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- Agenda Item 1:** Analysis to the proposals for the MEVA II / REDDIG Networks total homogeneous integration/interoperation
- Agenda Item 2:** Analysis to the proposals for the interconnection/interoperability between nodes in the MEVA II and REDDIG networks requiring it
- Agenda Item 3:** Development of a proposal for actions to implement the recommended option for the integration/interconnections of the MEVA II and REDDIG networks

**FOLLOW-UP TO THE CONCLUSIONS FORMULATED BY THE MEVA II / REDDIG
COORDINATION MEETING**

(Presented by the Secretariat)

<p>SUMMARY</p> <p>This Working Paper presents a follow up to the Conclusions agreed by the MEVA II / REDDIG Coordination Meeting.</p>
<p>References:</p> <ul style="list-style-type: none">• Report of the MEVA II / REDDIG Coordination Meeting. (Lima, Peru, 20 – 22 March 2006).

1. Introduction

1.1 This working paper is based on the Report of the MEVA II / REDDIG Coordination Meeting, held in Lima, from 20 to 22 March 2006 which results are related with the Agenda item 1, 2 and 3 of this Meeting.

2. Conclusions agreed by the MEVA II / REDDIG Coordination Meeting

2.1 The MEVA II / REDDIG Coordination Meeting took note of the technical description and status of implementation of MEVA II and REDDIG networks and reviewed the status of development and interconnection of the regional digital networks. In addition, the Meeting analyzed the services to interoperate between MEVA II and REDDIG networks, as well as the execution of an initial study on the technical feasibility of the MEVA II / REDDIG homogeneous interconnection / interoperability and started a study on institutional and economical aspects regarding the MEVA II / REDDIG integration / interconnection. As a result from the studies and analyses, the Meeting agreed three Conclusions whose texts and follow-up are presented in **Appendix A** to this working paper.

2.2 Additionally, the tasks developed by the meeting are presented in the following Appendixes:

- **Appendix B** – Summary of CAR/SAM interoperability requirements
- **Appendix C** – Summary of NAM/SAM interoperability requirements
- **Appendix D** – Diagram of a MEVA II / REDDIG integration proposal
- **Appendix E** – Diagram of a MEVA II / REDDIG interconnection proposal
- **Appendix F** – Preliminary Memorandum of Understanding and technical-operational cooperative agreement for the establishment of the integration / interconnection / interoperability of MEVA II and REDDIG networks
- **Appendix G** – REDDIG institutional arrangements
- **Appendix H** – MEVA II institutional arrangements
- **Appendix I** – Preliminary proposal of institutional aspects for the establishment of a homogeneous integration/interconnection between MEVA II and REDDIG networks

4. Suggested action

4.1 The meeting is invited to:

- a) take note of the information presented in this working paper; and
- b) follow up the Conclusions of the MEVA II/ REDDIG Coordination that are presented in Appendix A, as well as the works developed by the mentioned meeting that are shown in Appendices B to I of this paper.

