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Agenda Item 5: Transition to MEVA III

MEVA II TRANSITION CONSIDERATIONS

(Presented by Secretariat)

EXECUTIVE SUMMARY

From the operation and performance of the current MEVA II Network, several operational and guidance material useful for maintaining this efficient operation has been developed as well as several existing documents have been agreed to ensure the appropriate operations of the MEVA II Network, including its interconnection/integration with REDDIG Network. The MEVA III Network implementation and operation should have the same or improved documents/guidance and follow the existing agreements made with the REDDIG network.

Action:	Actions suggested in Section 4
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency
References:	• Technical Management Group (TMG) Meetings • MEVA-REDDIG Interconnection Task Force Meetings

1. Introduction

1.1 The MEVA III transition process must ensure that all services from MEVA II transferred to the MEVA III Network infrastructure are done without any affectation or degradation of the services to the users (operational/ technical), while complying with the MEVA III contractual agreements and the committed Service level of Agreement (SLA).

1.2 The MEVA II Service and Operation, has evolved since its beginning of service, developing the necessary documentation and material to guide the operation and maintenance support by the MEVA Members.

1.3 Similarly, as requested in the MEVA III Network Tender requirements, the MEVA II had agreed with the REDDIG Network the corresponding responsibilities and role of each party in the troubleshooting of problems and the management of common activities for both networks, including the vision for the integration of both networks.

2. MEVA II Supporting material for Operation and Network management

2.1 From the continuing evaluation and improvements made to the MEVA II Network, several operation/trouble shooting/ guidance material had been developed and made available for all MEVA Members under the secured MEVA II Webpage in the MEVA II Service Provider website, such as:

Reference Material

- Equipment manuals
- As-built diagrams
- Training material

Operational references

- MEVA Service Provider Organizational chart
- MEVA II Directory- switched lines
- MEVA Contact List
- Maintenance Plan/ Procedure
- MEVA Contingency Plan Rev 3.
- Sun outage reports
- Status of spare part pools
- NOC troubleshooting flowcharts/procedures
- MEVA Escalation Guidelines

Operational follow-up

- Monthly/quarterly/periodic network performance reports
- Annual Maintenance reports

3. MEVA II- REDDIG Interconnection – Valid Agreements

3.1 The implementation work for the interconnection of MEVA II and REDDIG is an interregional agreement made in GREPECAS in promotion of regional Telecommunication networks and represented the first phase for achieving in the future a full network integration. This interconnection was being carried out in two parts:

a) Interconnection of the Caracas and Bogota REDDIG nodes to the MEVA II network - completed in March 2010; and
b) Interconnection of the COCESNA MEVA II node to REDDIG – completed in Dec 2010.

3.2 The Interconnection of the Caracas and Bogota REDDIG nodes to the MEVA II network includes a Viasat Linkway 2100 modem, two DVP2 E-1 cards for the FRAD MEMOTEC CX 950 equipment (1 for the MPS A and 1 for the MPS B), three two-port L-band dividers, and three L-band combiners, installed in the Bogota REDDIG node; and a Viasat Linkway 2100 modem, 4 DAV cards for the FRAD MEMOTEC CX 950 equipment (2 for the MUX A and 2 for the MUX B), three two-port L-band dividers, three two-port L-band combiners and two Datacom Standard 75 Watt C-band amplifiers, installed at the Caracas (Maiquetia) REDDIG node.

3.3 To complete the installation permitting the REDDIG nodes to communicate with the MEVA II nodes, the MEVA II Service Provider, installed the cards required in the FRAD Memotec equipment at each of the MEVA II nodes involved in the MEVA II / REDDIG interconnection (Aruba, Curacao, Jamaica, Miami, Panamá and San Juan) prior to installing the equipment at the Bogota and Caracas REDIG node.

3.4 The MEVA II Service Provider and the REDDIG Administration uploaded the new software archives pertaining to the interconnection with the MEVA II network, at the FRAD Memotec CX 950 equipment and Viasat Linkway 2100 modem in the Bogota and Caracas nodes and successfully carried out all satellite link trials with Intelsat.

