



International Civil Aviation Organization
South American Regional Office – Regional Project RLA/03/901
REDDIG Management and Satellite Segment Administration System
Twenty-Second Meeting of the REDDIG Coordination Committee (RCC/22)
Lima, Peru, 5 to 7 March 2019

Agenda Item 4: Work plan for 2019

ACTIVITIES FORESEEN FOR 2019

(Presented by the Secretariat)

SUMMARY	
This working paper presents information on the activities to be carried out in 2019 under Project RLA/03/901 – <i>REDDIG management and satellite segment administration system</i> .	
Reference	
- Report of the Twenty-first meeting of the REDDIG Coordination Committee (RCC/21) (Lima, Peru, 14-16 May 2018);	
ICAO strategic objectives:	<i>A – Safety</i> <i>B – Air navigation capacity and efficiency</i>

1. **Introduction**

1.1 The main activities scheduled for 2019 are:

- a) REDDIG II training programme;
- b) Preventive training programme
- c) Operation of REDDIG II and analysis of the implementation of new services.

2. **Discussion**

REDDIG II TRAINING PROGRAMME

2.1 The following training courses are foreseen for 2019:

- a) Recurrent training on REDDIG II operation and maintenance;
- b) Seminar/workshop on the basics of the services delivered through REDDIG;
- c) Course on security policies and firewall settings;
- d) Advanced course on firewall management and monitoring;
- e) Training for the Manaus NCC personnel on analysis of IP packages using sniffer (radar, AMHS, etc.);
- f) Eighth meeting on the technical-operational implementation of REDDIG (RTO/8).

Recurrent training on REDDIG II operation and maintenance

2.2 This training is addressed to technical personnel responsible for the operation and maintenance of a REDDIG station. Among the aspects to be covered, emphasis will be placed on new implementations, the preventive maintenance work plan, the use of WUG tools, and troubleshooting of station components. **Appendix A** to this paper shows the content of the recurrent training on REDDIG operation and maintenance.

2.3 This training is to be delivered during the visits of the REDDIG Administrator scheduled for the year.

Seminar/workshop on the basics of the services delivered through REDDIG

2.4 This workshop is addressed to technical personnel operating REDDIG stations, and will focus on the basics of the services delivered through REDDIG II, such as: RADAR, AMHS, AIDC, CPDLC, ADS-C, ADS-B, etc.

2.5 The objective is to develop the capability to analyse voice and data packages carried over the network in each node, using available IT tools, thus enabling a better analysis of the problems that might emerge during the operation of network services.

2.6 The workshop will be delivered by the REDDIG Administrator and will take place concurrently with the RTO/08 meeting.

2.7 The workshop will last three days and will be held tentatively in Santiago, Chile, on a date to be defined at the RCC/22 meeting.

2.8 It is foreseen that two participants from each REDDIG node will participate in this event and simultaneous interpretation services will be provided.

Course on security policies and firewall settings

2.9 Subject to the purchase of firewall equipment, training would be provided to the technical personnel of the REDDIG nodes, NCC personnel and the Administrator.

2.10 In a first stage, training would be aimed at presenting the security policies to the personnel and, in a second stage, at enabling participants to configure the equipment installed in each node.

2.11 Taking into account that the equipment to be purchased would be delivered at the Regional Office, training would be provided in Lima, offering two fellowships per node.

2.12 The duration would be one week, and the special feature is that the participants of each State would be setting up the equipment to be installed in their own nodes. The participants will be required to have networking knowledge. In this regard, it must be recalled that the personnel have already received various courses on this topic.

2.13 The cost of the course will be included in the purchase price of the equipment, while Project RLA/03/901 will cover the fellowships.

2.14 Once again, this training will depend on the final acquisition of the equipment, reason why it might be moved to 2020.

2.15 In this regard, it should be noted that the Regional Office has taken steps prior to the purchase of this equipment. An *ad-hoc* group made up by Argentina, Brazil, Chile, Colombia, Paraguay, and ICAO has been established in order to find the best possible solution based on network requirements.

Advanced course on firewall management and monitoring

2.16 This course will be addressed to NCC personnel and the REDDIG Administrator.

2.17 It is directly related to the “*Course on security policies and firewall settings*” and thus subject to its implementation, since it is a continuation of the same.