APPENDIX A

FOLLOW UP TO THE CONCLUSIONS OF THE MEVA II / REDDIG COORDINATION MEETING

CONCLUSION	ACTION FOR	REMARKS AND FOLLOW-UP	STATUS/TARGET DATE
<p>CONCLUSION 2/1 - IMPLEMENTATION OF COMMUNICATIONS INTEROPERATION REQUIREMENTS AMONG THE CAR, NAM AND SAM REGIONS SUPPORTED BY VSAT NETWORKS</p> <p>That, taking into account current and future communications interoperation requirements among the CAR, NAM and SAM regions, whose summaries are presented in Appendices A and B to this part of the Report, and taking advantage of the hemispheric coverage of the satellites available, CAR/SAM States, Territories and International Organizations should implement the mentioned requirements through a simple MEVA II and REDDIG VSAT digital network integration/interconnection solution, to provide high performance at low cost and avoid the use of multiple VSAT networks.</p>	States, Territories and International Organizations	Considering this Conclusion and Conclusion 5/16 of the ALLPIRG/5 Meeting, efforts should continue aimed at integrating the MEVA II and REDDIG networks simply with an operational control (centralized).	Valid / Feb. 2007
<p>CONCLUSION 2/2 - STUDY OF OPTIONS 1 AND 2 ON INTEGRATION / INTERCONNECTION AND INTEROPERABILITY SOLUTIONS</p> <p>That, the members of MEVA II and REDDIG networks, with the aim of broadening studies regarding implementation of either Options 1 or 2 described in this part of the Report, for the integration/interconnection and interoperability between MEVA II and REDDIG networks:</p> <p>a) establish a Task Force on Interconnection of MEVA II and REDDIG Networks composed by the following States, International Organization and enterprise: Argentina, Brazil, Colombia, United States, Venezuela, COCESNA, Americom Government Services (AGS), and the REDDIG Administrator, under the coordination of ICAO, to mainly analyze aspects related with control and technical-operational management,</p>	MEVA II and REDDIG Members and Task Force	This MEVA II / REDDIG Interconnection Task Force Meeting should perform its tasks in accordance with this Conclusion.	Valid / May 2006

CONCLUSION	ACTION FOR	REMARKS AND FOLLOW-UP	STATUS/TARGET DATE
<p>financial, security, technical-operational and other institutional aspects;</p> <p>b) propose the preliminary text of the Memorandum of Understanding presented in Appendix 3D to this part of the report;</p> <p>c) hold a meeting of the Task Force in the ICAO NACC Regional Office in Mexico, tentatively from 3 to 5 May 2006; and</p> <p>d) distribute the results of the mentioned Task Force meeting to the MEVA II and REDDIG parties involved, through the corresponding ICAO NACC and SAM Regional Offices.</p>			
<p>CONCLUSION 2/3 - ANALYSIS OF INSTITUTIONAL ARRANGEMENTS PROPOSED FOR AN INTEGRATION/INTERCONNECTION OF MEVA II AND REDDIG VSAT NETWORKS</p> <p>That, the Task Force created under Agenda Item 3 of this Meeting, as part of its work, takes into account the institutional arrangements:</p> <p>a) established for MEVA II and REDDIG networks, whose summaries are being presented in Appendices A and B to this part of the Report, and</p> <p>b) proposed for the integration/interconnection of MEVA II and REDDIG networks presented in Appendix C to this part of the Report.</p>	MEVA II / REDDIG Task - Force	This MEVA II / REDDIG Interconnection Task Force Meeting should propose institutional arrangements for the integration/interconnection of the MEVA II / REDDIG networks in accordance with this Conclusion.	Valid / May 2006

APPENDIX B

(Appendix 2A to the Report of the MEVA II / REDDIG Coordination Meeting)

Table No. 1 – Summary CAR/SAM interoperability Requirements																		
No.	State/Station	ARUBA, Aruba	COLOMBIA	Barranquilla	Bogota	Cali	Medellin	San Andres	ECUADOR, Guayaquil	JAMAICA, Kingston	NETHERLANDS A. Curacao	PANAMÁ, Panama	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	Bogota											D,V					V	
2.3	Cali											V						
2.4	Medellin											V						
2.5	San Andres											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	PANAMA, Panama			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 the requirements expressed in Table No. 1, the ATN router interconnection, new services for the radar data sharing and other communications services should be added, all of which are in its review and definition process.

APPENDIX C

(Appendix 2B to the Report of the MEVA II / REDDIG Coordination Meeting)

Table No. 2 – Summary of NAM/SAM interoperability requirements		
No.	Communication Service	Type
1	2	3
1	Trunk circuit AFTN BRAZIL , Brasilia – UNITED STATES	Data
2	Trunk circuit AFTN PERU , Lima – UNITED STATES	Data
3	Trunk circuit AFTN VENEZUELA , Caracas – UNITED STATES	Data
4	Interconnections No. 1 ATN routers (Plan in revision)	Data
5	Interconnections No. 2 ATN routers (Plan in revision)	Data
6	Other future services	Data

Diagram 2 – MEVA II – REDDIG Interconnected networks with one Network Operator

APPENDIX E

(Appendix 3B to the Report of the MEVA II / REDDIG Coordination Meeting)

