SNA/CNS	Coordinador de Comunicaciones
56	Venezuela	JARUMY ROSERLYN	CASTILLO JIMÉNEZ	INAC	GERENTE DE MANTENIMIENTO SNA
57	Venezuela	Jose	Ramirez	INAC	Coordinador de Comunicaciones y Microonda

Introduction

Before beginning with the development of the questions to be dealt with, a review was made of the topics developed in the RTO-08.

All the conclusions and even those discussed in the RCC were reviewed.

For the purposes of the report, the following link allows access to the presentation used and which contains all the topics discussed and stated on the agenda.

[link to access the presentation in pdf]

In relation to the issues raised, the highlights are included for each one.

Question 1 of Agenda: Performance of REDDIG II to date

Under this item on the agenda, the meeting was informed of the REDDIG II performance to date, including the Lumen/Cirion network, and subsequent considerations.

It was stated that the expected levels of availability and functionality are being worked on. It was agreed that this result is mainly due to the work carried out by the Administration, the technical staff of the Manaus NCC and the technical staff of the States.

In the development of this matter, the Attentions, Failures, and Availability of the REDDIG were reported. In addition, it should be mentioned that previously a review was made of what was discussed in RTO/08.

Logistical aspects

On this topic, the meeting was informed about the logistical movements that were made from the Regional Office.

The historical record in this regard was also presented.

Delegates were reminded of the definitive replacement process with parts from the REDDIG Spare Parts lot dating from RCC-08 of April 2005, which is still in force. Bearing in mind that the REDDIG equipment is in the final stage of its life cycle, it is feasible that novelties will continue to appear and it will be necessary to continue with the logistics processes for shipment, repair and replacement of equipment. In addition to all of the above, the manufacturers, NDSatcom and Terrasat, no longer manufacture outdoor and indoor equipment since 2020. In addition, that there is only a commitment to have spare parts until 2022 and then it will be subject to availability from the manufacturers.

In this sense, all those present were informed of the current procedure in relation to this matter.

The requested part will be sent to the node as final, as long as it is available in the spare parts lot.

a) The State Administration will provide the details of to whom and to which address (Send) the spare part should be sent.

b) Export of the spare part, in the State where the shipment of the spare part must be made and the contracting of the transport company.

c) Definitive import of the spare part, to be carried out by the State Administration (direct or customs agent)

Costs and expenses to incur

a) Payment to the factory for the replacement of the spare part.

b) Payment to the transport company.

c) Payment of the services of customs agents.

Regarding the costs and expenses, all these will be paid by the State that requests the definitive replacement of the spare part.

In accordance with the guidelines indicated in project document RLA/03/901, the State Administration will deposit in the Project account the value of the cost of the spare part, as well as all the expenses incurred for the replacement of the part. spare. In the event that the project makes payments that could be agreed with the State Administration, these expenses will be reimbursed by including them in the annual quota corresponding to the State.

"In the Eighth Coordination Meeting (RCC / 8) of Project RLA / 03/901 held in Lima, Peru, from April 27 to 29, 2005, administrative procedures for spare parts management were defined and approved.

It is indicated that the cost of repairing damaged equipment, as well as the replacement of equipment or spare parts, is borne by the State, therefore, they are not shared costs with all REDDIG member states, according to what was consulted"

Inventory

Those present were informed about the existing inventory in the warehouse that the Regional Office has for their information.

Current situation of the nodes

Those present were informed of the current situation of all the stations and the work carried out. In this sense, some particular situations were highlighted.

Those present were exposed to the news in relation to the equipment with failure; the repetitive failure of the IBUC 80W amplifiers was highlighted. Skywan 1070 modems were also reported. One observation made about the 1070 modems is that the sources of these equipment do not have visible fuses, and prove to be susceptible to voltage fluctuations.

In addition, it was reported that, depending on requirements, tasks tending to use fxs cards to enable Hotline, switched and administrative circuits between States continue to be carried out.

The Meeting was informed about actions that continue to be carried out to correct developments in its operation and to prevent problems:

a) checking the status of the serial cables and checking the operation of chain B;
b) verification of operation of maintenance and administrative voice circuits;
c) verification of coaxial cabling;
d) back-up procedure of the servers on external disks; and
e) general and comprehensive verification of the operation of the station and its components.

The Meeting was made aware of the long times that the teams remain in the respective customs, and the importance for the focal points to collaborate with logistical tasks, in order to avoid these situations.

In this sense, it was mentioned that these delays impair the repair times of the equipment and put other stations at risk since at a certain moment there are no spare parts to save the situation presented. It was mentioned to take into account the operational impact that this can cause.

Lumen/Cirion Ground Network

It was reported that tasks are being carried out with the company to improve, among other things, the following:

a) improve last mile connectivity;
b) in some cases, the times are still long to solve the problems,

c) discrepancies, this depending on the last mile operator;

It was reported that a report is sent to Montreal on a monthly basis with the availability of the States that are below the value of 99.7% of the benefit, as the case may be, in order to penalize the company for the observed breaches.

During the meeting, monthly availability reports obtained with a monitoring tool were presented as examples.

Once the stability and reliability of the terrestrial network is achieved, it is proposed that it become the main network and the satellite become the back-up or have a balanced network.

In relation to Lumen and Intelsat, the accesses to the respective web pages were presented to the Meeting, showing the options that are available to both generate or follow up on a ticket, or to obtain important information on aspects related to the satellite and its provider.

Question 2 of
Agenda: Review and update of the procedures for the maintenance and operation of the REDDIG

Under this item on the agenda, the procedures that are necessary to carry out the maintenance and operation tasks of the REDDIG II services, the 'backup' of network information, the regional telephone directory , the tables of the numbering of the voice and data interfaces of each network node, as well as the standardization of the configurations for native IP services. Likewise, what is related to the interconnections of different systems for data exchange (Regional and Inter-Regional – AMHS, radar data, AIDC, ADS-B, etc.). Aspects related to the operational part were also discussed, as well as issues that must be taken into account when implementing new systems that interconnect with the REDDIG.

