

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
SOUTH AMERICAN REGIONAL OFFICE**

**Second Meeting of the Informal Coordination Group of the East
Caribbean and North Eastern South American**

(Caracas, Venezuela, 1 to 5 December 2003)

Agenda Item 2: Review of CNS matters

b) Review of matters related with AFS (Aeronautical Fixed Service) System

**REVIEW OF THE IMPLEMENTATION OF REGIONAL DIGITAL NETWORKS AND THEIR
INTER-CONNECTION FOR THE AERONAUTICAL FIXED SERVICE**

(presented by the Secretariat)

Summary

This working paper provides a brief description of VSAT based digital networks, such as the MEVA and REDDIG networks, as well as the E-CAR optic fibre ground network. Likewise, it informs on the progress made regarding digital network interconnection, and on the studies foreseen for said interconnection.

References:

- CNS/CAR/SAM 01/00 informal meeting report (Mexico, 26 to 29 June 2000); and
- Informe GREPECAS 10 (Las Palmas, Canary Islands, 23 to 27 October 2001).

1. Background

1.1 In the Subregion under analysis, there are three digital networks implemented, the E-CAR, MEVA and the South American Digital network (REDDIG). These networks support all fixed communications services (AFTN and ATS speech circuits) specified in the FASID document but, in addition, are capable of supporting other voice and data services.

1.2 The E-CAR network is a digital ground network implemented on optical fibre cable covering all countries/territories in the Eastern Caribbean (Antigua, Barbados, Barbuda, Dominica, Grenada, Guadalupe, Martinica, Montserrat, Puerto Rico, St. Kitts, St. Lucia, St. Maarten, St. Thomas, St. Vincent, Tortola and Trinidad & Tobago,) and Venezuela. **Appendix A** shows a diagramme of this network.

1.3 The MEVA network (Improvements to the ATS voice link) is a VSAT network with SCPC/DAMA-PAMA satellite access implemented mainly to support AFTN data and ATS speech services in the Central Caribbean (Aruba, Cayman Islands, Cuba, Curacao, Dominican Republic, Haiti, Jamaica and Puerto Rico) and Central America (Honduras and Panama). **Appendix B** shows a diagramme of this network.

1.4 The REDDIG network, which became operational at the end of September 2003, is a multiservice and multiprotocol VSAT network with TDMA satellite access (see **Appendix C**) between 13 SAM States (Argentina, Bolivia, Brazil, Chile, Colombia, Guyana, French Guiana, Ecuador, Paraguay, Peru, Suriname, Uruguay and Venezuela).

1.5 In the Subregion under analysis, the interconnection of these networks will permit to increase the availability of the current fixed comunicaciones systems and, at the same time, facilitate the implementation of additional services such as radar data exchange and the initial transition phase towards the ATN internetwork.

2. **Analysis**

Piarco ACC connection with Georgetown, Maiquetía, Paramaribo and Rochambeau ACCs

2.1 During the First CNS-CAR/SAM 01/00 Informal Meeting held in México from 26 to 29 June 2000, solutions were formulated with the aim of improving the ATS speech requirements between the Piarco ACC with the Georgetown, Maiquetía, Paramaribo and Rochambeau ACCs, as well as the coordinations between Curacao and Maiquetía.

2.2 Therefore, to propose solutions to the problem in the current communications means used for ATS coordinations between the referred ACCs, this first meeting formulated interconnection proposals using the digital communication networks indicated in the introductory section of this paper.

2.3 To satisfy voice requirements between Piarco ACC with the Georgetown, Maiquetía, Paramaribo and Rochambeau ACCs and increase availability, the configuration in **Appendix D** was proposed. Maiquetía, being an entry/exit point of the E-CAR network, as a multiplexor node connected through a 64Kbits dedicated line (optic fibre) with another similar multiplexor node in San Juan, Puerto Rico. Likewise, the Maiquetia multiplexor node has the physical capacity of communicating with another multiplexor node, in this case the E-CAR Piarco multiplexor node.