2.18 One place will be reserved for the Administrator, one for the Manaus NCC and one for the Ezeiza NCC.

2.19 The cost of the course will be included in the purchase of the equipment, while fellowships will be covered by the Project.

Training for the Manaus NCC personnel on analysis of IP packages using sniffer (radar, AMHS, etc.)

2.20 This training is addressed to the Manaus NCC personnel responsible for network support and data transport and integrity.

2.21 Training will be provided throughout the year. It will include initial theoretical training and then, using the tools available, analyses to enable the assessment, identification, and resolution of the various data transport issues that might emerge.

2.22 This training will not entail any expenditure and will be delivered by the network Administrator.

Eighth meeting on the technical-operational implementation of REDDIG II

2.23 The Eighth meeting on the technical-operational implementation of REDDIG II will be held in Santiago, Chile, on a date to be defined at the RCC/22 meeting. For this event, one fellowship per node and simultaneous interpretation services are foreseen.

PREVENTIVE MAINTENANCE PROGRAMME

2.24 Just like for 2018, the REDDIG Administration has established for 2019 a preventive maintenance programme of all REDDIG II equipment at the NCCs and all REDDIG II nodes. The preventive maintenance programme is shown in **Appendix B** to this working paper.

Visit to REDDIG nodes

2.25 The REDDIG Administration, as part of REDDIG II maintenance and training activities, has seen the need for the REDDIG Administrator to visit two nodes per year in order to conduct a complete assessment of the node and provide training to the personnel responsible for node maintenance. The RCC/22 meeting will select the two nodes to be visited in 2019. Visits will last one week.

OPERATION OF REDDIG II AND ANALYSIS OF THE IMPLEMENTATION OF NEW SERVICES

2.26 The activities scheduled for 2019 are as follows:

- Complete the acquisition of REDDIG II spare parts and updating of settings
- Renew the antivirus licence for REDDIG II servers
- Replace faulty equipment at the nodes
- Complete preventive maintenance
- Visit REDDIG II nodes
- Relocate the Bogota REDDIG II node
- Install a new REDDIG II node in Ezeiza
- Implement new REDDIG II services
- Implement new MEVA III REDDIG II services and contractual considerations.

Complete the acquisition of REDDIG II spare parts and updating of settings

2.27 At present, there is a set of spare parts available for REDDIG II, shown in **Appendix C** to this working paper, which was acquired as part of the REDDIG II modernisation project under contract 22501200.

2.28 Likewise, a set of spare parts, shown in **Appendix D**, is being purchased as agreed at the RCC/21 meeting.

2.29 In view of the scarce number of Skywan 1070 modems available as spare parts, the RTO/07 meeting proposed to study the feasibility of purchasing a new modem of this series in 2019 to be used as spare part.

2.30 As stated at the RCC/21 meeting, it was necessary to update the antivirus software of the servers. Accordingly, the licence was renewed for one more year.

2.31 At present, the Manaus NCC personnel are updating the antivirus software in all network servers in coordination with the technical personnel of each station.

Renewal of the antivirus licence for REDDIG II servers

2.32 Taking into account that the antivirus software (Kaspersky) expires on 29 December 2019, the REDDIG Administration shall start the renewal process at least three months in advance.

Procedure for replacing faulty equipment in the nodes

2.33 The process for replacing faulty equipment and its delivery to the factory for repair will be as follows: the REDDIG Administration sends from the ICAO SAM Office the equipment or spare part to the node of the State where the failure occurred.

2.34 The State of the node sends to the ICAO SAM Office the faulty equipment or part, which, upon receipt, will be sent to the factory for its repair.

2.35 Once repaired, the equipment will be sent back to the ICAO SAM Office to be stored in the spare part storage room. Coordination will take place between the REDDIG Administration, the REDDIG focal points, and the Regional Office.

2.36 In this regard, it is important that States keep up to date the list of REDDIG II focal points, shown in **Appendix E** to this working paper.

Transfer of the REDDIG II node of Bogotá

2.37 As a result of the on-site inspection carried out by INEO on 19-20 February 2017, INEO submitted a new offer for the relocation of the node. The offer is currently being reviewed and negotiated between the ICAO Technical Cooperation Bureau (TCB), the REDDIG Administration, Colombia, and INEO. The transfer of the Bogotá node will be carried out under REDDIG II contract 22501200, and the expenses to be covered by Colombia have already been deposited in the ICAO account.