REDDIG telephone directory

It was reported that the REDDIG Administration needs the REDDIG telephone directory (ATS and Administrative) to be updated annually. In this regard, the States were requested, following the regular procedure, to review this telephone directory and send its update to the REDDIG Administration as soon as possible.

Improvement in coordinations

It was requested to inform the REDDIG Administration and the nodes involved, of the technological changes or configurations that are made in the systems of the States and that affect the services provided by the REDDIG, such as PABX, Voice Switching, MTA, automated systems, data networks, radar data exchange, etc., with the objective that the Administration, as well as the States, are informed of the operating conditions of the nodes and associated systems that may be affected.

In relation to logistical procedures, the Meeting was reminded of what was defined during RCC-20, in which it is expressed: "...the process of attention to the replacement of damaged equipment and shipment to the factory for repair will be as follows , from the ICAO SAM Office in Lima, the REDDIG Administration sends the equipment or part to the node of the State where the failure occurred, the State of the node sends the damaged equipment or part to the ICAO SAM Office, which one Once received, it will be sent to the factory for repair. Once the equipment has been repaired, it will return to the ICAO SAM Office and will be placed in the spare parts warehouse. All coordination will be made between the REDDIG Administration, the REDDIG focal points and the representatives of the equipment manufacturers…".

The importance of the validity of the designated focal points and that their list must be updated was highlighted.

Node equipment back-ups

The Meeting was informed of the back-ups of the configurations of the network equipment, of

each one of the stations, that were carried out during the year, which are kept safe and available at the NCC in Manaus.

Security

It was reported that password changes are periodically made to the routers and switches of the stations, in order to increase the security measures and integrity of the processes and configurations of the equipment, due to problems in some nodes. Switch ports have also been blocked and work is underway to filter by mac-address. It has been observed that some irregularities have been detected in the interconnections between systems, for which reason work is being done on the configuration of the Access List until the firewalls that are in the process of being purchased by the Project are available. For these reasons, if it is necessary to carry out a local procedure or action in a node, by personnel trained and authorized for this purpose, the NCC must be called and informed of their activities and request access.

Training program and RTO/09

During the development of RTO-09, the delegates were informed about the scope of compliance with the activities that were scheduled for the year 2023.

In this sense, the following training will be developed:

a) Recurrent on REDDIG II Operation and Maintenance.

It is a regular task for the REDDIG Administrator to carry out this training during the visits that he makes annually to the nodes, and according to their forecasts. On this occasion, the recurrent was carried out during the visit to the NCC Alternative Ezeiza. Technical personnel from EANA S.E. (service provider) and personnel of CNS inspectors from ANAC (National Administration of Civil Aviation-Aeronautical Authority).

b) Seminar/workshop on basic concepts of the services provided by the REDDIG.

This event was held during the development of RTO-08. Although the basic content was delivered, due to the time available, it was not possible to fully deliver what was planned. This happened, in particular, because the discussions in the RTO took longer than expected.

c) Training for NCC Manaus staff on sniffing IP packet analysis.

The delegates were informed that, in this sense, it is in process.

c) Ninth REDDIG Technical Operational Meeting (RTO-08)

It developed according to plan.

In addition, in relation to the acquisition of firewalls, the following trainings are underway during 2022:

a) Course on security policies and firewall configuration.

In relation to this question, refer to what is related to the acquisition of firewall.

b) Advanced course on firewall management and monitoring.

Ídem above.

Adicionalmente se desarrolló en 2022:

a) Job the On Training en Cayenne

The importance of training in the aeronautical environment was highlighted, even more so considering how exclusive it is and how decisive and essential it is for operational safety.

Acquisition of spare parts

Based on the information about the useful life of the equipment and the situation regarding the sending of faulty modems to the Regional Office for their subsequent transfer to their repair at the factory. It was recalled that there is a minimum stock in the Lima Regional Office.

The Meeting considered it very important that the Administrator continue repeating two visits a year, for at least one week, to two nodes, in order to inspect the facilities and train node personnel. In particular, that he himself attend the move of the Bogotá node.

Development of a space for REDDIG

It was agreed to give more promotion through social networks of REDDIG activities.

It was reported that the creation of WhatsApp groups is being used to facilitate coordination in response to jobs or news that arise. In this sense, the NCC has a cell phone provided by the FAB for this type of facility in terms of coordination and assistance if this alternative is necessary.

Antivirus software on NMS servers

The Meeting was informed about the renewal of the antivirus for 23 NMS servers, licensed for 1 year. The renewal must be effective as of December 31. This action will be carried out based on the necessary procedures that will be coordinated with the technical focal points to proceed with the antivirus update.

Corrective maintenance

Among the corrective maintenance, in addition to those mentioned during the visits, the work carried out in

It was highlighted that the 40 W amplifiers can replace the 80 W IBUCs without generating inconveniences in the station and even presenting fewer failures.

Preventive maintenance

The Meeting was informed that for the year 2023, preventive maintenance of all the nodes was planned, distributed during the year, and according to the Schedule that had been used until 2019. A posteriori it could not be completed due to the restrictions and limitations from of the pandemic in 2020. This type of maintenance makes it possible to detect and solve a series of problems that remained from the installation.

The Meeting approved proposing to the RCC that this preventive maintenance program be repeated during the year 2020, paying special attention to the RF part of each station.

Visit to the node of Cayena.

During the year 2022, a mission requested by French Guyana, by the REDDIG II Administrator, was carried out. The purpose was to provide training and solve different failures, in the IBUC, in the Skywan modem, observe the facilities and state of the station; and to be able to develop On the Job Training sessions for the staff that work in the node.