2.4 For the Maiquetía/Piarco connection to be effective, a 64 Kbits/sec ground digital circuit is required to be implemented. In this respect, during the CAR/SAM AIS/ATM/CNS Informal Meeting (Cayenne, 27 to 29 March 2001) Conclusion 1/15 (Implementation of a Maiquetia/Piarco digital circuit) was formulated. Therefore, the meeting would appreciate being informed by the States involved on the progress in the implementation of this circuit.

2.5 Being Maquetía a REDDIG node also, all communications to Piarco from Paramaribo, Rochambeau and Georgetown would converge in Maiquetía via REDDIG. The Maiquetia REDDIG Node (FRAD switch) should be provided with a communications channel with the E-CAR multiplexor node, also in Maiquetia, to route the communications to Piarco via the E-CAR network. In this manner, the functionality of two networks would be taken advantage of to solve the communications problems between both aforementioned States.

2.6 For the interconnection of the E-CAR and REDDIG networks, technical aspects related to signalling, code number conversion, and other necessary interphase elements are still to be defined.

2.7 All these elements will be analyzed during the forthcoming second CAR/SAM 01/02 CNS informal meeting on interconnection of regional digital networks (internetwork) to be held in Lima, from 12 to 14 August 2002.

Maiquetía CC – Curacao ACC connection

2.8 The increase of communications availability and capacity between Maiquetía ACC and Curacao ACC can be implemented through a connection between the MEVA network node in San Juan (Puerto Rico) and the E-CAR node, also in San Juan. For the Maiquetia-San Juan connection, the current would be used (**Appendix E**). The signaling, numbering and other technical aspects for the interconnection of these networks will be thoroughly analyzed in the afore-referred informal meeting.

2.9 Likewise, it would be important for the meeting to be aware of the status of operation of the E-CAR network, as well as its future implementation plans.