3.5 For the COCESNA MEVA II node interconnection to REDDIG, an agreement between ICAO and COCESNA for the MEVA II / REDDIG interconnection was signed on 21 April 2010, to be carried out through Project RLA/09/901. The project took into consideration the technical, service, and economic aspects for the implementation of the interconnection of the COCESNA MEVA II node with the REDDIG. The services implemented by the project were the ATS speech circuits between the COCESNA ACC (CENAMER) and the Bogota and Guayaquil ACCs.

3.6 Currently, all ATS speech/AFTN circuits planned in the MEVA II / REDDIG interconnection are operational.

3.7 In order to maintained the interconnection service between MEVA-REDDIG, several agreements we made among the MEVA TMG and the REDDIG Group:

- MEVA- REDDIG network integration considerations- **Appendix A** to this paper
- MEVA – REDDIG interconnection Management agreements- **Appendix B** to this paper
- MEVA-REDDIG existing services

4. Action suggested

4.1 The Meeting is invited to:

a) take note of the information presented;

b) coordinate with COMSOFT the necessary actions to maintain or improved the network documentation and references when transitioning to MEVA III;

c) review the existing MEVA II- REDDIG interconnection agreements for its customization for MEVA III;

d) analyse the need for a MEVA III- REDIG II Meeting to review and agree on the corresponding common network management issues; and

e) analyse any other considerations in this regard which the Meeting might deem necessary.

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APPENDIX A
PRELIMINARY STUDY ON INITIAL TECHNICAL CONSIDERATIONS FOR THE IMPLEMENTATION OF THE MEVA II / REDDIG NETWORKS INTEGRATION

Background and References for Digital Networks Integration

The Third Regional Air Navigation Caribbean and South America Meeting (RAN CAR/SAM/3) (Buenos Aires from October 5th to 15 of 1999) alert GREPECAS the need to develop criterions and pertinent orientation in order to obtain the interconnection among several available and emerging digital networks. Recommendation 9/1 – *Implementation of digital networks to improve the current AFS and to facilitate the introduction of the ATN*.

In order to set up criteria for digital networks interconnection in a regional an interregional level, two informal meetings: CAR/SAM Informal Meeting 01/00 (Mexico, from June 26 to 29, 2000) and CNS-CAR/SAM Informal Meeting 01/01 (Bogota, Colombia, from October 9 to 11, 2001) were held, as well as MEVA and REDDIG networks Interconnection Coordination Meeting (Lima, from November 11 to 12, 2002). In these meetings several proposals of interconnection alternatives were displayed, including the adoption of an memorandum of understanding for the establishment of an homogeneous digital platform based in MEVA II and REDDIG networks interconnection, as well as the transitory implementation of Colombian network nodes in Jamaica, Panama and COCESNA; it was agreed that these measures be applied until the MEVA II / REDDIG interconnection is achieved.

The GREPECAS/10 Meeting (Las Palmas, Spain, October 23 to 27, 2001) adopted a preliminary orientation material referred to digital networks interconnection for aeronautic communications (Conclusion 10/27). Also, the Conclusion 10/28 indicates the need of capacity provision of massive information exchange through aeronautic communications digital networks.

The GREPECAS/12 Meeting (La Habana, Cuba, June 7 to 11, 2004) highlighted the importance to continue efforts in order to achieve interconnection and homogeneous interoperability among CAR/SAM regional digital networks, considering present and future communication requirements of voice and data and, in this sense, formulated Conclusion 12/39 – *Additional inter-connection points for regional and inter-regional digital networks*.

The GREPECAS/13 Meeting, based in the recommendation of CNS/COMM/4 Meeting, considered:

- the need to continue interconnection/interoperability efforts between two networks, using, in this respect, the coordination meetings of ICAO Technical Cooperation Projects, related with MEVA II y la REDDIG
- research alternatives, such as implementation of an homogeneous type interconnection or the establishment of interconnection points for a non-homogeneous solution
- it is important to achieve the purpose of interconnection/inter-performance between MEVA II and REDDIG and consequently, Conclusion 13/70 (*Establishment of Agreements to achieve the MEVA II – REDDIG interconnection/interoperation*) was formulated

The Fifth Meeting of the ALLPIRG/Advisory Group (ALLPIRG/5), held in ICAO Headquarters, Montreal, Canada, 23 to 24 March 2006, among issues related to VSAT networks implementation, formulated Conclusion 5/16 – Implementation of very small aperture terminals (VSATs), which discourage proliferation of VSAT networks where one/some of the existing ones can be expanded to serve new areas of interest.