Visits.

It was recorded that the Meeting approves the Administrator's visits to the nodes and at least two visits per year, for maintenance purposes and field instruction to site technical personnel.

Question 3 of
Agenda: Analysis of the requirements for the improvement of REDDIG II benefits

Regarding this issue on the agenda, taking into account the results of the analysis of the behavior of REDDIG II since its commissioning to date, as well as the review of the procedures for the maintenance and operation of REDDIG II, the Meeting proceeded to analyze the short and medium term requirements for the improvement of the REDDIG II benefits. In this sense, issues related to security, the inclusion of additional nodes inside and outside the Region, inclusion of new services, upgrade of terrestrial network bandwidth, etc. were discussed. Aspects related to a future network, useful life of the equipment that makes up the current REDDIG and possible actions.

REDDIG II interconnections

The Administrator informed, generically, of the REDDIG interconnections both internally and with other satellite networks and service providers, such as:

- AMHS Interconnection
- Radar data exchange
- AIDC interconnection
- REDDIG and SITA
- REDDIG vs MEVA
- REDDIG vs CAFSAT
- REDDIG vs EUROCONTROL
- REDDIG vs FAA

A brief description of the AMHS Interconnection in the region and the state of progress that the States have experienced in this regard was made, describing some drawbacks that prevent faster progress in the implementation of AMHS.

They were told how necessary it is for them to be in close contact with the external AMC operators of their respective States.

The Administrator gave a brief overview of AIDC and its scope within the operational functions of the Control Centers and their automated systems.

The Administrator requested the representative of Chile and technical focal point of AIDC in Chile, Engineer Mr. Pedro Pastrián C., to report on the current situation of AIDC and its way of operating, of which he gave a detailed description of the operation of the system with its three phases or groups of messages; notification, coordination and transfer.

Regarding the exchange of surveillance data (using REDDIG as a means of transport), currently Argentina, Brazil, Paraguay and Uruguay are exchanging surveillance data; tests have been carried out between Chile and Argentina; and in coordination the sending of surveillance data from Manaus to Maiquetía, and exchange between Chile and Peru.

Operationally:

1) Paraguay is sending data from the Asunción radar via REDDIG to Ezeiza and from there finally to the automated system of the Resistencia ACC.
2) Argentina is sending data from the Corrientes radar to the Asunción ACC via REDDIG.
3) Argentina is sending radar data from Posadas to Asunción.

Testing:

1) Paraguay is sending data from an ADS-B station from Asunción to Resistencia and they are

being evaluated at destination

Likewise, the Guaraní airport, in Ciudad del Este, is receiving radar data from Foz de Iguazú (Brazil), injected into the REDDIG node, for APP.

The Meeting was informed that data from the Carrasco (Asterix) radar is being sent to Ezeiza, under evaluation. These activities are added to the radar data that is sent from Ezeiza (Argentina) to Carrasco (Uruguay); and radar data from Durazno (Uruguay) to Ezeiza.

			SAEZ	SUMU
	SENSOR	CANAL	SOURCE	DESTINATION
1	EZEIZA (Indra)	A	10.0.1.10	10.0.97.10
2		B	10.0.1.11	10.0.97.11
3	QUILMES (Invap)	A	10.0.1.12	10.0.97.12
4		B	10.0.1.13	10.0.97.13
5	PARANÁ (Invap)	A	10.0.1.14	10.0.97.14
6		B	10.0.1.15	10.0.97.15

1	INDRA	A		10.0.1.20
2		B		10.0.1.21
3	SELEX			10.0.1.8
4	DURAZNO			10.0.1.1

Desde	Hacia	Radar	ADS-B	Estado
Asunción (Paraguay)	Resistencia (Argentina)	Asterix		operativo
Asunción (Paraguay)	Resistencia (Argentina)		Asterix	a prueba
Corrientes (Argentina)	Asunción (Paraguay)	Asterix		operativo
Posadas (Argentina)	Asunción (Paraguay)	Asterix		operativo
Foz Iguazú (Brasil)	Guaraní (Paraguay)	Asterix		operativo
Carrasco (Uruguay)	Ezeiza (Argentina)	Asterix		a prueba (estuvo operativo)
Durazno (Uruguay)	Ezeiza (Argentina)	Asterix		a prueba (estuvo operativo)
Ezeiza (Argentina)	Carrasco (Uruguay)	Asterix		a prueba (estuvo operativo)
Paraná (Argentina)	Carrasco (Uruguay)	Serial/Asterix		a prueba
Quilmes (Argentina)	Carrasco (Uruguay)	Asterix		a prueba
Santiago (Chile)	Ezeiza (Argentina)	Asterix		deben continuar pruebas
Mendoza (Argentina)	Santiago (Chile)	Asterix		deben continuar pruebas
Manaos (Brasil)	Maiquetia (Venezuela)	Asterix		en coordinación previa

Monitoring of AMHS interconnections in the Region

In relation to the AMHS interconnections in the Region, a presentation was made to the delegates on their evolution and the importance of REDDIG for this purpose. Mainly with regard to the fulfillment of the goals proposed in the Bogotá declaration. The only thing left pending, to be finalized before the end of this year, is the interconnections of Uruguay with Argentina and Brazil.

Solar incidents

The delegates were informed about the process carried out for the notification of solar explosions that affect the satellite network, the Intelsat web page was accessed to show where the data was obtained from, and it was recalled that the affectation is towards the station at the moment of greatest intensity. Those present were also reminded that this was one of the reasons for having two NCCs.

New REDDIG node in Argentina

The meeting was informed that the installation of an mpls node in ARSAT is in process.

REDDIG node transfer from Bogotá

The Meeting was informed about the process of moving the Bogotá node.

The Meeting was informed about the process of moving the Bogotá node.)