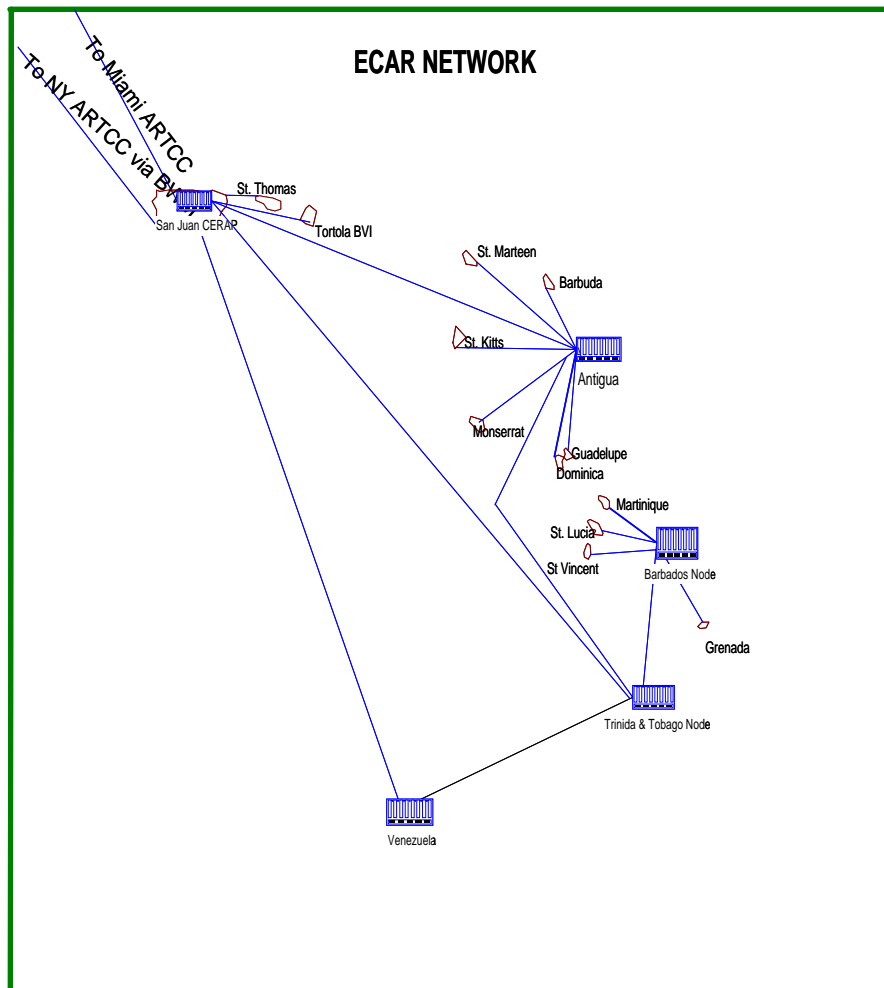
3. Action suggested

3.1 The meeting is invited to:

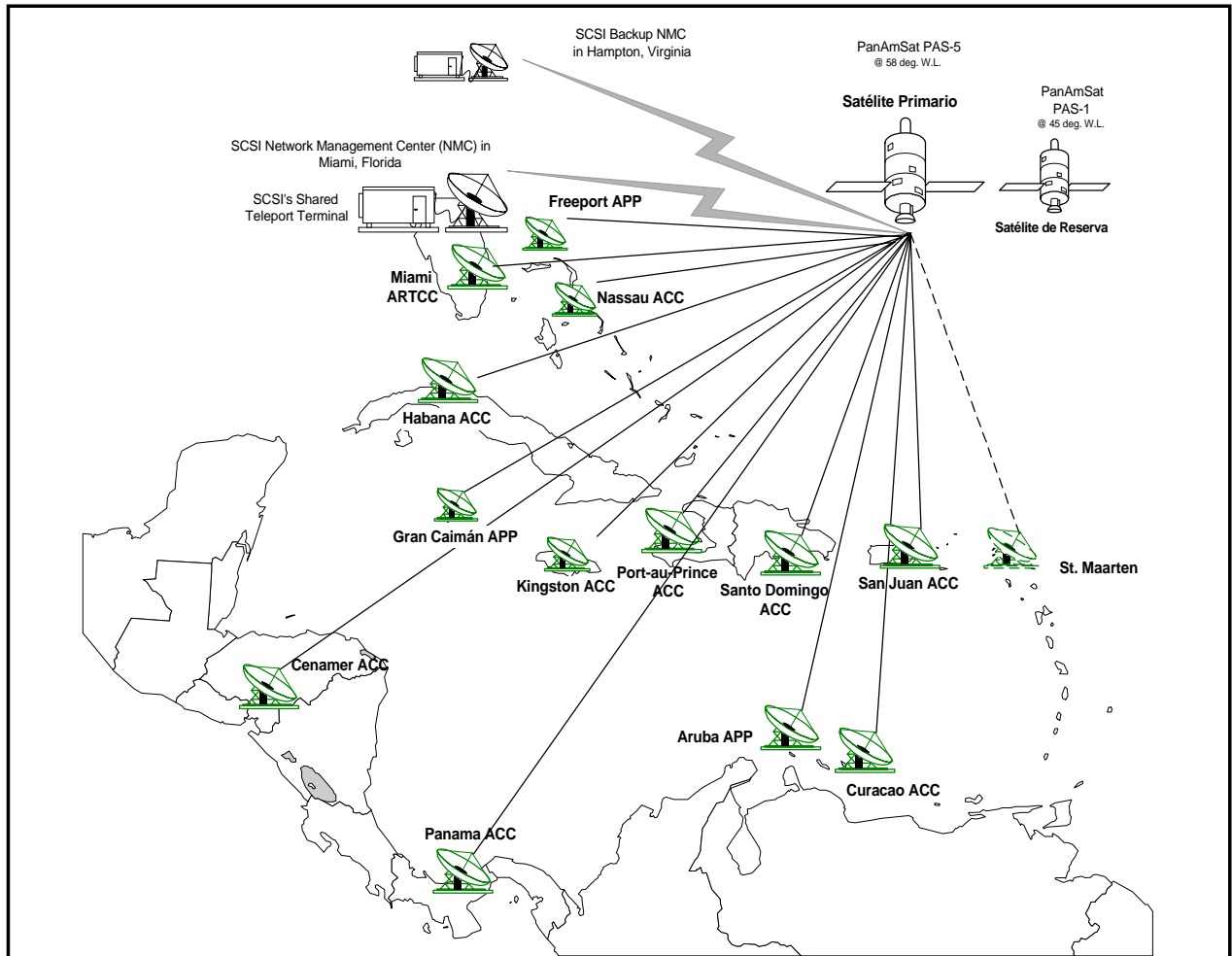
- a) Take note of the information presented in this working paper;
- b) Examine the interconnections in Appendices D and E; and
- c) Inform on the status of implementation of CAR/SAM AIS/ATM/CNS 02/00 Conclusion 1/15.