Considerations and Initial Operational Technical Aspects for the Integration

Under this networks integration concept, VSAT MEVA II and REDDIG networks interoperability will be allowed in a homogeneous way, as if only one VSAT network exist without the need to implement other communication means for interconnection.

Interoperability is possible since the technical characteristic of both (MEVA II and REDDIG) are similar: network topology type Full Mesh, using TDMA/Frame Relay typical satellite access modality, IS 1R satellite with beam addressed over the United States / Latin America, band C and vertical lineal polarization operation frequency. In the same way, both network use similar and compatible equipment, such as those corresponding to FRAD and satellite MODEM.

One of the fundamental parameters for establishing a homogeneous MEVA II – REDDIG network is synchronization of MEVA II and REDDIG carriers. This synchronization could be carried out with the MRT (Master Reference Terminal, located in the Viasat Linkway MODEM) of the REDDIG NCC or the MEVA II NCC.

Due to the MRT importance and in order to avoid collapsing the network when this fails, it is necessary to have an alternate MRT, as presently in the REDDIG. When a MRT fails, the NCC will use the alternate to maintain the network synchronism. This change will be automatic and transparent for the network users. The principal and alternate MRT should be geographically separated and joined in a direct way through a communications mean. For the MEVA II – REDDIG integration, the REDDIG MRT (operating in Manaus) and the MEVA II MRT could be considered.

The MEVA II and REDDIG networks, being integrated in the same transponder, could operate with different groups of nodes or users according to the traffic between them and to respective frequencies being used. In this way, a group with all the REDDIG nodes and other with all the MEVA II nodes could be established, as well as a last group including REDDIG and MEVA II nodes requiring voice and data service between them. This third users group would be conformed by the nodes of Colombia, Ecuador and Venezuela (REDDIG), and Aruba, Curacao, Panamá, Jamaica, Puerto Rico and COCESNA (MEVA II). Only one reference carrier (MRT) would be used for the synchronization of the homogeneous network.

In the same way, the following particular premises could be identified:

a) Network Management Centre

- Equipment redundancy with hemispherical geographical diversity
- Use of the MRT and AMRT with geographical diversity to avoid solar interference
- Dedicate circuit between MRT and AMRT
- Operation of the Network Management Centre during 24x7x365 in English, Spanish and Portuguese languages
- Use of carriers up to 1.25 Msps with QPSK and FEC ½. Modulation
- Conformation of three groups of users NAM-CAR, SAM and NAM-CAR /SAM
- Minimum availability: 99.95%
- The network is exclusive and closed for member States and should not be interconnected to any Public Network

b) Remote Nodes

- Redundant equipment desirable
- Minimum availability: 99.95%
- BER equal or above 10^{-6}

Present communications requirements identified for integration between the SAM Region and CAR Region and the SAM Region and NAM Region

Within the networks integration, initially the voice and data communications requirements between the SAM and CAR Regions (presented in table 1) have been considered, as well as data requirements between the SAM and NAM regions (presented in table 2).