It was suggested to the Meeting that this concept is valid both for locations outside the Region, such as Atlanta, Salt Lake City, Ilopango, etc., as well as for locations within the States themselves.

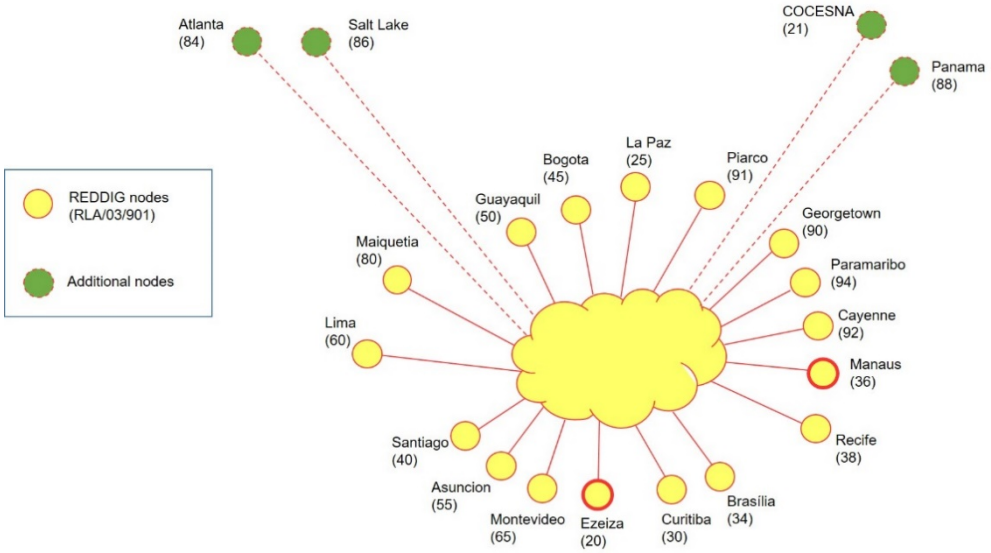

Figure 2 – Additional nodes of the REDDIG II terrestrial network
(Diagram made by Mr. Francisco Almeida)

Acquisition of firewall equipment for REDDIG

The SAM Regional Office acquired the firewall equipment, as established in Conclusion RCC/22-4 of the Regional Project Coordination Committee RLA/03/901.

Question 4 of
Agenda: Other business

Under this item on the agenda, the Meeting analyzed other matters related to the aspects discussed that were considered convenient.

Interference

The issue related to the interference that the network suffers, according to the records, since 2016 was discussed during the meeting.

Currently, and to resolve this issue, the migration of frequencies within the same transponder was coordinated with Intelsat, which was completed and no further interference has been recorded at the moment.

Recommendations

The Administrator recalled a series of recommendations for the staff of each of the nodes:

-Have available the old REDDIG I Linkway modems, for spare parts of the power sources;

- Acquire RF connectors, for the ODU units, to be replaced if necessary.

Interoperability Task Force – GT Interop

Regarding the Interoperability Task Force, the delegates were encouraged to work so that specialists in the different areas participate in these subgroups based on their importance for the Region. Particularly in terms of seeking, to work on implementations that are compatible and that mainly, allow the integration of the different systems.

ADS-B, IWXMM

Participants were informed that tasks related to these services are still being developed. for example, the tests of the exchange of messages in Met IWXXM format between the OPMET bank of Brazil with Cuba, Venezuela, and Paraguay; and in relation to ADS-B, it was reported that AIREON is part of REDDIG and the use of REDDIG is available for data transport and the consequent cost savings.

Support for coordination of extra-regional interconnections

The Meeting was informed that support continues to be provided to States in relation to P1/AMHS interconnections and other services.

It was reported that the REDDIG Administration has an active participation in the interconnection processes of AMHS systems in the Region, as well as in different services that are exchanged between the States. Likewise, it was reported that there is collaboration in different situations that arise in each State in relation to services and systems, and that are external to REDDIG.

Usually, the REDDIG Administration collaborates with all the available tools in order to collaborate with any action tending to achieve interconnections, exchanges, transport of different services and information. Likewise, with actions tending to the analysis of information, capture of traffic, etc., that allow finding solutions to difficulties raised between the exchanged services.

Normally, the NCC performs tasks beyond those foreseen, becoming a center, not only for network management, but also for consulting and support with issues unrelated to REDDIG.

REDDIG III

During the meeting, it was suggested that, based on the useful life of the network, and taking into account the recurring failures in some particular equipment, as well as the projection of the current network, alternatives for REDDIG III are being analyzed.

This new network suggests considering whether the topology is going to be maintained, whether the satellite network will continue to be the main one, what the market offers, how to prepare the network so that it allows migrations to new technologies without significant financial impact for the States, etc.

It was proposed to start discussing these issues in order to have a project outlined within the next 5 years. Consider the alternatives offered by the market, invite companies, integrators, etc., to present solutions, new technologies, and in particular to form an Ad-Hoc group that can start working in this regard.

In this sense, and based on what was discussed during the meeting, it was decided to preserve the useful life of the equipment currently in operation, for which it was proposed to leave a single chain running, and thus extend the life of at least one of them. The modems and one of the amplifiers.

Requirements to delegates

In summary, the following requirements were made to the delegates:

a) The delegates were asked to verify that the stations are registered with the frequency spectrum regulatory bodies, once they return to their respective States, and report the situation.

b) The meeting was required that the Aeronautical Administrations of each of the States, update the REDDIG II Focal Points, through an official written communication addressed to the Regional Office, because in the ICAO registry personal figure who has ceased to fulfill said functions due to transfers, retirements or separations.

c) The representatives of the States were requested that the personnel responsible for electricity from their respective administrations carry out the verification of the status of the UPS of each

one of the REDDIG II nodes and of the grounding system.

Suggestions that emerged during RTO-09.

