



**Agenda Item 3: Analysis of future requirements / services for the implementation of the
MEVA II / REDDIG interconnection**

**FUTURE SERVICES REQUIREMENTS AND CONSIDERATIONS FOR THE CONTINUITY
AND KEEPING OF OPERATIONS IN THE MEVA II / REDDIG NETWORKS
INTERCONNECTION**

SUMMARY

This working paper presents an analysis of future services requirements in the MEVA II / REDDIG interconnection, as well as considerations foreseen for the continuity and keeping of the services in the MEVA II / REDDIG interconnection.

References:

- CAR/SAM Regional Air Navigation Plan, Volume II - FASID;
- Report of the second MEVA II / REDDIG coordination meeting (MR/2) (Lima, Peru, 20-22 March 2006);
- Report of the twelfth meeting of the REDDIG coordination committee (RCC/12) (Lima, Peru, 9-10 March 2009); y
- Report of the nineteenth meeting of the MEVA Technical Management Group (Mexico City, Mexico, 26-28 February 2008).

1. Background

1.1 The identification of the need to install regional digital networks with a high availability permitting the implementation of voice and data fixed aeronautical services specified in the CAR/SAM Air Navigation Plan, Volume II – FASID, led to the implementation of important digital networks in the CAR/SAM Regions, such as the MEVA/MEVA II and REDDIG networks.

1.2 The MEVA II and REDDIG networks were implemented under a same technology, with the aim of facilitating the implementation of voice and data aeronautical fixed services among the CAR, NAM and SAM States. To this end, six MEVA II / REDDIG coordination meetings and three MEVA II / REDDIG Task Force meetings have been held for the coordination, planning and implementation of the MEVA II and REDDIG interconnection.

1.3 The initial voice and data services to be implemented in the MEVA II / REDDIG interconnection were analyzed during the second MEVA II / REDDIG coordination (MR/2), presented in the Appendix to WP/06 of this coordination meeting.

1.4 The following five years, as of the date of the MEVA II / REDDIG interconnection, it is expected that both the MEVA II and the REDDIG network continue operating under the following technical operational aspects:

- a) full mesh network topology;
- b) TDMA/Frame Relay satellite access;
- c) Use of IS IR satellite transponder with a beam directed over United States / Latin America and migration to IS 14 satellite;
- d) C band operation frequency; and
- e) co-lineal vertical polarization.

1.5 In addition, during the five-year period established for MEVA II / REDDIG interconnection, upon installation of new equipment, a new software version, or any HW/SW change, will have to be compatible with the equipment installed in the MEVA II and REDDIG nodes.

2. Analysis

Future services to be taken under consideration at MEVA II / REDDIG

2.1 In the CAR/SAM Regions, it is expected that in the next years most States/Territories/International organization make progress in the implementation of the aeronautical telecommunications network (ATN), particularly in the ground-ground applications such as the AMHS systems, that the surveillance coverage is widened and improved, and that the systems control data processing capacity also progress, such as the automation systems in the ACC (radar data, meteorological data, operational coordinations, flight plans, etc.).

2.2 As regards the AMHS systems implementation in the States/Territories and International Organization involved in the MEVA II / REDDIG interconnection, in 2010 Brazil, Colombia, Panama, Peru, United States and Venezuela will have the AMHS Systems implemented. The interconnection of these AMHS systems, in accordance to CAR/SAM FASID Table CNS 1Bb, will be made through MEVA II / REDDIG.

2.3 The implementation of the new radar systems and the improvement of these coverages, specifically in the areas common to various States/Territories/International Organization, will encourage the convenience of sharing/exchanging adjacent radar data, as could be the case of Netherlands Antilles-Venezuela, COCESNA-Colombia and Colombia-Panama information.

2.4 With the increase of automated systems in the ACCs and ATS units in the CAR/SAM Regions, the implementation of automatic data transfers will be required, such as flight plans and radar data between adjacent ACCs.

2.5 Taking into account the afore indicated, new circuits should be implemented in MEVA II/REDDIG. The implementation of these new circuits will entail a greater use of the MEVA II and REDDIG networks' bandwidth, becoming it necessary that both the REDDIG Administration and the MEVA II Service Provider (AGS), develop a bandwidth requirement study for the next five years. In this respect, the MEVA II and REDDIG administrations have started to analyze the necessary considerations and preparatory activities to meet these future requirements.

2.6 The nineteenth meeting of the MEVA Technical Management Group (TMG/19) started the analysis of future new network requirements and has considered continuing with this analysis together with the MEVA II Service Provider, at MEVA TMG/20 meeting. Also, as a contractual aspect with the MEVA II Service Provider, the latter has guaranteed bandwidth availability to meet the growth in services at the current MEVA II network.

2.7 In view of the implementation of new services, the twelfth meeting of the REDDIG coordination committee (RCC/12) established an ad-hoc group composed by Argentina, Brazil and the REDDIG Administration, with the purpose of carrying out a study to determine the bandwidth increase necessary in REDDIG. The complete result of this study are expected for mid-2009.