Table No. 1 – Summary of CAR/SAM interoperability requirements

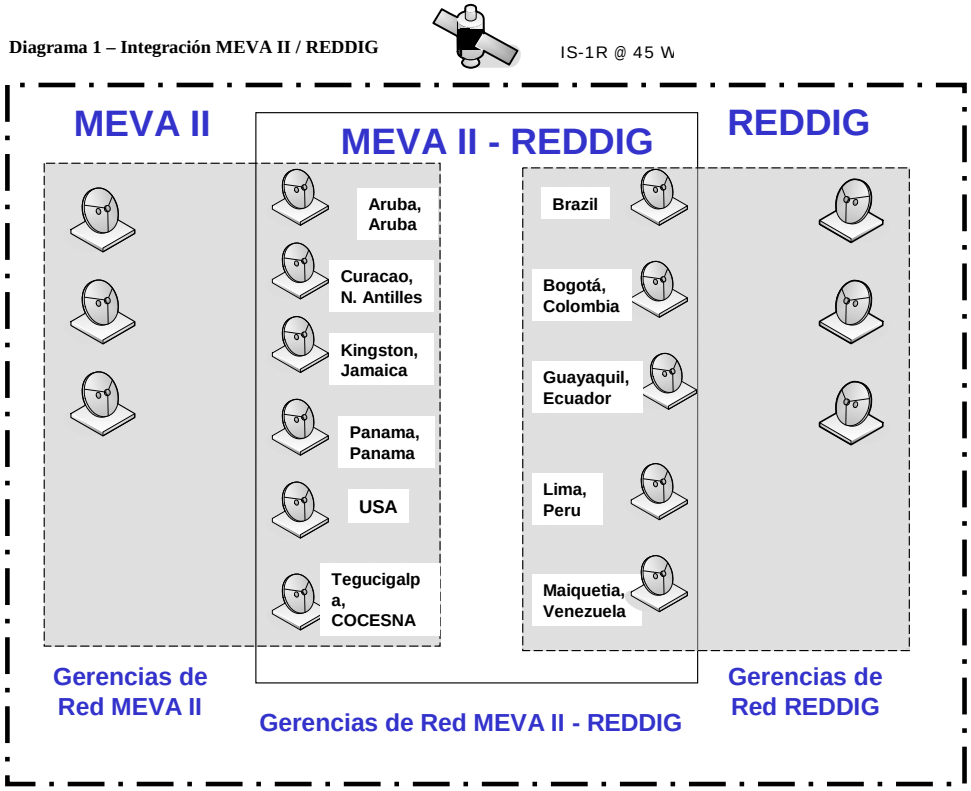
No.	State/Station	**ARUBA,** Aruba	**COLOMBIA**	Barranquilla	Bogota	Cali	Medellín	San Andrés	**ECUADOR**, Guayaquil	**JAMAICA**, Kingston	**NETHERLANDS A**. Curacao	**PANAMÁ**, Panamá	**PUERTO RICO**, San Juan	**VENEZUELA**	Caracas	Josefa Camejo	**COCESNA**, Tegucigalpa	**Total per State**
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	**ARUBA**, Aruba															V		**1 Voice**
2	**COLOMBIA**																	**8 Voice + 1 Data**
2.1	Barranquilla									V	V	V						
2.2	Bogotá											D,V					V	
2.3	Cali											V						
2.4	Medellín											V						
2.5	San Andrés											V						
3	**ECUADOR**, Guayaquil																V	**1 Voice**
4	**JAMAICA**, Kingston			V														**1 Voice**
5	**NETHERLANDS A.** Curacao			V											D,V			**2 Voice + 1 Data**
6	**PANAMÁ**, Panamá			V	D,V	V	V	V										**5 Voice + 1 Data**
7	**PUERTO RICO**, San Juan														D,V			**1 Voice + 1 Data**
8	**VENEZUELA**																	**3 Voice + 2 Data**
8.1	Caracas										D,V		D,V					
8.2	Josefa Camejo	V																
9	**COCESNA**, Tegucigalpa				V				V									**2 Voice**
	Total per Station	1 Voice		3 Voice	2 Voice + 1 Data	1 Voice	1 Voice	1 Voice	1 Voice	1 Voice	2 Voice + 1 Data	5 Voice + 1 Data	1 Voice + 1 Data		2 Voice + 2 Data	1 Voice	2 Voice	

***Note**: Additionally to requirements expressed in Table No. 1, ATN routers interconnection should be added, as well as new services for the radar data Exchange and other communications services, all of which is in process of revision a definition. .*

Table No. 2 – Summary of NAM/SAM interoperability requirements		
No.	**Communications services**	**Type**
1	2	3
1	Mian AFTN circuit **BRASIL**, Brasilia – **UNITED STATES**	Data
2	Main AFTN circuit **PERU**, Lima – **UNITED STATES**	Data
3	Main AFTN circuit **VENEZUELA**, Caracas – **UNITED STATES**	Data
4	ATN routers interconnection No. 1 (Plan under review)	Data
5	ATN routers interconnection No. 2 (Plan under review)	Data
6	Other future services	Data

Initial architecture proposed by the MEVA II / REDDIG Coordination meetings for integration of both networks and their suggested operation