States that are in a position to acquire spare parts and/or backup equipment for REDDIG II were reiterated and urged to request assistance or technical support from the ICAO Regional Office, in order to maintain the homogeneity of the systems in each of the nodes and proceed accordingly.

Delegates were reminded of the need to verify the existence of appropriate RF measurement instruments for L-band measurements. Once their existence has been verified, it will be requested to prepare the RF diagram of the node of both chains, in order to have it as reference to the future to see if there is degradation of the equipment. The aforementioned, in coordination with the REDDIG Administration.

It was suggested to the States, the review of the situation of the entry of the nodes to the assets of each one of the Aeronautical Administrations and to find irregularities, to proceed to the regularization.

An analysis was invited on future additional nodes within each State based on the needs that will improve the redundancy and robustness of the network at a lower cost.

The meeting suggests that the Administration consult Century Link, the technical feasibility and the costs of being able to have two last-mile links in some nodes, in order to have background for a future change to the terrestrial network as the main means of communication.

The need to invite different companies to present new technology solutions that are applied to this network was raised, and that presentations will eventually be made during the next RCC and RTO.

Summary of final conclusions and topics proposed for discussion at the next RCC.

Summary of most outstanding information issues

1) Continue with the study to replace the current Netgear Switches with others that better support packet capture tasks, that are more robust in relation to their performances (e.g., replace the switch with the fortiswitch provided for each node). .

2) It was reiterated that a spare equipment will not be sent to the node that presents news in any of its equipment until it sends the damaged equipment to the Office.

3) It was reiterated that the useful life of the equipment in the satellite part of each node has ended; however, they will continue to be used as long as they are considered necessary, and they continue to function. Those present were reminded that the NDSatCom and Terrasat factories no longer manufacture the models of equipment used in the network, and there are no spare parts either.

4) In relation to the future REDDIG III, it was made clear that a solution that commits the States to invest in new satellite stations will not be chosen, and that a solution tending to the terrestrial network with sufficient redundancies will be chosen to have sufficient an availability as close as possible to 99.999%.

5) Continue the efforts to finish implementing the nodes in Madrid (Spain), Johannesburg (South Africa), and Panama (Panama). Moreover, the benefits and scope of these implementations were expressed, in addition to the advantages and benefits of the integration of the nodes of Atlanta, Salt Lake City, Ilopango, AIREON, Cochabamba, Rio de Janeiro, ICAO SAM.

6) In relation to the situation of the satellite part of the nodes, concern or commitment was expressed for the issues of spare parts, processes for sending equipment for repair, discontinuity of manufacture by manufacturers, and in particular, adopting the commitment to make the necessary efforts to send the equipment to the SAM Office when it is certain that it is necessary to send the equipment to the factory for repair, etc.

7) Regarding the P1/AMHS connections, Uruguay stated that by the end of 2020 they plan to establish this type of interconnection with Argentina and Brazil, also adding a connection with Peru, and definitively replacing their international AFTN circuits.

8) Trinidad&Tobago committed to finish establishing the P1/AMHS connection with Guyana in the short term.

9) It was established that once the Madrid node is implemented, a conference would be held with AENA of Spain, EANA of Argentina, DECEA of Brazil, and INAC of Venezuela in order to establish a Schedule that allows the P1/AMHS interconnections to be established in an orderly manner. In addition, all actions associated with this event.

10) It was reported, in relation to the Skywan 7000 installed in the NCCs, they have not presented failures. While the Skywan 1070 have presented failures continuously in the different nodes and mainly due to electrical power problems, parasitic currents and consequences associated with the failures of the sources. In order to save these novelties, different solutions have been implemented, such as supplanting the original source by compatible sources, such as those used in REDDIG I (Linkway modem sources), and the adaptation of other types of sources that have allowed the replacement of damaged sources and that the modems can continue to function.

11) The replacement of the HP NMS server source of the Bogotá node was reported. The source was handed over to the Colombian staff at the Regional Office, which allowed the NMS to be installed once on site.

12) The work in coordination with the terrestrial network provider was reported to continue with last mile access improvements. The cases of Manaus, Recife, Piarco, Cayenne, etc., were mentioned to give examples.

13) It was reported that currently the terrestrial network has a required SLA of 99.7% (previously it was 99.5% and 99.7% depending on the node), and the upgrade that the symmetrical bandwidth of 1 Mbps was made to 5 Mbps, except for some particular nodes.

14) The procedures that are followed in the event of a failure in the terrestrial network or particular node were recalled.

15) It was recalled that until 2018 access to the terrestrial network was 256Kbps, that in 2019 a free upgrade to 1 Mbps was made, and that in the new 2020 contract most of the nodes were brought to 5 Mbps and the increase of the SLA to 99.7% the nodes that were prior to the new contract that was 99.5%.

16) The practices and exercises related to RF measurements with instruments and the certification of structured cabling related to each node were mentioned.

17) As every year, it was reiterated that the directories of each node must be updated in order to avoid confusion and errors, and take into account that there are letters of operational agreement that must be observed before making any changes.

18) The importance that working together with the operational parts of each State must always have. That the technical personnel keep in mind the content of the letters of operational agreement in relation to the CNS services in particular. That any change, alteration, novelty, always has to be coordinated with the parties involved, including users and taking into account any pre-existing agreement.

19) Reorganize the means of communication for rapid communications through informal means, but with the objective of quickly communicating information that is considered necessary to mitigate.

20) Security and IT issues since 2012, today there is more talk about cybersecurity, since 2017 a lot of work has been done on physical security issues, at the software and hardware level, working together to apply different policies. Work is currently underway on the implementation of firewalls in all the nodes to provide greater robustness, despite the fact that it is still a closed network. This is also due to the

incorporation of new players such as companies, Aireon, SITA, and additional nodes. Added to the integrations that the States are carrying out between the technical and administrative networks, to the services that the States are implementing in the IP environment associated with operational and administrative services that at some point are related to the multiservice platform that is the REDDIG SAM, to the integration work with other Regions and the commitment and responsibility in terms of security that this implies.