Installation of a new REDDIG II node in Ezeiza

2.38 The review by EANA (Argentina), the ICAO Technical Cooperation Bureau (TCB), the REDDIG Administration, and INEO of INEO's offer for the installation of a new REDDIG II node in Ezeiza was completed in mid April 2018. In this regard, ICAO has negotiated the 1/7/2017 proposal with INEO in order to adjust it to the budget available at EANA. This resulted in proposal B, dated 16/02/2018, where the most significant change was the reduction in the number of SKYWAN 7000 modems from two to one, reusing one of the modems of the existing node at Ezeiza. This activity was included in REDDIG II contract 22501200, and expenditures will be covered by Argentina. In this sense, the delivery of the timetable of activities by INEO is pending, and the new station is expected to become operational in late 2019.

Implementation of new REDDIG II services

2.39 It is foreseen that new AMHS circuits be installed in 2019. **Appendix F** shows a table with the circuits to be implemented and the estimated date of implementation. The first 27 connections refer to the connections indicated in the declaration of Bogotá. The other connections are interregional and extra plan. The meeting is request to update the information on the tables.

2.40 Likewise, as part of the ATM automation project at the regional level, radar data exchange and AIDC (the latter already being implemented through the existing AFTN/AMHS circuits) are still pending. It is expected that radar data exchange will be completed as planned between Argentina – Chile (tests already started) and Ecuador – Peru.

Implementation of new MEVA III REDDIG II services and contractual considerations

2.41 Depending on the MEVA III - REDDIG II interconnection, AMHS is scheduled for implementation in 2019 between Bogotá -Panama, Lima-Atlanta, and Maiquetía-Atlanta.

2.42 Taking into account the increasing number of MEVA III services, such as the implementation of several AMHS circuits and the exchange of surveillance data, the MEVA III group needs to increase its satellite bandwidth. To this end, it has considered that the cost of increasing the satellite bandwidth should be divided equally among all the States that have a MEVA III node, including the Bogotá and Maiquetía nodes that host the interconnection with REDDIG II.

2.43 Each 100khz increase of satellite bandwidth in the MEVA III network has a cost of 500 Dollars per month. The MEVA III group has considered that this cost should be divided among the 13 MEVA III member States (Aruba, Bahamas, Cayman Islands, Cuba, Curacao, Dominican Republic, Haiti, Jamaica, Mexico, Panama, Puerto Rico, Saint Maarten and United States) and one Organisation (COCESNA), thus the monthly fee would be 35.70 Dollars (USD 500.00/14). Thereafter, the MEVA III group invited the REDDIG Project to participate in the cost-sharing, as the fifteenth component. This way, the fee for each increment would be 33.33 Dollars (USD 500.00/15).

2.44 The implementation of AMHS interconnections between Atlanta – Brasilia (*via* Bogotá) and Bogotá – Panama is currently under way. The interconnection between Atlanta and Brasilia was affected by the partial shutdown of the United States government and tests are to be completed as soon as things go back to normal. Regarding the AMHS interconnection between Bogotá and Panama, a teleconference was held on 16 January 2019 to coordinate initial steps for the establishment of communications.

Alternating operation of the NCCs and the REDDIG management centre

2.45 Alternating operation of the NCCs and the REDDIG management centre in Manaus did not take place. However, during short periods of solar activity and other events, only the reference carrier was temporarily switched from Manaus to Ezeiza.

3 Suggested action

3.1 The Meeting is invited to:

- a) take note of the information provided herein;
- b) review the activities foreseen for 2019 as described in Section 2 and the appendices to this working paper;
- c) review any other issue related to the activities scheduled for 2019 under project REDDIG RLA/03/901.