Diagrama 1 – Integración MEVA II / REDDIG



Note: The interrupted dark line represents a total network operator

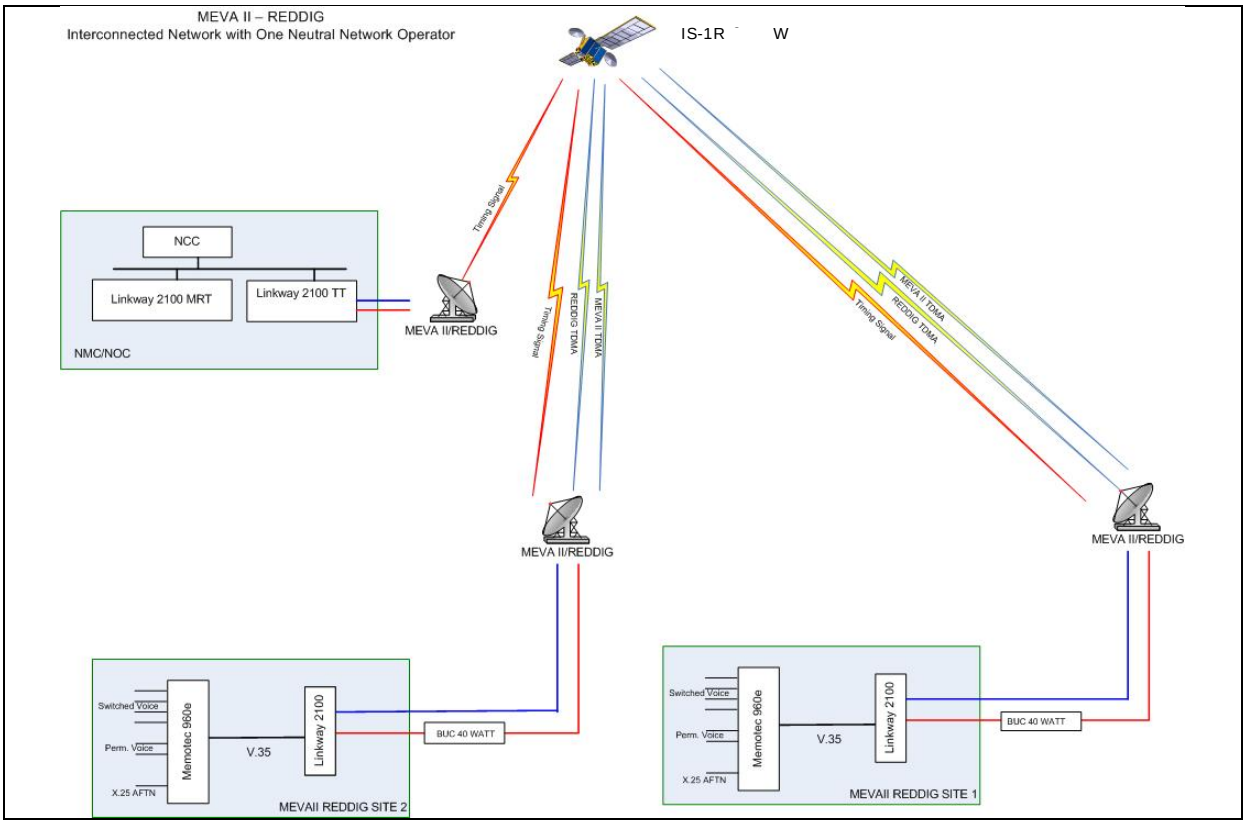


Diagram 2 – MEVA II – REDDIG Networks Interconnected with only one Network Operator

Conclusion

Taking into account these initial considerations on operational technical aspects for the MEVA II and REDDIG networks integration, failing to study in-depth operational, administrative and institutional aspects, as well as review other considerations from the experience in operating both networks interconnection, it could be concluded that both networks integration is technically feasible and among the principal advantages that could be achieved are:

- For any communication between any of the MEVA II and REDDIG nodes only one satellite hop will be used keeping at minimum the delay in voice and data communications
- Independent and transparent operation for users of groups without interconnection, there should not be interference on those groups traffic
- Being a homogeneous network in technology and equipments, interconnection and interoperability among MEVA II and REDDIG would be carried out without mayor additional investments in principal equipments or stations
- Flexibility to increase new interconnection users in any of the networks
- Fulfills interoperability principles of regional digital networks
- Facilitates implementation of ATN applications

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APPENDIX B
AMENDMENT TO THE MEMORANDUM OF UNDERSTANDING BETWEEN STATES/TERRITORIES/INTERNATIONAL ORGANISATIONS MEMBERS OF MEVA II AND REDDIG PROJECT ORGANISATION

1. SECTION 1. INTRODUCTION AND PURPOSE OF THIS DOCUMENT

1.1 INTRODUCTION

1.1.1 With the aim of effectively and efficiently fulfilling aeronautical telecommunications requirements in these regions, the members of the MEVA II and REDDIG VSAT networks decide to interconnect the two networks. For this purpose, the Members decided to establish this Memorandum of Understanding (MoU). This Agreement is being established jointly under coordination of the ICAO North American, Central American, and Caribbean (NACC) Office in Mexico City, Mexico and the ICAO South American (SAM) Office, in Lima, Peru.