DIAGRAM OF A PROPOSAL FOR THE MEVA II / REDDIG INTEGRATION

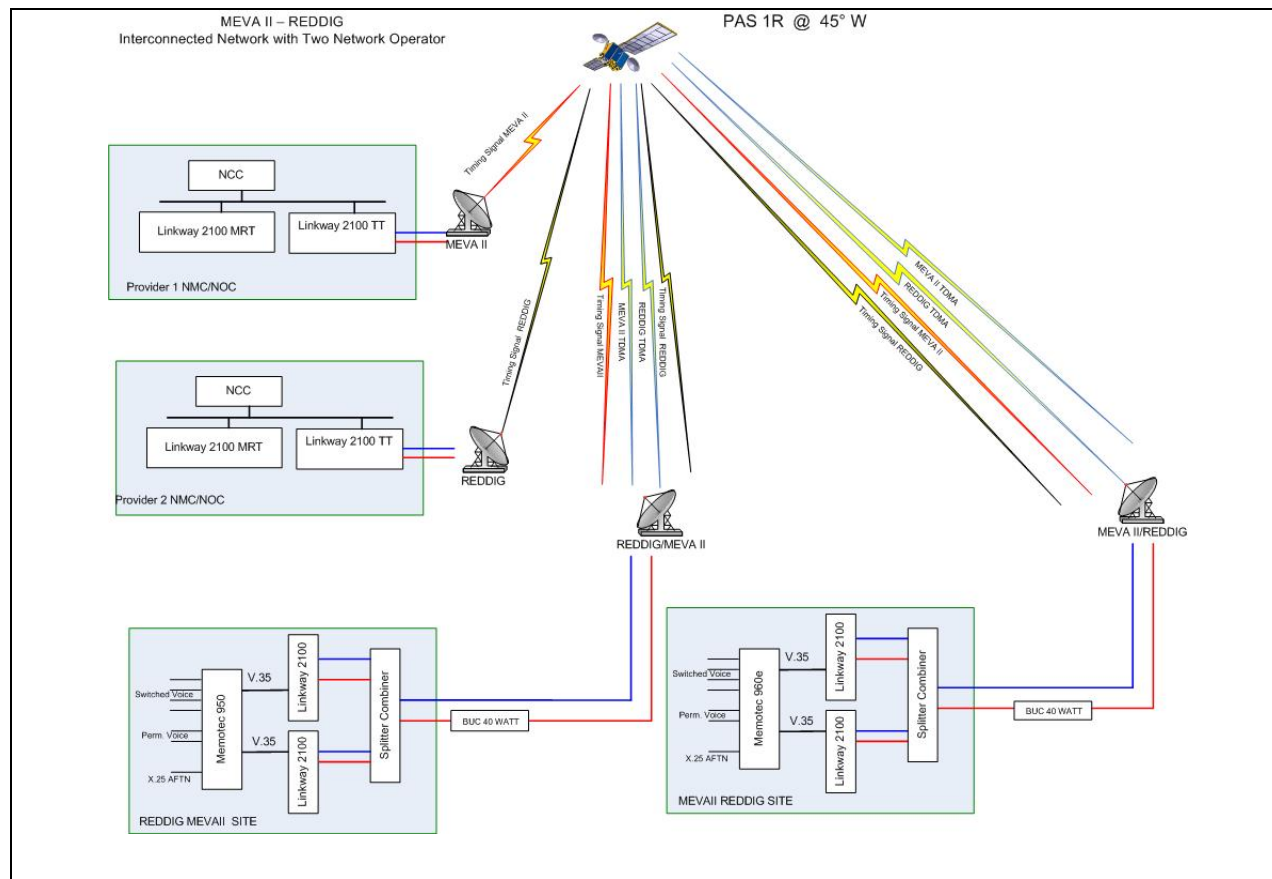


Diagram 3 – MEVA II – REDDIG interconnected with two Network Operators

APPENDIX F

(Appendix 3D to the report of the MEVA II / REDDIG Coordination Meeting)