APPENDIX A**RECURRENT ON REDDIG II OPERACION AND MAINTENANCE**

- 1. REDDIG II Architecture new**
 - Satellite network
 - Backup network (MPLS)
 - IP Address Global Plan
- 2. REDDIG II Nodes**
 - Types y Components
 - IP Address Local Plan
- 3. RF Equipment**
 - IBUC + Redundancy
 - LNB + Redundancy
 - Access via HTTP y TCP/IP (Web)
- 4. Modem Skywan**
 - Model 7000
 - Model 1070
 - Redundancy
 - Access via “Telnet” and “LineUp Manager”
 - Performance
- 5. Ethernet Switch Netgear**
- 6. Router Cisco**
 - Interfaces
 - Redundancy Protocol VRRP
 - Routing Protocol OSPF
 - VLANs
 - Line Commands
 - Interfaces monitoring
 - Configurations
- 7. Base Band Commuter (RSS) y Patch Panel**
- 8. NMS – WhatsUp Gold**
 - Central NMS Server
 - Remote NMS (Local) Server
 - Web Access
 - Modules and visualizations
 - Monitors
 - Active Monitor
 - Performance Monitor
 - Alarms

APÉNDICE B / APPENDIX B

Cronograma de mantenimiento preventivo de la REDDIG – año 2019 / Schedule of preventive maintenance of the REDDIG – year 2019

Tareas Mantenimiento Preventivo
REDDIG 2019

21-nov-2018

Administración REDDIG - CNS - ICAO
SAM<http://icaoinc.int>

Encargado del proyecto	
Fechas de inicio y fin del proyecto	01-abr-2019 - 30-nov-2019
Progreso	0%
Tarea	76
Recursos	0

Tareas programadas para ser desarrolladas durante el año 2019 en NCCs y estaciones de la REDDIG.

Tarea

Nombre	Fecha de inicio	Fecha de fin
NCC	1/04/19	29/11/19
Routers	1/04/19	31/05/19
Backup configuraciones	1/04/19	19/04/19
Verificar configuraciones	22/04/19	10/05/19
Verificar diagramas y cableado	13/05/19	31/05/19
Verificar identificaciones	13/05/19	31/05/19
Switches	3/06/19	21/06/19
Backup configuraciones	3/06/19	7/06/19
Verificar configuraciones	10/06/19	14/06/19
Verificar diagramas y cableado	17/06/19	21/06/19
Verificar identificaciones	17/06/19	21/06/19
AMHS -AFTN - AIDC Check	24/06/19	28/06/19
ATS - ADMIN - MANT Check	1/07/19	5/07/19
Verificar WUG	8/07/19	12/07/19
Externos (ADS-C, otros)	15/07/19	19/07/19
Capacitación	1/04/19	29/11/19
VERIFICACIÓN EQUIPOS INDOOR	22/07/19	2/08/19
Registro fotográfico	22/07/19	2/08/19
Cotejo de diagramas	22/07/19	2/08/19
Backup	30/07/19	2/08/19
Servers Local y Global	5/08/19	9/08/19
GPS	12/08/19	16/08/19
MODEM SKWAN A	19/08/19	23/08/19
MODEM SKYWAN B	26/08/19	30/08/19
LINE-UP-MANAGER	2/09/19	6/09/19
ANTENA	9/09/19	1/11/19
Registro fotográfico	9/09/19	13/09/19
Cotejo de diagramas	16/09/19	20/09/19
Backup	16/09/19	20/09/19

Tareas Mantenimiento Preventivo REDDIG 2019

21-nov-2018

Tarea

3

Nombre	Fecha de inicio	Fecha de fin
LNB A	23/09/19	27/09/19
LNB B	30/09/19	4/10/19
RX 1+1	7/10/19	11/10/19
IBUC A	14/10/19	18/10/19
IBUC B	21/10/19	25/10/19
TX 1+1	28/10/19	1/11/19
VERIFICAR NROS DE SERIE DE EQUIPOS Y ESTADO DE INVENTARIO	1/04/19	30/05/19
LEVEL 3	4/11/19	8/11/19
Identificar equipos	4/11/19	8/11/19
Verificar cableado	4/11/19	8/11/19
Nodos	1/04/19	1/11/19
Routers	1/04/19	26/04/19
Verificar Configuraciones físicas y lógicas	1/04/19	5/04/19
Verificar Diagramas y cableado	1/04/19	12/04/19
Verificar Identificaciones	15/04/19	26/04/19
SWITCHES	29/04/19	24/05/19
Verificar Configuraciones físicas y lógicas	29/04/19	3/05/19
Verificar Diagramas y Cableado	1/05/19	17/05/19
Verificar Identificaciones	20/05/19	24/05/19
ATS -ADMIN - MANT	27/05/19	31/05/19
AMHS - AFTN - AIDC Check	3/06/19	7/06/19
Verificar WUG	10/06/19	14/06/19
Externos	17/06/19	21/06/19
VERIFICACIÓN EQUIPOS INDOOR	1/04/19	26/04/19
Registro Fotográfico	1/04/19	5/04/19
Cotejo de diagramas	1/04/19	12/04/19
BackUp	15/04/19	26/04/19
Server NMS Local	24/06/19	28/06/19