1.1.2 The Third MEVA II / REDDIG Coordination Meeting (MR/3) concluded that the interconnection implementation will operate for a five-year period, as an initial basis, after finalising the implementation.

1.1.3 The main body of this document consists of four (4) sections and 2 Appendices. The content of the sections and appendices is summarised below: In accordance with the interconnection development, when considered necessary, and if the interested Parties of both networks agree to do so, other Appendices could be added as necessary.

a) Section 1.0: Presents a brief overview and statement of purpose.

b) Section 2.0: Provides an explanation of the Technical Cooperative Agreement process.

c) Section 3.0: Describes the technical terms of reference.

d) Section 4.0: Describes the financial responsibilities of the parties to this agreement.

e) Appendix A: A list of reference documents used in support of this Agreement.

f) Appendix B: Technical-operational coordination agreement for the establishment of VSAT MEVA II and REDDIG networks interconnection

1.2 **SECTION 1 – PURPOSE**

1.2.1 The goal of this MoU is to foster a coordinated plan for in the development of MEVA II and REDDIG networks and its interconnection implementation.

1.2.2 This MoU is a living document through which members of the MEVA II and REDDIG networks shall convene, as necessary and at locations agreed upon, to review or amend the details of the Agreement. Revised versions of this Agreement, or paragraph changes, shall be coordinated and distributed by the ICAO NACC and SAM Regional Offices to the signatory parties of the Agreement as appropriate.

1.2.3 This MoU document establishes the following coordination and cooperation process:

a) The holding of coordination meetings to analyse and identify the requirements and preferred technical solution(s), alternatives, and options for achieving interconnection of the MEVA II and REDDIG VSAT networks via a common satellite and use of similar equipment.

b) The exchange of technical reports and documentation, program plans and schedules, as may become necessary, to assure the successful and timely completion of these efforts.

c) Operational-technical coordination between the Parties involved in MEVA II and REDDIG networks, as necessary.

d) Planning, technical coordination, and development participating member States/Territories/International Organisations of the MEVA II and REDDIG Networks.

2. **SECTION 2 – THE TECHNICAL COOPERATIVE AGREEMENT PROCESS**

2.1 To reach the goal of this MoU, the MEVA II and REDDIG members have developed an interconnection solution that shall be implemented to operate during an initial five-year phase after finalising the implementation. During this initial phase, the members of these networks shall also define and develop a solution that shall enable the integration of the two networks at a later stage, which will be properly protected in a separate document.

2.2 **RELATIONSHIPS AND RESPONSIBILITIES OF THE PARTIES**

2.2.1 In order to achieve the interconnection of the networks in a timely and mutually beneficial way, the parties to this Agreement recognise the need to coordinate their actions and exchange updated operational-technical information.

2.2.2 The Parties also recognise the need to develop common technical solutions for interconnecting and/or integrating these networks, in a manner that shall not negatively impact the planned operation, performance, or management of the either network.

2.2.3 ICAO NACC and SAM Regional Offices shall convene coordination meetings, as needed.

2.2.4 The Parties of this MoU agree to exchange reports, technical documents, plans and programming that may be necessary in order to guarantee the successful and timely fulfilment of the interconnection of these networks.

2.2.5 The Parties of this MoU agree to implement during the initial phase the MEVA II / REDDIG interconnection solution as presented in Appendix B.

3. SECTION 3 – TECHNICAL TERMS OF REFERENCE

3.1 The interconnection solution's objectives and their technical operational principles are described under the Appendix B of this document.

4. SECTION 4 – FINANCIAL RESPONSIBILITIES OF THE NETWORK PARTIES

4.1 MEVA II / REDDIG members shall, as individual administrations, be responsible for their own financial obligations, in accordance with the Agreement contained in Appendix B.