PRELIMINARY MEMORANDUM OF UNDERSTANDING AND TECHNICAL- OPERATIONAL COOPERATIVE AGREEMENT FOR THE ESTABLISHMENT OF THE INTEGRATION / INTERCONNECTION / INTEROPERABILITY OF MEVA II AND REDDIG NETWORKS

SECTION 1. INTRODUCTION AND PURPOSE OF THIS DOCUMENT

1. INTRODUCTION

1.1.1 The MEVA and the REDDIG Networks Organizations, in order to improve the efficiency of air traffic communications in the Caribbean and South American (CAR/SAM) regions, decided to establish this Memorandum of Understanding (MOU) and Technical Cooperative Agreement (TCA). This Agreement is being established jointly under coordination of the ICAO North American, Central American, and Caribbean (NACC) Office in Mexico City and the ICAO South American (SAM) Office, in Lima, Peru.

1.1.2 The goal of this MOU/TCA is to foster communications, planning, coordination, and development between the MEVA II (updating of the MEVA network) and the REDDIG network organizations that will lead to a homogeneous integration network environment or to interconnection of the MEVA II and REDDIG networks in the CAR/SAM Regions, in accordance with option No. 1 or No. 2 to be elected, in a timely and mutually beneficial manner.

1.2 PURPOSE

1.2.1 The purpose of this document is to establish a general set of goals and objectives for use by the stakeholders in the MEVA II and REDDIG Networks that can be used to further develop the work that needs to be accomplished by the participating parties of the Agreement.

1.2.2 This MOU/TCA is a living document subject to refinements or modifications, from time to time, as needed by either party to this Agreement. Members of the MEVA and REDDIG networks will convene, as necessary and at locations to be mutually agreed upon, to review and revise or amend the details of the Agreement. Revised versions of this Agreement, or paragraph changes, will be coordinated and distributed by the ICAO NACC and SAM Offices to the signatory parties of the Agreement as appropriate.

1.2.3 This MOU/TCA document establishes the following process:

- The holding of meetings and engaging in discussions between the organizations to identify the requirements and preferred technical solution(s), alternatives, and options for achieving integration/interconnection of the MEVA II and REDDIG VSAT networks via a common satellite.
- The exchange of memoranda, technical reports and documentation, program plans and schedules between the Network Organizations, as may become necessary, to assure the successful and timely completion of these efforts.

- Technical coordination with satellite service providers, equipment manufacturers, and others involved in the MEVA II and REDDIG Networks, as necessary.
- Planning and technical coordination and development participating member States/International Organizations/Territories of the MEVA II and REDDIG Networks.

1.2.4 The main body of this document consists of four (4) sections and an Appendix. The content of the sections and appendices is summarized below.

Section 1.0	Presents a brief overview and statement of purpose.
Section 2.0	Provides an explanation of the Technical Cooperative Agreement process.
Section 3.0	Describes the technical terms of reference.
Section 4.0	Describes the financial responsibilities of the parties to this agreement.
Appendix A	A list of reference documents used in support of this Agreement.

SECTION 2. THE TECHNICAL COOPERATIVE AGREEMENT PROCESS

2. RELATIONSHIPS AND RESPONSIBILITIES OF THE PARTIES

2.1 The RAN CAR/SAM III and GREPECAS Meeting identified the need to integrate and/or interconnect their digital regional networks. In order to achieve this objective in a timely and mutually beneficial way, the parties to this Agreement recognize the need to coordinate their actions and provide current, relevant technical information to one another. The parties also recognize the need to develop a common technical solution for integrating and/or interconnecting their respective networks with one another that will not negatively impact the planned operation, performance, or management of the other network.

2.2 ICAO NACC and SAM Regional Offices will coordinate technical meetings as needed.

SECTION 3. TECHNICAL TERMS OF REFERENCE

3. TECHNICAL TERMS OF REFERENCE

3.1 Both the MEVA II and REDDIG networks have expressed a mutual interest in establishing the integration and/or interconnection of their respective satellite communication networks in such a way that it will provide the capability for achieving voice, data (AFTN, future ATN services and others) communications interconnectivity between designated service points within these networks in support of Aeronautical Communications in the CAR/SAM regions.