Tareas Mantenimiento Preventivo REDDIG 2019

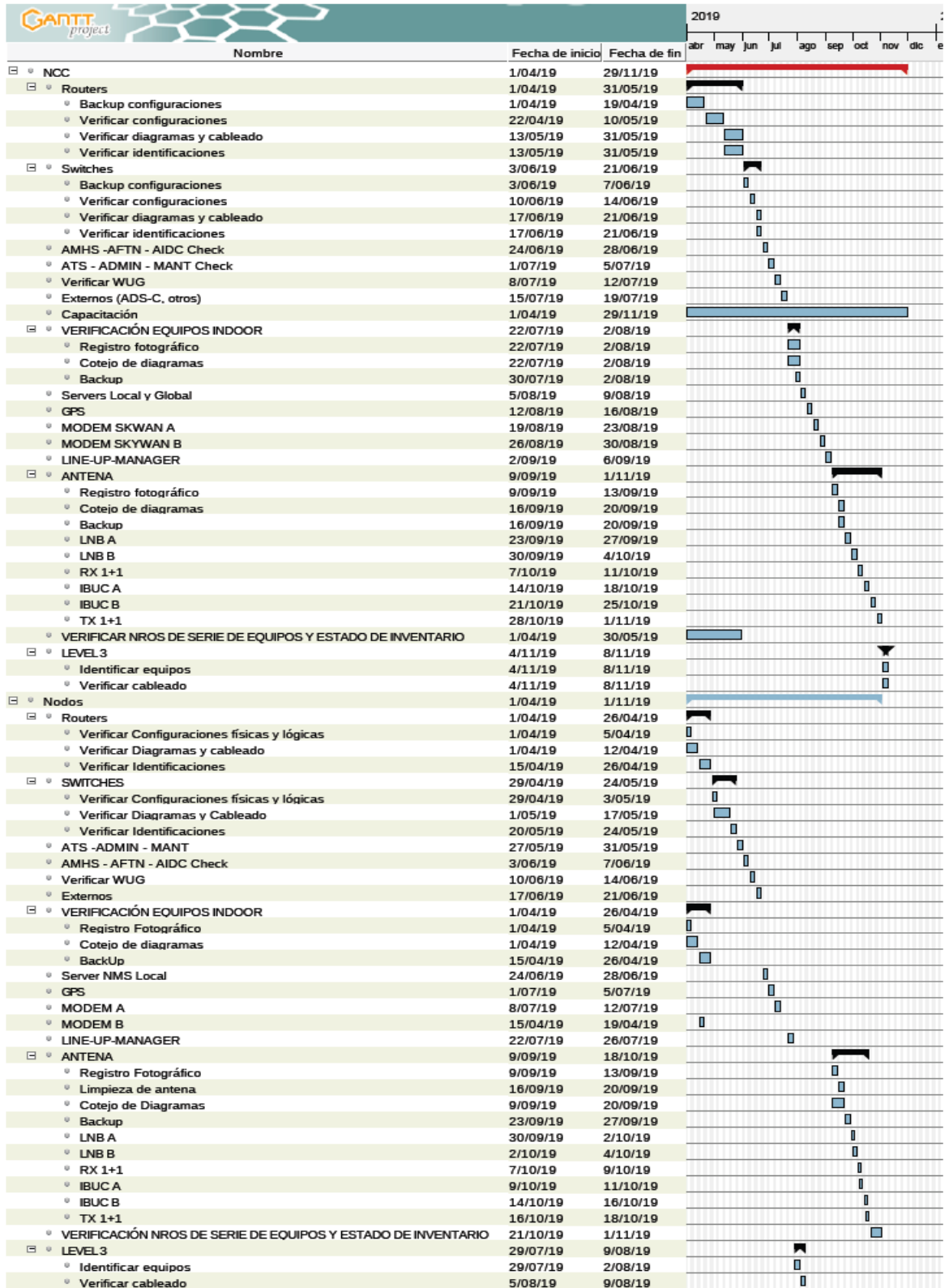
21-nov-2018

Tarea

4

Nombre	Fecha de inicio	Fecha de fin
GPS	1/07/19	5/07/19
MODEM A	8/07/19	12/07/19
MODEM B	15/04/19	19/04/19
LINE-UP-MANAGER	22/07/19	26/07/19
ANTENA	9/09/19	18/10/19
Registro Fotográfico	9/09/19	13/09/19
Limpieza de antena	16/09/19	20/09/19
Cotejo de Diagramas	9/09/19	20/09/19
Backup	23/09/19	27/09/19
LNB A	30/09/19	2/10/19
LNB B	2/10/19	4/10/19
RX 1+1	7/10/19	9/10/19
IBUC A	9/10/19	11/10/19
IBUC B	14/10/19	16/10/19
TX 1+1	16/10/19	18/10/19
VERIFICACIÓN NROS DE SERIE DE EQUIPOS Y ESTADO DE INVENTARIO	21/10/19	1/11/19
LEVEL 3	29/07/19	9/08/19
Identificar equipos	29/07/19	2/08/19
Verificar cableado	5/08/19	9/08/19

Diagrama de Gantt



APÉNDICE C / APPENDIX C

LISTA DE RESPUESTOS EXISTENTES / EXISTENT SPARE PARTS LIST

Optional equipment for Additional Spare Parts	Qty
INDOOR equipment	
Satellite modem, including:	
IDU 1070 19" NS + PS AC	1