4.2 The Parties to this Agreement understand that they shall not commit to any action that may result in a financial obligation to other Parties, without first obtaining an Agreement, in writing, from all other parties to this Agreement.

NOTES:

MEVA II - The term "MEVA II", as used in this document, refers to the VSAT network currently providing voice and data aeronautical telecommunications services to States/Territories/International Organisations in the Caribbean Region. The network is managed by Caribbean States/Territories/International Organisations members, through the Technical MEVA Group (TMG), and is coordinated by the ICAO NACC Regional Office.

REDDIG - The term "REDDIG", as used in this document, refers to the VSAT network presently implemented in the South American region under the technical cooperation project RLA/03/901 coordinated by the ICAO Lima Office.

TECHNICAL-OPERATIONAL COORDINATION AGREEMENT FOR THE ESTABLISHMENT OF VSAT MEVA II AND REDDIG NETWORKS INTERCONNECTION

1. SECTION 1 – PURPOSE OF THIS AGREEMENT

1.1 PURPOSE

1.1.1 To establish technical, operational and administrative aspects necessary for the digital VSAT MEVA II and REDDIG networks interconnection, to meet aeronautical telecommunications requirements between the CAR/SAM Regions.

2. SECTION 2 – CO-OPERATIONAL TECHNICAL PROCESS OF THE AGREEMENT

2.1 RELATIONSHIP AND RESPONSIBILITIES OF THE PARTIES

2.1.1 During this stage, the management of MEVA II and REDDIG shall continue with their respective service providers, i.e, REDDIG shall continue with its REDDIG Administration, and MEVA II, with the MEVA II Service Provider.

2.1.2 States/Territories/International Organisations members of MEVA II and REDDIG networks shall be responsible for the normal operation of each of their nodes, having to establish mechanisms necessary to ensure the degree of availability required for each of the services under consideration.

3. SECTION 3 – TECHNICAL TERMS OF REFERENCE

3.1 TECHNICAL TERMS OF REFERENCE

3.1.1 Members of MEVA II and REDDIG networks have mutual interest in establishing the interconnection of their respective communications networks in a manner that they provide the capacity for current and future voice and data aeronautical telecommunications services between the designated nodes within these networks, so as to support aeronautical telecommunications in the CAR/SAM Regions.

3.1.2 The interconnection technical solution shall be carried out under premise that the REDDIG and MEVA II VSAT network is developed under a full mesh network topology, using TDMA/Frame Relay satellite access, as well as a IS 1R satellite transponder with a beam directed over United states / Latin America, C band operation frequencies and co-linear vertical polarisation.

3.1.3 For the interconnection of the additional equipments to be initially installed at each node involved, MODEMs Linkway 2100, as well as any other necessary equipment, shall be acquired.

3.1.4 The interconnection implies the following implementations:

a) Additional equipment at Bogota (Colombia) and Caracas (Venezuela), REDDIG nodes; and

b) Additional equipment at Tegucigalpa, Honduras, COCESNA MEVA II node.

3.2 **MANAGEMENT TERMS OF REFERENCE**

3.2.1 Implementation of the interconnection option shall not involve modifications to the technical, operational and control management of MEVA II and REDDIG networks, with exception of the necessary maintenance coordination procedures detailed in paragraph 3.2.5 of this Attachment.

3.2.2 The configuration, synchronisation, supervision and control of additional MODEMs participating in the interconnection and installed at REDDIG nodes, shall be carried out by the MEVA II Network Control Centre (NCC). Also, the configuration, synchronisation, supervision and control of additional MODEMs participating in the interconnection and installed at MEVA II nodes, shall be carried out by the REDDIG NCC.

3.2.3 The band-width, number and type of circuits installed in the MEVA II node for communications with REDDIG, shall be managed by REDDIG.

3.2.4 The band-width, number and type of circuits installed in the REDDIG node for communications with MEVA II, shall be managed by MEVA II.