21) The activities of the use of VoIP applications between Colombia and Venezuela are reported. Being at this moment one alternative to failures of traditional and dedicated telecommunications accesses. It is a trend and an evolution that is being worked on in many States.

22) It has been suggested that today work should be done to improve the infrastructure of structured cabling and added to the fact that technology leads to a trend towards service management.

23) It was reported that as of December 31, the antivirus of the network servers will be updated, it has already been renewed.

24) Regarding preventive maintenance, the scheme that was being used will be maintained.

25) It was clarified that the visits to the two nodes that are carried out annually are included as tasks foreseen by the Project. The cost that these missions imply are borne by the project.

26) The possibility of installing an mpls node in Leticia on the Colombian side be studied, and the means to materialize this possibility be arbitrated. Request a quote from the provider to install an mpls node in Leticia or a viable access solution. Consult the feasibility.

27) Cocesna suggested being able to implement dedicated circuits between CENAMER and SAM States. Dedicated lines in particular, two with Ecuador and two with Colombia, and take advantage to implement these solutions by VoIP, although it could also be implemented as analog.

28) Colombia proposes to implement VoIP SIP with Cocesna, which is agreed to start the tests to finalize this implementation.

29) The idea of creating a database was given to include the systems that are being used around the REDDIG node. Build a base that allows regional technical personnel on the systems associated with REDDIG. Information can be shared. Seek to address this issue in the RCC. The idea would be to present a model of what you want to have. The goal is to clarify compatibility issues, including troubleshooting to interconnect systems from different manufacturers or vendors. Generate a pattern of information fields that facilitate the integration of systems that coexist between States. Garex 300 from INDRA and Rohde Schwarz (Guv 4000 from Rohde Schwarz or from Frecuentis (sip trunks voice ip), between Garex there is no problem R&S®GV4000 Multi-Link Controller

https://www.didww.com/sip-trunk/?keyword=sip%20trunking%20solution&matchtype=b&target=&placement=&device=c&source=SearchNetwork&gclid=Cj0KCQjwk5ibBhDqARIsACzmgLS8nyEVt0k7b78C9vtCKMcAf4KIjvazgshDgWZoIv4eDW8hM7hZODgaAoe3EALw_wcB

https://www.sangoma.com/how-does-sip-trunking-work/

30) The meeting was reminded about the events of the solar explosions, and the other event is the continuity of the process of moving the Bogotá node that was delayed due to the need for associated civil works.

31) Aspects related to maintaining IPv4 with respect to IPv6 were discussed. In general, the idea of maintaining IPv4 is maintained, taking into account that aeronautical networks are still closed networks. Unless, at the hardware level, it is not allowed to work in IPv4, continue with this version without neglecting to take into account the evolution of the discussions around this issue of the use of IPv6.

32) Work on establishing redundancy between Ilopango and Tegucigalpa. One option that was expressed is to change the Tegucigalpa satellite node to an mpls node, and always in redundancy with Ilopango.

Aiming at high redundancy for COCESNA.

33) Pending tasks were reviewed, such as the change of the RSS of Uruguay, the redundancy between Tegucigalpa and Ilopango, the ats hotline between Peru and Chile, between Peru and Ecuador.

34) Implementation of a new application using the Zabbix application and allowing recovering the monitoring of the satellite modems of the network, since there were problems with WhatsApp Gold for monitoring.

35) put the map and distribution of the mpls and satellite nodes

36) Mandatory test for acceptance of mpls nodes.

37) Cúcuta – San Antonio works to implement voice coordination using voice over IP applications.

38) Venezuela, recurring failure on weekends with Bogota. I exchange radar data in conversations. Analyze the contingencies between Venezuela and Brazil due to some failures that have arisen.

39) T&T connection with the USA by REDDIG are working to achieve the connection. That it works with ICAR and then move on to the connection with Atlanta through REDDIG. Frequentis is supporting this task for the necessary configurations to make the change in the local routers in Piarco. They expect to finish by the end of the year, and then for next year if they work to achieve the connection by REDDIG. Regarding Guyana, first finish what is being done with the ICAR network, then work on REDDIG and Atlanta, and finally with Guyana.

40) Suriname was asked to take into consideration that Aireon is in the network and that this represents a saving if the transport is done through REDDIG.

41) Guyana is ready to finalize the P1/AMHS connection

42) Chile uses a converter called Stealth and the need to exchange radar data with neighboring States, with Peru and with Argentina. AIDC communications with Peru are working well, there are two automated centers. Working with Thales, who is providing an upgrade for the Santiago system. By the end of the year, they will be 100% operational for neighboring States and the Oceanic FIRs with ASIA PAC and Peru.

43) After the latest work carried out to resolve the news with Puerto Suarez, it was possible to definitively resolve the news of lack of communication that occurred in recent times. Problems were detected in the local connection with the PBX (there are two).

44) Brazil, in particular, Curitiba requested an operational alternative, for coordination between Curitiba and Puerto Suárez.

45) It was highlighted that Puerto Suárez does not work h24, but works as required. That is one of the reasons why the situation in which Curitiba cannot talk to this tower is likely to arise.

46) Bolivia promised to share a private telephone number for contingencies with Puerto Suárez.

47) Expectations regarding the connection or adherence to the network by SITA and other operators for the benefits of the SAM States. Not only improve performance but also reduce costs.

48) It was recalled that the States have full power to acquire spare parts and ICAO is willing to collaborate and advise on the acquisition of spare parts.

49) Issue of Guayaquil, Colombia stated that the fxs interfaces provided by ICAO helped to resume coordination.