<i>License Key Mesh Topology (included)</i>	
GORGY TIMING equipment	
GPS Master Clock - RT9s including one outdoor GPS Antenna with pre-wired cable	1
GPS standalone outdoor Antenna for RT9s (without cable)	1
LAN Server	
NPORT 5610-8	1
10 MHz Redundancy Equipment	
BIAS-T switch (10MHz redundancy system)	1
Passive DC-Block (Power injector 10MHz pass)	4
Passive DC-Block (RF Bandwidth)	4
Passive Splitter (2 Port RF Bandwidth)	2
Spare Parts for HPE PROLIANT DL160 Server	
Fans for HPE PROLIANT DL160 Server	10
Hot-Plug HP Midline HDD 500GB 7.2k SATA	2
Outdoor equipment	
RF Transmitter & Receiver	
IBUC 80W	1
Tx 1+1 switching system	1
Rx 1+1 switching system (unit without	1
Waveguide Switch (CPRG flange) + Control cable	1
LNB with external 10MHz reference	1
RF Filter (LNB path)	1
N-Female Type coaxial connector (for CNT/LMR-400 Type coaxial cable)	4
N-Male Type coaxial connector (for CNT/LMR-400 Type coaxial cable)	4
N-Male Type coaxial connector (for CNT/LRM-600 Type coaxial cable)	4

