Agenda Item 2: Review of CNS matters

Review of the conclusions formulated by the CAR/SAM AIS/ATM/CNS 02/00 Informal Meeting

2.1 The meeting examined the eight conclusions in the CNS area formulated by the First CAR/SAM AIS/ATM/CNS 02/00 Informal Meeting, in order to determine whether they were still effective, needed redrafting or had been finalised. **Appendix A** to this part of the report shows the results of this analysis, together with effective and redrafted conclusions.

2.2 The meeting considered that Conclusion 1/16 (Economic contribution to the REDDIG) had been finalised, since all the States had made the corresponding economic contributions to Project RLA/98/019 for the implementation of the South American digital network. The meeting also noted that Project RLA/98/019 had been completed, but that a new project (RLA/03/901) was already under way for the management, planning and maintenance of the network.

2.3 Likewise, the meeting considered that Conclusion 1/21 (Use of the priority alarm in AFTN distress messages) had been completed, since AFTN message switching centres in the Sub-region, when sending AFTN distress messages, distress traffic and emergency messages that were considered of maximum priority (SS), met the requirements of Annex 10, Volume II, Sections 4.4.4.3 and 4.4.4.5 (lack of a line shift signal following the priority alarm).

2.4 Furthermore, upon analysing Conclusion 1/19 (Information requirements) in which the States of the Sub-region were requested to provide information about radar surveillance implementation plans, 24-bit aircraft address allocation plans, radio aid implementation plans, and national radio aid flight testing programmes, the delegates present at the meeting provided the respective information, which is contained in **Appendix B** to this part of the report. Regarding the missing information, the Secretariat would invite the States concerned to complete the information contained in Appendix B and send it to the respective Regional Offices. Consequently, considering the information provided to date, the meeting felt that this conclusion had been concluded.

2.5 Furthermore, when reviewing the status of implementation of Conclusion 1/15 (Implementation of a Maiquetía-Piarco digital circuit), the meeting considered that it would be redrafted under Conclusion 2/10.

2.6 The meeting felt that the remaining conclusions in the CNS area—Conclusion 1/14 (Improvement of Guyana AFTN Centre), Conclusion 1/17 (Implementation of VHF speech channels and coverage analysis), Conclusion 1/18 (Implementation of HF speech channels) and Conclusion 1/20 (Radar data sharing)—remained effective since they had not been fully implemented.

AERONAUTICAL FIXED SERVICE

Digital networks in the Sub-region

2.7 The meeting took note of the current status of the digital networks implemented in the Sub-region, as described below.

E-CAR digital network

2.7.1 It is foreseen that, for the first quarter of 2004, there will be a new provider of communication services for managing the E-CAR network (Cable & Wireless West Indies Limited). The new provider will update the current configuration so as to align it with other international networks in Frame Relay. The update will involve the replacement of the multiplexers in each node with routers. The routers with the associated Frame Relay devices will, in a first instance, provide encapsulation of X.25, changing to IP when so required. ATS speech circuits will transmit voice over Frame Relay. The following States form part of the East Caribbean network: Puerto Rico, Trinidad and Tobago, Barbados, Antigua, Anguilla, Saint Marteen, France (Guadaloupe, Martinique), Saint Kitts and Nevis, Dominica, Saint Lucia, Saint Vincent and Grenada.

MEVA network

2.7.2 It is foreseen that, by mid December 2003, a tender process will begin for the implementation of the new digital VSAT-based satellite communications network (MEVA II), which will replace the current digital VSAT station-based network (MEVA). The MEVA II network will be implemented as an open, multiservice/multiprotocol ATN-compatible Frame Relay-based network that will use VSAT technology as physical medium, with Full Mesh TDMA access. This configuration will replace the current SCPC/PAMA/DAMA access-based MEVA. Initially, the MEVA II network will operate at the same locations as the MEVA in the Central Caribbean and Central America (Jamaica, Cuba, Cayman Islands, Haiti, Puerto Rico, Panama and Honduras).

REDDIG

2.7.3 The REDDIG digital network, with nodes in all of the South American States, is an open, multiservice/multiprotocol, ATN-compatible, Frame Relay-based network, which uses Full Mesh TDMA-access VSAT technology as primary physical medium, and ISDN circuits, dedicated digital circuits (V35), and IP VPN circuits as physical backup. REDDIG became operational in late September 2003, with the transfer of AFTN services, ATS speech services and radar data. The implementation of the backup network and the transfer of CSTB GNSS data to the network are currently being completed.

Connection of the Piarco ACC with the ACCs of Georgetown, Maiquetía, Paramaribo and Rochambeau

2.8 The meeting took note that the First CAR/SAM AIS/ATM/CNS 02/00 Informal Meeting, in order to increase the availability of communication services between Maiquetía and Piarco, formulated Conclusion 1/15 (Implementation of a Maiquetía-Piarco digital circuit), which called for the implementation by both States of a 64-bit/sec digital circuit to replace the existing analogue circuit.