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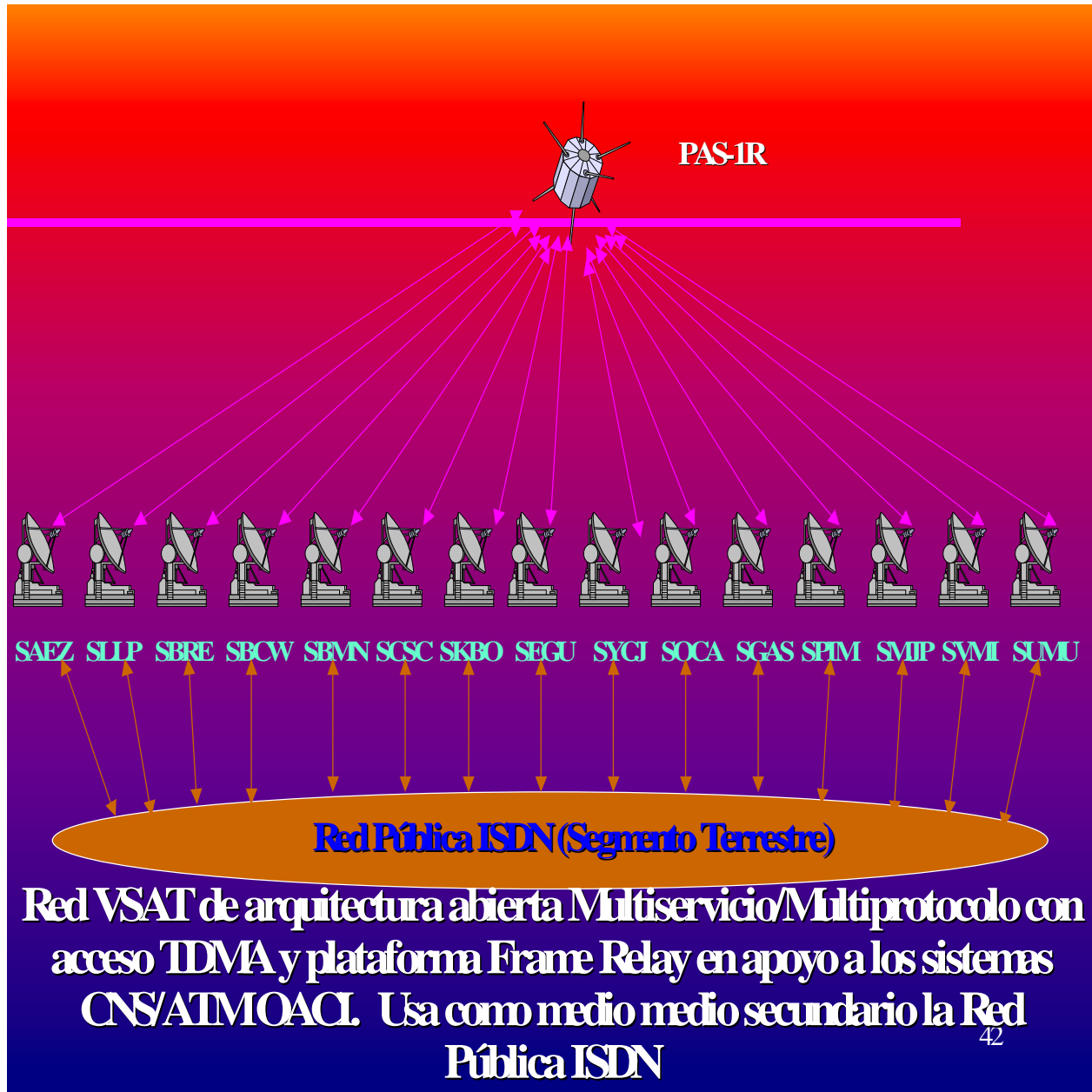
APPENDIX/APENDICE A
E-CAR CONFIGURATION
CONFIGURACIÓN DE LA E-CAR