APÉNDICE D / APPENDIX D

INEO-ES Price List for Procurement of Satellite Equipment Spare Parts



Items	Unit	Description	Qty	Unit Price	Total Price
				US\$	US\$
INDOOR Equipment					
Satellite modem, including:					
1	set	IDU 1070 19" NS + PS AC	1	20 664,00	20 664,00
2		License Key Mesh Topology		included	
GORGY TIMING Equipment					
3	set	GPS Master Clock - RT9s including one outdoor GPS Antenna and cable	1	3 289,00	3 289,00
4	unit	GPS standalone outdoor Antenna for RT9s (without cable)	1	937,00	937,00
LAN Port Server					
5	unit	NPORT 5610-8	1	1 230,00	1 230,00
10 MHz Redundancy Equipment					
6	unit	BIAS-T switch (10MHz redundancy system)	1	2 125,00	2 125,00
7	unit	Passive DC-Block (Power injector 10MHz pass)	4	542,00	2 168,00
8	unit	Passive DC-Block (RF Bandwidth)	4	130,00	520,00
9	unit	Passive Splitter (2 Port RF Bandwidth)	2	265,00	530,00
Spare Parts for HPE PROLIANT DL160 Server					
10	unit	Fans for HPE PROLIANT DL160 Server	10	124,00	1 240,00
11	unit	Hot-Plug HP Midline HDD 500GB 7.2k SATA	2	405,00	810,00
OUTDOOR Equipment					
RF Equipment					
12	unit	IBUC 80W	1	18 653,00	18 653,00
13	unit	Tx 1+1 switching system	1	8 707,00	8 707,00
14	unit	Rx 1+1 switching system	1	9 523,00	9 523,00
15	set	Waveguide Switch (CPRG flange) + Control cable	1	3 528,00	3 528,00
16	unit	LNB with external 10MHz reference	1	804,00	804,00
17	unit	RF Filter (for LNB path)	1	676,00	676,00
18	unit	N-Female Type coaxial connector (for CNT/LMR-400 Type coaxial cable)	4	45,00	180,00
19	unit	N-Male Type coaxial connector (for CNT/LMR-400 Type coaxial cable)	4	44,00	176,00
20	unit	N-Male Type coaxial connector (for CNT/LRM-600 Type coaxial cable)	4	67,00	268,00
SUB-TOTAL SPARES					76 028,00
ACCESSORIES					
21	Lot	Technical Documentation (applicable for documentation not previously provided)		included	
SUB-TOTAL ACCESSORIES					0,00
SERVICES					
22	Lot	2-Year Warranty	1	7 036,00	7 036,00
SUB-TOTAL SERVICES					7 036,00
Grand Total					83 064,00
Insurance and Freight charges to Lima, Peru			1	6 658,00	6 658,00
TOTAL PRICE					89 722,00
Up to site acceptance on site(s), on a DAP Lima, Peru, basis (Delivered at Place – Incoterms® 2010) The prices for the services, civil works and supplies subcontracted and carried out in Peru include all applicable taxes.					

Augustin BAREAU
Head of Aeronautical Export
Department

Suggested Payment terms and conditions

70% on Proof of Purchase Order of the Equipment
30% upon Proof of Delivery (POD to be received from the Freight Forwarder)

Validity of the offer: **6 months**

Delivery delay after PO: Usually **4 months** (for delivery at final destination, excluding Customs Clearance delay)

APENDICE E / APPENDIX E

PUNTOS FOCALES REDDIG II / REDDIG II FOCAL POINTS

Estado / State	Nombre/ Name	Cargo / Position	Correo-e / E-Mail	Teléfono / Telephone	Dirección / Address
ARG	Moira Lidia Callegare	Jefe Departamento Proyectos – DNSA - ANAC	mcallegare@anac.gov.ar	(5411) 594-13097	Edificio ANAC Central Paseo Colón 1452, Ciudad Autónoma de Buenos Aires, CP 1063
	Sergio Alberto Vallone	Inspector de Navegación Aérea, Depto. Regional Noroeste de Inspecciones de la Dirección Nacional de Inspecciones de Navegación Aérea - ANAC	svallone@anac.gov.ar	(54351) 475-6414	Dirección Regional Noroeste Camino Pajas Blancas Km. 8.5, CP 5000, Córdoba Capital
	Javier Shenk	Gerente CNS - EANA	Jschenk@eana.com.ar	(54911) 28370135	EANA S.E. Av. Rivadavia 578, Piso 3 Buenos Aires, Argentina
BRA	Eduardo Alberto do Nascimento Fontes	Jefe de TIC - DECEA Avenida General Justo, 160 Rio de Janeiro, Brasil	eduardeanf@decea.gov.br	(5521) 21016620	Av. General Justo 160, Rio de Janeiro, Brasil
	Renata Rodrigues Frias	Asesora de Comunicaciones - DECEA	renatarrf@decea.gov.br	(5521) 21016869	Avenida General Justo, 160 Rio de Janeiro, Brasil
BOL	Hernando Lara	Jefe Unidad Nacional CNS AASANA	nanos_24@hotmail.com	(5912) 212-7959	Aeropuerto Internacional El Alto, Bloque Técnico AASANA
	Remigio Blanco	Responsable de Telecomunicaciones AASANA	rblanco@asana.bo	(5912) 237-0340	Aeropuerto Internacional El Alto, Bloque Técnico AASANA
CHI	Christian Vergara Leyton	Supervisor de Mantenimiento Técnico - DGAC Centro de Control de Santiago	cvergara@dgac.cl	(562) 836-4005; (562) 836-4011; (562) 644-8345	Avenida San Pablo 8411, Comuna de Pudahuel, Santiago, Chile
	Pedro Pastroján Céspedes	Supervisor de Mantenimiento Técnico - DGAC Centro de Control de Santiago	ppastrian@dgac.cl	(562) 836-4005; (562) 836-4011; (562) 644-8345	Avenida San Pablo 8411, Comuna de Pudahuel, Santiago, Chile