3.2 Interconnection objectives and technical operational principles are described under the Appendix.

3.3 MEVA II network, when fully implemented, will be capable of providing, as does REDDIG, highly bandwidth efficient voice and data communications connectivity between any two or more VSAT ground earth stations in the coverage area of the PAS-1R satellite while using a single satellite hop. The MEVA II system is expected to include other technical refinements that are expected to result in increased communications reliability and operational efficiency, and lowered operating cost to the MEVA States.

SECTION 4. RESPONSIBILITIES OF THE NETWORK PARTIES

4.1 MEVA II - REDDIG networks under this Agreement will, as individual organizations, be responsible for any direct or indirect expenses or financial obligations incurred in connection with the work they expect to perform under this Agreement. This includes, for example, travel and lodging expenses, hosting meetings, administrative expenses, publishing and distributing documents and memoranda.

4.2 The parties to this Agreement understand that they will not commit to any agreements or contracts with vendors or service providers that will result in a financial obligation to the other party, without first obtaining an Agreement in writing with the other party to this Agreement.

NOTES:

The term "MEVA", as used in this document, refers to the VSAT satellite communications network currently providing voice, data, and AFTN telecommunications services to the FAA in the United States and to CAA users at AFS facilities in the States, International Organizations, and Territories of the Central Caribbean region.

The term "MEVA II", as used in this document, refers to the next generation of VSAT satellite communications network that is presently in the requirements definition and planning stages of development, and which will eventually replace the present MEVA network.

The term "REDDIG", as used in this document, refers to the VSAT satellite communications network presently being implemented in the South American region by a technical cooperation project coordinated by the ICAO Lima Office.

APPENDIX G

(Appendix 4A to the Report of the MEVA II / REDDIG Coordination Meeting)

REDDIG INSTITUTIONAL ARRANGEMENTS

Operation and maintenance

1. The network users, i.e. the States, are currently using the facility and are responsible for the operation and maintenance of the nodes implemented in their respective State. States are receiving support from the network control centre (NCC) under the responsibility of ICAO.

Management

2. The management of the network is under ICAO's charge, through RLA/03/901 technical cooperation project, until a definite organism to handle this is decided upon. Within this project, a satellite segment has been hired for a five-year period. The network control centre (NCC) supports the operation and maintenance of the network providing guidance to States and acts, if necessary and in coordination with States, on the parameters of the network's configuration.

Control

3. Even though the NCC has control over the network, its control is finally under the decision of user States, as owners of the system.

Ownership

4. States are owners of the system and share common resources (management, satellite segment, spare parts, support services).

Economical/financial aspects

5. The administration of all the system is momentarily under the responsibility of ICAO and its operation is financed through funds that States provide ICAO to that end, through RLA/03/901 project.

Sovereignty

6. The management and operation of REDDIG would not be affecting Status sovereignty.

Service accessibility and continuity

7. States have access to services that of common agreement have been coordinated to be implemented. The continuity of the services is guaranteed within the design parameters and system topology, and States have (through ICAO) total control of the network.

Civil responsibility

8. Legal aspects on the use of the satellite segment have been agreed with PanamSat through the respective contract with ICAO. In this contract, there is an indemnity clause (to PanamSat) for undue use of the network. In view that ICAO only acts as facilitator, and States are the real users and operators of the services, this responsibility is of the States.

Legal responsibility

9. The hiring, purchasing and arranging of goods is carried out within the frame of RLA/03/901 project document, or by each State, in correspondence with its node ownership (purchasing of spare parts, training, personnel hiring).

Pending aspect

10. The most important subject pending in REDDIG is the definition and establishment of an organism for the management and operation of the system. This study will be carried out within RLA/03/901 project and will be presented for States' approval.

11. Until there is no definition and establishment of an organism for the management and operation of REDDIG, same will continue being carried out through ICAO. The eighth meeting of the REDDIG Coordination Committee, upon analyzing this matter, established Conclusion 8/8 – *Administration of REDDIG*, which agreed that ICAO will continue with REDDIG administration for an additional two-year period (15 October 2005 to 15 October 2007).