50) They commented on some incidents that occurred in Paraguay because of electrical power problems, and improvements are being made in this sense. Difficulties with radar data reception from Foz and the drawbacks of oral ATS were also mentioned.

51) Uruguay and the issue of chains and the consequences of the storm of more than two years ago.

52) Question of the change of the RSS and the actions that have to be done with extreme care.

53) After the meeting, the reception of the radar data in the Carrasco processor, of the data that arrives from the Ezeiza, Quilmes and Paraná radars, was finally completed.

54) Regarding the amhs system in Uruguay, it was stated that, before the end of the year, they intend to establish P1 connections with Argentina, Brazil, and Peru.

55) Argentinian. The new Ezeiza system allows you to have terminals via web access. You could easily have a remote terminal. He leaves with a pc, connects to the REDDIG, generates the credentials and already has access to the Ezeiza mta.

56) It is proposed to coordinate a meeting to agree to do tests.

57) on the exchange of radar data with Chile, at the end of the meeting, meetings between the parties were arranged, and tasks are being developed to specify the exchange of data.

58) Cocesna. They already have P1 with Venezuela, Colombia, Peru, and Argentina. They were pleased to highlight how SAM addresses training issues and the generation of this type of meeting.

59) Mention was made of the prefix changes that were made on the dialing of the Colombian PSTN. This generated some inconveniences, because in the face of a contingency, the States made calls to Colombia through the public network, but they did not take into account that it went from 7 digits to 10 digits, which brought, and continues to happen, that it is stated that they cannot be communicate, but in reality it is due to the need to update the numbering of the Colombian public network to the one currently used: 6014251000, 601/602/605 + 7 digits.

60) The volcanic ash situation was recalled and the preventive measures that were taken in this regard, taking advantage of the terrestrial network, until it was confirmed that the conditions were right to put the satellite station back into service.

61) Failures of the coolers in Lima, in Georgetown, a source failure in Santiago, and in Bogotá always talking about the servers.

62) It was recalled the timely support of the Office in relation to AFTN connections between Uruguay and Brazil (in the first instance from Curitiba for Brasilia - in the second instance from Uruguay to Peru) it was highlighted that all changes of virtual circuits or configuration changes of services, etc., are free of charge for the States. It is part of the support that the project has to give. Support for Venezuela is recalled when a p1 amhs was established in the first instance by MEVA.

63) The meeting was informed about the mission to Cayenne.

64) the Intelsat and Lumen/Cirion portals were shown to the meeting and all the particularities related to each of them.

65) The AMC page and the information that can be obtained from it was shown.

66) The distribution of MTAs and amhs system manufacturers was shown

Topics proposed for discussion at the next RCC

1) That the Administrator continue with the two annual visits, and it is proposed for the year 2023 the visits to the nodes of Guayaquil (Ecuador) and Piarco (Trinidad & Tobago).

2) That the next RTO-10 be held at the headquarters in Asunción, Paraguay. In this sense, the delegate of

Paraguay expressed the intention to specify the next RTO in the mentioned node.

3) In reference to RTO-10, the need to associate training related to the necessary tools for the analysis and evaluation of traffic transported by the REDDIG remains. During the week, there will be days to specify the RTO and days for training days.

4) Analyze the possibility of conducting Fortigate courses again for technical staff of the nodes.

5) Maintain the schedules established to carry out scheduled maintenance tasks based on the calendar and structure of the same that was applied until before the pandemic.

6) Regarding the Ad Hoc group for the new REDDIG III, it continues to be active, and should work on a draft of technical specifications as soon as possible.

7) Coordination with the other regions and transport network providers continue, to continue working with the vision of the integration of all networks and the objective of a network of networks, of a true global ATN (Aeronautical Telecommunications Network). , in particular with CRV/PCCGlobal, with New PENS/British Telecom, with the future CARNAM/CANSNET.

8) Depending on the growth of new applications or the more frequent use of existing applications, the meeting considered that it is important to continue carrying out different trainings at the Regional level in order to not only have suitable personnel, but also to have a concordance in about the vision you have. That is why it is urged not only to hire training courses through the project, but also to take advantage of the specialists of each State so that they can share their knowledge and experience in the implementation and development of different systems of regional interest.

9) It was once again highlighted how fundamental the support of the States is in relation to the processes that must be carried out in Customs for the shipment and reception of damaged or repaired equipment.

10) Regarding the implementation of the Regional Office node, it is in the process of enabling the services with the advantages that this implies.

11) Work will continue so that the network works mainly through terrestrial access as priority and satellite as secondary.

12) It was urged to reinforce the issue of communication in relation to developments that arise in our environment and that affect operational services, that the necessary means continue to be used to be able to have a timely intervention in the event of a novelty. The importance of communication that must exist between those who are part of the network was highlighted.

13) It should be noted that in the short term, 100% of the interconnections will be IP and the intention to use VoiP is an inevitable trend. There are already States that have made significant investments to support operational telephony over VoIP over SIP, highlighting the issue of recording as a criticality, which is a requirement. The usefulness of this new technology is highlighted, which allows, among other advantages, portability, the use of video, chat, either with the use of specific devices for this purpose or using cell phones through applications. This leads to rethinking the engineering of each node.

14) As in all the meetings, the importance of exchanging experiences in the implementation and integration of systems has been emphasized, as well as the actions carried out to provide solutions to the novelties presented. There was significant participation by the participants in this regard. For example, the use of VoIP, the challenges that have been faced in this regard; the issue of compatibility is always a recurring issue, the use of expertise, and the need for technical staff to constantly evolve. The challenge of adapting new technologies to aeronautical systems, since they are solutions that have a specificity of aeronautics, take advantage of consultancies, and the experiences of the States.

15) Venezuela proposes that Uruguay consider a P1/AMHS connection between both States.

16) Venezuela offered to be available to carry out P1/AMHS interconnections with the States that consider it.