APPENDIX/APENDICE B
MEVA CONFIGURATION
CONFIGURACIÓN DE LA MEVA



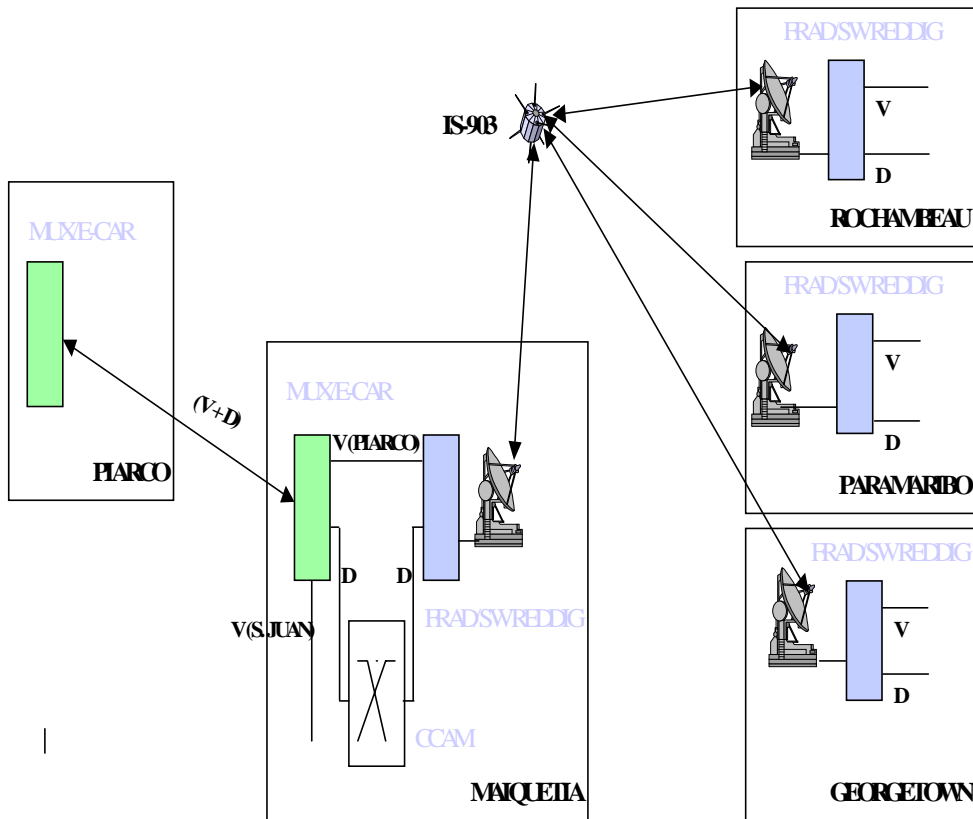
APPENDIX/APENDICE C
REDDIG CONFIGURATION
CONFIGURACIÓN REDDIG



APPENDIX D/APENDICE D

CONNECTION OF PIARCO ACC WITH GEORGETOWN, MAIQUETÍA, PAMARIBO AND
ROCHAMBEAU ACCS
CONEXIÓN ACC PIARCO CON LOS ACCS DE GEORGETOWN, MAIQUETÍA,
PARAMARIBO Y ROCHAMBEAU.

REDDIG-MEVA INTERCONNECTION
INTERCONEXIÓN REDDIG- MEVA



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APPENDIX/APENDICE E

MAIQUETÍA AND SAN JUAN CONNECTION
CONEXIÓN MAIQUETÍA Y SAN JUAN