Estado / State	Nombre/ Name	Cargo / Position	Correo-e / E-Mail	Teléfono / Telephone	Dirección / Address
COL		Director de Telecomunicaciones y Ayuda a la Navegación Aérea		(571) 296-2224; (57) 317-5170996	Aeropuerto Internacional El Dorado, Av. El Dorado N° 112-09 Edif. C.N.A. (Centro Nacional de Aeronavegación)
	Gabriel Enrique Guzmán Pachon	Jefe del Grupo de Sistemas de Comunicaciones	gabriel.guzman@aerocivil.gov.co	(571) 296-2940; (57) 317-656 7202	Aeropuerto Internacional El Dorado, Av. El Dorado N° 112-09 Edif. C.N.A. (Centro Nacional de Aeronavegación)
ECU	Rául Avellán Oña	Dirección de Nodo Aeropuerto "José Joaquín de Olmedo" - DGAC	ravellan1@yahoo.com raul.avellan@dgac.gob.ec	(593-4) 269-2829	Av. De las Américas, Edif. Servicio para la Navegación Aérea, Guayaquil
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GUY	Mortimer Salisbury	Supervisor - AN & T - GCAA	mbsalisbury2000@yahoo.com	(592) 261-2569	Control Tower complex, Cheddi Jagan International Airport, Timehri, East Bank Demerara, Guyana
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APÉNDICE F / APPENDIX F

Interconexiones AMHS – Región SAM / AMHS Interconnection – SAM Region

	Conexión P1 / P1 Connection	Situación / Situation	Operativa en / Operational in	Observaciones / Notes
1	SAEZ – SBBR	Operativa / Operational	04/04/2018	
2	SAEZ – SCSC			
3	SAEZ – SGAS	Operativa / Operational	30/11/2018	
4	SAEZ – SLLP			
5	SAEZ – SPIM			
6	SAEZ – SUMU			
7	SBBR – SGAS	Operativa / Operational	30/11/2018	
8	SBBR – SLLP	En coordinación / In coordination		
9	SBBR – SKBO	Operativa / Operational	22/05/2017	
10	SBBR – SMJP	Operativa / Operational	11/10/2018	
11	SBBR – SOCA	En coordinación / In coordination		
12	SBBR – SPIM	Operativa / Operational	14/12/2015	
13	SBBR – SUMU			
14	SBBR – SVCA	Operativa / Operational	28/02/2018	
15	SBBR – SYCJ	Operativa / Operational	16/07/2017	
16	SCSC – SPIM	Operativa / Operational		
17	SEQU – SKBO	Pre operativa / Pre-operational		
18	SEQU – SPIM	Operativa / Operational		
19	SEQU – SVCA	Operativa / Operational	11/10/2018	
20	SKBO – SPIM	Operativa / Operational		
21	SKBO – SVCA	Operativa / Operational	01/12/2017	
22	SLLP – SPIM	En coordinación / In coordination		
23	SMJP – SVCA	En coordinación / In coordination		
24	SMJP – SYCJ	Operativa / Operational	11/10/2018	
25	SOCA – SVCA	En coordinación / In coordination		
26	SPIM – SVCA	Operativa / Operational	01/12/2017	
27	SVCA – SYCJ	En coordinación / In coordination		

Interconexiones AMHS – Región SAM / AMHS Interconnection – SAM Region

	Conexión P1 / P1 Connection	Situación / Situation	Operativa en / Operational in	Observaciones / Notes
28	SAEZ – FAOR			
29	SAEZ – SITA			
30	SAEZ – SVCA			
31	SBBR – GOOO			
32	SBBR – KATL	En coordinación / In coordination		
33	SBBR – LEEE	Operativa / Operational	11/10/2018	
34	SBBR – SITA	Operativa / Operational	16/08/2018	
35	SKBO – MPPC			
36	SPIM – KATL	En coordinación / In coordination		
37	SVCA – KATL	En coordinación / In coordination		
38	SVCA – LEEE			
39	SVCA – TNCC			
40	SVCA – TTPP			

AMHS Interconnections / Interconexiones AMHS