3.2.5 **Maintenance coordination procedures between the NCCs**

3.2.5.1 When there is any problem in a REDDIG node, with the MODEM or other equipments involved in the interconnection with MEVA II, the following shall be applied:

a) MEVA II Service Provider shall call the REDDIG Administration informing of the happening;

b) The REDDIG Administration shall phone the respective node and shall establish an audio teleconference between MEVA II Service Provider and Caracas or Bogota local technicians, as necessary;

c) REDDIG NCC, under control of the REDDIG Administration, shall supervise communications between MEVA II Service Provider and REDDIG nodes technicians.

d) The MEVA II Service Provider is the only one that may call the REDDIG Administration to start or close the respective trouble ticket.

3.2.5.2 When there is any problem in a MEVA II node, with the MODEM or other equipment affect the interconnection with REDDIG, the following shall be applied:

a) The REDDIG Administration shall call the MEVA II Service Provider informing of the happening;

b) The MEVA II Service Provider shall call the respective node and shall establish an audio conference between REDDIG Administration and local technicians, as necessary;

c) MEVA II NCC, under control of the Service Provider, shall supervise communications between REDDIG Administration and MEVA II nodes technicians.

d) The REDDIG Administration is the only one that may call the MEVA II Service Provider to start or close the respective trouble ticket.

3.2.6 **Security requirements**

3.2.6.1 The minimum security arrangements required by REDDIG, and that should be followed by the MEVA II, are:

a) MEVA II network have no direct communications with public networks.

b) The equipment is not shared with services different to MEVA II.

c) Access restriction to equipment belonging to the network, through the use of a password.

d) The network must exclusively support services to which it was originally constituted for.

3.2.6.2 The minimum security arrangements required by MEVA II, and that shall be followed by REDDIG, are:

a) REDDIG network have no direct communications with public networks.

b) The equipment is not shared with services different to REDDIG.

c) Access restriction to equipment belonging to the network, through the use of a password.

d) The network must exclusively support services to which it was originally constituted for.

SECTION 4 – FINANCIAL RESPONSIBILITIES OF THE PARTIES

3.3 EQUIPMENT PURCHASING

3.3.1 Additional equipment to be installed at REDDIG nodes, with MEVA II MODEMs requirements, can be purchased by the REDDIG members in accordance with the requirements established for the interconnection.

3.3.2 Additional equipment to be installed at MEVA II nodes, with REDDIG MODEMs requirements, can be purchased by MEVA II members (States, Territories, Organisations) to the MEVA II Service Provider, in accordance with the requirements established for the interconnection.

3.4 SPARE PARTS LOT PURCHASING

3.4.1 The spare parts for the additional equipment to be installed at the REDDIG nodes, with MEVA II MODEM and other device requirements, can be purchased by REDDIG, and would form part of the spare parts lot existing in REDDIG.

3.4.2 The spare parts for the additional equipment to be installed at the MEVA II nodes, with REDDIG MODEM and other device requirements, shall be purchased by MEVA II Members.

3.5 **MAINTENANCE**

3.5.1 The additional equipment that would be installed in the REDDIG nodes and that would route communications requirements with MEVA II nodes, shall be maintained by the respective REDDIG member States, under the coordination of the REDDIG Administration.

3.5.2 The additional equipment that would be installed in the MEVA II node, with communications requirements with REDDIG nodes, shall be maintained by MEVA II Member, in coordination with the MEVA II Service Provider.

3.6 **SPACE SEGMENT**

3.6.1 The carriers, as well as the band width requirement for communications between REDDIG nodes shall be the same as those currently rented with INTELSAT. The payment of the space segment to INTELSAT shall continue being carried out through the REDDIG Administration, who shall be in charge of collecting contributions from each SAM State member of REDDIG.

3.6.2 The carriers, as well as the band width requirement for communications between MEVA II nodes shall be done through the MEVA II Service Provider. MEVA II members shall pay the bandwidth consumption to the MEVA II Service Provider.

3.6.3 The circuits necessary for communications between a REDDIG node having MODEMs participating in the interconnection with MEVA II shall be administrated by the MEVA II Service Provider. The amount charged for circuits used by the REDDIG Member of the aforementioned node mentioned shall be provided by the MEVA II Service Provider, and the respective consumption payment to the provider shall be made through REDDIG Administration.

3.6.4 The circuits necessary for communications between a MEVA II node having MODEMs participating in the interconnection with REDDIG shall be administrated by REDDIG. The amount charged for circuits used by the mentioned node shall be provided by the REDDIG Administration, and the respective consumption payment shall be made by the MEVA II member of the aforementioned node to the REDDIG Administration.

- END -