2.8 Independently of the results from the studies to be carried out by the ad-hoc group, the REDDIG RCC/12 meeting approved the inclusion in the REDDIG's 2010 budget of an initial 0.875 Mhz bandwidth increase to be able to take the carrier from a 0.625Msym/sec to 1.25Msym/sec transmission speed. In this manner, REDDIG will have three 1.25MSym/sec carriers by 2010.

2.9 In this respect, the Meeting should examine and complete the list on new services requirements, taking into account the proposal in the **Appendix** to this working paper, and request the MEVA II Service Provider, as well as the REDDIG Administration, to evaluate the economical and technical aspects necessary for the implementation of the new services.

2.10 Also, the Meeting should start analyzing the additional bandwidth requirement in MEVA II and REDDIG, with the aim of guaranteeing the provision of these services.

Considerations to maintain the continuity and keeping of the services in the MEVA II / REDDIG interconnection

Current situation of the MODEM and FRAD equipment

2.11 The equipment of a MEVA II and REDDIG node is basically composed by the Linkway 2100 satellite MODEM, the CX950/960e Memotec bandbase equipment, the transmission amplifier, a low-noise receiver amplifier, and an antenna.

2.12 The REDDIG RCC/12 meeting, upon analyzing the current situation of the REDDIG equipment, observed that the CX 950/CX 960e Memotec equipment, as well as the 2100 modem equipment, would no longer be commercially available as of this year. A similar analysis will be made as part of the agenda items to deal with at the next MEVA TMG/20 meeting, 8-9 June 2009.

2.13 The new Memotec bandbase equipment models, as well as the Viasat Modem, are not inter-operable with the bandbase and MODEM equipment currently installed in REDDIG and MEVA II.

2.14 The Linkway 2100 modem is incompatible with the new Modem S2 equipment, becoming it necessary to compatibilize both equipment and update the Linkway 2100 modem software.

2.15 To this end, with the aim of using the current version of the Memotec bandbase equipment, as well as the Linkway 2100 model, the REDDIG Administration has decided to purchase a lot of spare parts to permit REDDIG operating for an initial minimum three-year period. In the event that the technology change occurs within the three-year period, the REDDIG Administration will have to update the Modem software installed in Tegucigalpa, Honduras, or install a new MODEM equipment in order to keep the MEVA II / REDDIG interconnection.

2.16 Also, if the MEVA II Service Provider decides to change the Linkway 2100 modem for a new S2 modem, within the next five years it will have to update the MODEM equipment software to be installed in Caracas and Bogotá, or install new MODEM equipment at said sites.

2.17 Taking into account the above indicated, both the REDDIG Administration and the MEVA II Service Provider must guarantee the continuity of the services provided by the interconnection of the MEVA II / REDDIG networks.

REDDIG management by the RMO

2.18 By 2011, it is expected that the current management of REDDIG, carried out through an ICAO technical cooperation project, will end and that the REDDIG management passes over to a Regional Multinational Organization (RMO). In the event this happens, the agreement signed between ICAO and COCESNA for MEVA II / REDDIG interconnection, should be assumed by the RMO.

2.19 Also, the MoU signed by all REDDIG member States will be maintained once the REDDIG Management is under the Management of the RMO.

3. Action suggested

3.1 The Meeting is invited to:

- a) Take note of the information provided;
- b) Analyze the implementation of new services foreseen in the MEVA II and REDDIG networks interconnection, and examine and complete a list of new services required, taking into account the proposal in the Appendix to this working paper;
- c) Analyze the impact of the unavailability of the current Linway 2100 equipment as of 2009, and the measures to take to guarantee a five-year interconnection;

- d) Analyze the change of the REDDIG Management from ICAO to the RMO, with the aim of guaranteeing the continuity of MEVA II / REDDIG Networks interconnection operations; and
- e) Analyze any other considerations in this regard, that the Meeting might consider necessary.

APPENDIX**FUTURE INITIAL FRAME RELAY CIRCUIT REQUIREMENTS AT MEVA II AND REDDIG NETWORKS**

SITE	FRAME RELAY CIRCUIT	AMOUNT
From Caracas (Venezuela) to:		
Curacao	64Kbits/sec duplex AMHS data channel	1
	9.6 Kbps-16 Kbps duplex radar data channel	1
Aruba	9.6 Kbps-16 Kbps duplex radar data channel	1
Puerto Rico	64Kbits/sec duplex AMHS data channel	1
From Bogota (Colombia) to:		
Curacao	9.6 Kbps-16 Kbps duplex radar data channel	1
Aruba	9.6 Kbps-16 Kbps duplex radar data channel	1
Panama	64Kbits/sec duplex AMHS data channel	1
	9.6Kbits/sec duplex radar data channel	1
COCESNA	9.6 Kbps-16 Kbps duplex radar data channel	2
Miami	64Kbits/sec duplex AMHS data channel	2*
From COCESNA to:		
Ecuador		
Bogota	9.6 Kbps-16 Kbps duplex radar data channel	2

- END/FIN -

* Both circuits correspond to the AMHS circuits:
 Lima (Peru) - Atlanta (USA)
 Brasilia (Brazil) - Atlanta (USA)