2.9 For the implementation of AFS services between the Piarco ACC and the ACCs of Georgetown, Maiquetía, Paramaribo and Rochambeau, the meeting was presented with two proposals: a 64-bit/sec land digital circuit to be implemented between Maiquetía and Piarco, and the implementation of a REDDIG node in Piarco.

2.10 In the first proposal, the meeting noted that, following the implementation and commissioning of the REDDIG, the Maiquetía node was directly connected to the Paramaribo, Rochambeau and Georgetown nodes. ATS and AFTN speech services between these locations are provided through the REDDIG. The meeting noted that AFS services from Paramaribo, Georgetown and Rochambeau to Piarco could be routed to the REDDIG node in Maiquetía. Information originating in these locations would be multiplexed in Maiquetía to the land digital circuit and de-multiplexed in Piarco, and the other way around from Piarco to Maiquetía.

2.11 In the second proposal, submitted by the delegation of Trinidad and Tobago, instead of implementing the 64-bit/sec land digital circuit between Maiquetía and Piarco, a REDDIG VSAT node would be implemented in Piarco. This would expedite communications between the aforementioned ACCs, without the need for multiplexing and de-multiplexing in Maiquetía and Piarco. Of course, the cost of this last solution would be higher for Trinidad and Tobago as compared to the previous one.

2.12 Upon analysing the two options, the meeting felt that the REDDIG VSAT node was the most suitable solution and, thus, would not consider the option of the implementation of a digital circuit between Piarco and Maiquetía.

2.13 The meeting also noted that, with the implementation of a REDDIG node in Piarco, a backup circuit would also need to be implemented in case of failure of the VSAT node in Piarco and, therefore, that possibility had to be examined.

2.14 Consequently, the meeting agreed that, for the time being, the digital circuit between Maiquetía and Piarco would not be implemented, and that Trinidad and Tobago would begin studying the possibility of implementing a REDDIG node by the last quarter of 2004. As a result, the meeting formulated the following conclusion:

Conclusion 2/10 Implementation of a REDDIG node in Trinidad and Tobago

That the aeronautical administration of Trinidad and Tobago, in order to meet AFS service requirements between the Piarco ACC and the ACCs of Georgetown, Maiquetía, Paramaribo and Rochambeau, take the necessary steps for the implementation, by the last quarter of 2004, of a REDDIG VSAT node in Piarco.

ACC connection between Maiquetía and Piarco

2.15 In this respect, the meeting considered that communications between Maiquetía and Curacao would improve once the MEVA II had been implemented. Since the configuration of the MEVA II was based on the same philosophy as the REDDIG and since they shared the same communications satellite, the connection between the two locations and between the two networks would be expedited.

2.16 The meeting was also informed that, for the last two years, the exchange of AFTN information between Curacao and Maiquetía was not being done directly but, rather, through the United States. In this regard, the meeting invited the aeronautical administrations of the Netherlands Antilles and Venezuela to coordinate as necessary to attain direct AFTN communications between Curacao and Maiquetía in the short term. In this sense, the meeting formulated the following conclusion:

Conclusion 2/11 Regular AFTN communications between Maiquetía and Curacao

That the aeronautical administrations of the Netherlands Antilles and Venezuela coordinate as necessary to attain, as soon as possible, regular AFTN communications between Curacao and Maiquetía, either directly or through the United States.

National digital networks

2.17 The meeting felt that, in order to meet the new voice and data communication requirements for air traffic services, and to facilitate the introduction of the ATN, the States of the Sub-region should start the process of implementing modern digital communication networks.

2.18 In this regard, the meeting was reminded that GREPECAS had developed a set of general principles for designing national digital networks, which take into account technical and operational aspects of the same. These general principles were examined and approved by GREPECAS/10 and appear as **Appendix C** to this part of the report.

2.19 Accordingly, the meeting formulated the following conclusion:

Conclusion 2/12 Implementation of national digital networks

That the States of the Sub-region, in order to improve the availability of national communication media for air navigation services, and meet the new voice and data communication requirements for air traffic services, and facilitate the introduction of the ATN, do their utmost in order to implement modern national digital communication networks in the short term, taking into account the general principles for the implementation of digital networks contained in Appendix C to this part of the report.

AERONAUTICAL MOBILE SERVICE

AM(R)S VHF systems

2.20 The meeting noted that, although the States of the Sub-region had implemented all of the voice channels specified in Table CNS 2A for AM(R)S VHF systems, some States had coverage problems in their FIR. **Appendix D** to this part of the report contains information about the VHF remote stations of the ACCs in the Sub-region.