17) Suriname wants to move the position antenna from the current location. In addition to improving conditions or relocating the rack where it is currently located. In the future, it would be a good idea to send directly to the factory. What is striking is the failure of the two modems at the same time. The facilities in Paramaribo have been improved, the systems are being updated, ADS-B has been implemented, RF improvements for radar control and it is probable that ADS-C is being implemented.

18) Chile requests a P1/AMHS connection with Bolivia, and that this generates the necessary steps to start coordination.

19) Chile accompanies the negotiations on the possibility of having an mpls node in Auckland,

20) Chile does not have a contract with AIREON, but it is in this process, and REDDIG is considered as a means of access to lower costs.

21) for the Cochabamba node there is no information regarding the commissioning of the new center. The node in Cochabamba remains de-energized. There have been problems, and they are analyzing the acquisition of a new system. Work continues with the Thales system, for now without incident. The collaboration of the States was highlighted, particularly with Argentina, Brazil and Peru, which helped and collaborated to save a contingency situation. For now, the Bolivian system is working well.

22) Bolivia requested coordination to work on contingencies in response to possible system failures.

23) Bolivia requested that two ATS internals be enabled by Fxs directly to voice switching, which today work through a Northel Telecom PBX. You can configure and enable today 4 fxs circuits and connect these circuits directly to the VSC.

24) Bolivia highlighted that Argentina and Brazil provided amhs terminals of their own MTAs, in order to evacuate traffic while a contingency situation arose due to failures in P1 connections with the other States. With hardware and licensing considerations plus other things to consider

25) It was once again highlighted in this forum to urge the Interop-Group to continue working in this sense of contingencies, which must be taken up with more force and work to implement these solutions for contingency situations. This is based on the positive results that were observed in the face of the contingency that occurred in Bolivia. On a concrete fact and that should be taken as a model and example to implement in the rest of the Region

26) Chronic problem in the link between Curitiba and Foz. Work continues to improve the circuit that affects the oral coordination between AD of Paraguay and Foz. Same affectation towards AD of Argentina. An attempt was made to establish a circuit through the Brazilian satellite network.

27) Create a second branch between APP Guaraní with Curitiba, but for an alternative by satellite from Brazil.

28) One circuit would be to use the last mile through the OI network and the other to route through the Brazilian satellite network as an alternative.

29) Colombia expressed concern about concluding the transfer of the node to the new facilities. In the medium term, it requested that the proposal to connect Puerto Rico, Curaçao, Aruba and Jamaica to REDDIG be resumed as mpls nodes. This will allow solving the problems that continue to arise and improve the exchange of services with these SAM States. He recognized the efforts of ICAO to reestablish the switched circuits with the CAR States.

30) The mpls node between Tabatinga and Leticia.

31) Verify communications news between Ecuador and Colombia.

32) Ecuador inquired about the possibility of increasing the number of fxs interfaces in the REDDIG routers. About what are the procedures for more voice interfaces to be provided?

33) If it is possible that the interfaces installed in the Guayaquil node (fxs) become part of the node and the cost of the same will be charged to the annual quota of Ecuador.

34) Colombia offered to share an Application with Ecuador to implement the same solution that was offered to Venezuela in the case of Cúcuta and Táchira.

35) Paraguay proposes Asunción as the venue for the next RTO-10, where the REDDIG node is located in this State.

36) An operational agreement is being signed for the Guaraní app, the issue of Encarnación. VoIP implementation go in that direction.

37) Need for maintenance of the antenna structure.

38) disadvantages of lack of technical personnel.

39) He expressed the need to continue attending to the training of personnel.

40) Argentina proposes to have P1 connections against all States with the proviso that Argentina's current system does not have connection limits. They propose to connect to everyone by P1 connections directly.

41) Panama expressed the motivation they have to have the mpls node and have greater integration with the SAM Region exchanging different voice and data services. Improve the exchange of information.

42) expressed the intention to migrate the Tegucigalpa node to a mpls node and have redundancy with the Ilopango node

43) REDDIG has improved the exchange of information with SAM States

44) The intention to use REDDIG to transport ADS-B sat data with Aireon.

45) In relation to voice communications, they intend to work with Colombia to establish voice communications in VoIP.

46) It has been found that there are cases where the States have all the users configured as operational, and they do not have administrative ones. While in other States, they are considered administrative users. As the operational network and the administrative network are different, this will imply that the users of the different networks will not be able to communicate between one network and another.

47) Colombia proposes to change the hotlines with Jamaica for switched ones

48) It is proposed to open a discussion on the issue of hotlines and review the agreements. From Chile, the Hotline of Peru is not reached, the same thing that Ecuador claims. Reestablish the hotline circuits between Chile and Peru, and between Ecuador and Peru.

49) You have to see how to configure the hotline circuits in Peru to recover the hotlines with Peru.

50) Mention was made of the situation that occurred with the temporary move of the ACC from Lima, and all the consequences that this entailed due to the lack of communication.

51) Regarding preventive maintenance, and in order to have an order, an annual Schedule is proposed in order to record maintenance tasks. All the delegates approved that this programming for preventive maintenance continues to be applied.

52) It is proposed to coordinate between Cenamer and Quito in order to establish a P1/AMHS connection between the parties, to improve, among other things, the conditions for the exchange of AIDC data between the parties.

53) Cocesna proposes to analyze the possibility of connecting P1/AMHS with Brasilia (Brazil). Interest

is expressed.

54) It was proposed to analyze the bandwidth contracted to Intelsat. It was also proposed to use the K band. The costs involved in the proposed solutions must be taken into account.

55) The question of reconfiguring the stations to use a single chain and preserving the equipment that makes up one of the chains is raised again.

56) Training:

- One referring to IP telephony
- Another on traffic analysis with the wireshark tool.
- A firewall training
- Share the documentation of the training given.
- Establish a shared link to enter and have the information.