APPENDIX H

(Appendix 4B to the report of the MEVA II / REDDIG Coordination Meeting)

MEVA II INSTITUTIONAL ARRANGEMENTS

1. A document of agreement was established for MEVA network, entitled “*Document of agreement on the joint participation, administration and provision of services of the second generation aeronautical telecommunications VSAT satellite network*” for MEVA II, through which the aeronautical administrations members of the network select a “service provider” and establish bilateral contracts with said provider, with an option to be owner of the equipment and have total or partial responsibility for the maintenance of the node; in addition, each of the network members is responsible for the payment of costs related with participation and use of the network. Also, there is the option of establishing contracts for the rent of equipment and services, including maintenance.
2. The agreement is flexible, so that within the rights and conditions to participate in the network, there is an equipment and service contract which the parties can sign with the provider, for the purchasing, installation, trial, operation and maintenance of the equipment required for participating in the network. This contract is in conformity with the document of agreement, and, as possible, the general parts applied to the whole network are standard to all parties; nevertheless, some differences can be required to accommodate the variations in existing equipment, competence and capacity to be found in the various parties. Hence, the equipment is technically maintained in accordance with the option chosen.
3. With the aim of aiding in the coordination of technical aspects on operation and administration of the network, a MEVA Technical Management Group (TMG) was established, composed by representatives from member States/Territories/International Organizations, which counts with a Coordinator.

APPENDIX I

(Appendix 4C to the Report of the MEVA II / REDDIG Coordination Meeting)

PRELIMINARY PROPOSAL OF INSTITUTIONAL ASPECTS FOR THE ESTABLISHMENT OF A HOMOGENEOUS INTEGRATION/INTERCONNECTION BETWEEN MEVA II AND REDDIG NETWORKS

1. To implement a homogeneous MEVA II / REDDIG integration, it is necessary to analyze technical-operational aspects, ownership aspects, technical-operational management, and financial aspects.

Technical-operational aspects

2. Technical-operational aspects for a homogeneous MEVA II / REDDIG interconnection are described in MEVA II/REDDIG-WP/03, pertaining to Agenda Item 3: MEVA II / REDDIG homogeneous interconnection / interoperation technical feasibility study.

Ownership aspects

3. Regarding equipment ownership, this paper provides a description in the section regarding REDDIG and MEVA II institutional aspects. If “homogeneous integration” is selected, the Meeting should make proposals of arrangements to accommodate the various ownership aspects between the networks.

Technical-operational management

4. MEVA II and REDDIG networks would, in an integrated or independent manner, be responsible for the operation, maintenance, management and control of the circuits between nodes.

5. Each network control centre (NCC) would be responsible for the coordination and establishment of interconnection circuits between networks.

6. For the synchronism of the MEVA II / REDDIG homogeneous network, it would be necessary to establish one carrier, controlled either from the REDDIG or the MEVA II NCC. Taking into consideration that the establishment of an only carrier for the synchronism of the networks is technically possible, the management for its operation would have to be studied upon. This synchronism carrier could be controlled by the REDDIG NCC, with the MEVA II NCC as alternate, or vice-versa. In addition, a rotation system between the MEVA II and REDDIG NCC to carry out this operation could be considered upon.

Financial aspects

7. Taking into account that the technical-operational management of MEVA II and REDDIG is carried out by different entities; on the one hand, a communications services provider (AGS - - Americom Government Service) and, on the other, through an ICAO technical cooperation project (RLA/03/901), the Meeting would have to analyze the costs necessary for the homogeneous interconnection of both networks, as well as safety-related matters.

8. One of the aspects to be considered is whether the management of the synchronism carrier will have a cost, especially when it is being carried out by the MEVA II NCC, administrated by a private communications services provider.

9. As regards costs for the use of inter-network circuits, each NCC would have to separately account the consumption corresponding to the associated nodes. In addition, taking into consideration that for inter-network interconnection it would be necessary to determine an additional number of carriers, MEVA II and REDDIG administrators would have to coordinate the costs of the band width use with Panamsat.