2.21 In this regard, the meeting was informed that the Netherlands Antilles had no VHF coverage problems over the Curacao FIR. Likewise, the delegate of France reported that a supplementary frequency (127.2 Mhz) had been implemented for the Rochambeau ACC.

2.22 The delegate of Venezuela informed that the Strategic Planning Division of his administration had plans to implement a new A/G VHF communication system at the national level by the last quarter of 2005. Venezuela would be seeking an urgent short-term solution to the lack of coverage in the south of Venezuela.

2.23 The delegate of Trinidad and Tobago informed that there was AM(R)S VHF coverage within their FIR. Brazil also reported that there was full coverage of the upper airspace in the Sub-region and that the management system was having problems with the monitoring system and remote control of stations.

HF communication services

2.24 In this area, the meeting was informed of the action taken by the States of the Sub-region to ensure 24-hour HF availability, as required in FASID table CNS 2B.

2.25 The delegate of Brazil informed the meeting that HF equipment had been installed to provide 24-hour operation as required.

2.26 The delegate of Trinidad and Tobago informed the meeting that a new HF system with 24-hour capability would be implemented by April 2004.

2.27 The meeting considered that the States that had not yet completed the implementation of HF equipment for 24-hour operation should do so as a matter of urgency.

NAVIGATION SERVICES

2.28 The meeting noted that some States of the Sub-region had not yet implemented some of the navigation systems (NDBs) specified in FASID Table CNS 3. In this regard, it was noted that these NDBs had not been installed because VORs had already been implemented at these locations and, thus, NDBs were no longer required.

2.29 The Delegate of France informed that French Guiana has plans to renew HF receivers by 2004, and transmitters, by 2005.

2.30 The meeting considered that the States of the Sub-region that faced this problem should send a letter to the ICAO Regional Office requesting the amendment of FASID Table CNS 3. Accordingly, the meeting formulated the following conclusion:

Conclusion 2/13 Amendment to FASID Table CNS 3

That:

a) Guyana send a letter to the ICAO South American Regional Office requesting the respective amendment to FASID Table CNS 3 for the deletion of the Kato NDB from the Plan; and

b) Venezuela send a letter to the ICAO South American Regional Office requesting the respective amendment to FASID Table CNS 3 for the deletion of the Cabo Codera, Los Roques, Carúpano, Maracaibo and Porlamar NDBs from the Plan.

2.31 The meeting received information on the flight tests carried out in each of the States of the Sub-region concerning the organisation responsible for conducting the tests, testing frequency, regulations applied, and the possibility of conducting flight tests in other States. **Appendix E** to this part of the report contains information in this respect.

SURVEILLANCE SERVICE

2.32 The meeting received information about radar implementation plans in the States of the Sub-region. In this regard, the delegate of the Netherlands Antilles stated that a new radar system had been installed in Curacao. The delegates of Trinidad and Tobago and France informed they had no plans to install new radar systems. The delegate of Venezuela stated that a tender process would soon begin for the acquisition of additional (primary and secondary) radar systems, for possible implementation in late 2007. The meeting was also informed that the implementation of the Maiquetía radar system was foreseen for late 2005.

2.33 The delegate of Brazil reported that new radar systems had been installed in the Sub-region, and that the systems located in Manaus, Boa Vista, Sao Gabriel da Cachoeira, Tabatinga and Belem were being streamlined, a process foreseen to be completed by 2005. The streamlining of these systems involved the conversion of conventional secondary radars to monopulse radars and the use of the Asterix protocol.

2.34 The meeting also noted that the States of the Sub-region had implemented the surveillance systems specified in FASID Table CNS 4.

Radar data sharing

2.35 Regarding radar data sharing aspects, the meeting acknowledged the offer made by Brazil to exchange radar information with interested States, provided they did not transfer this information to other States.

2.36 The meeting considered that those States interested in exchanging radar data had to provide, first of all, coverage diagrams of the radars whose information was to be shared. It would also be necessary to study the means of communication to be used to carry the information, the possibility of implementing processing systems, as applicable, and the display systems.

2.37 The meeting noted that the protocol to be used for the exchange of radar data was Asterix, as established in Conclusion 11/47 of GREPECAS/11, which also specifies the national guidelines to be taken into account for radar data exchange.

2.38 The delegate of Brazil informed the meeting that Brazil was interested in examining the coverage of Brazilian territory by SSR secondary radars of adjacent States, in order to fill coverage gaps. In addition, Venezuela and France indicated their interest in analysing Brazil's radar coverage. Likewise, that once this coverage were analysed, Venezuela and France had interest in obtaining radar data from Brazil.

2.39 The meeting also took note of radar data exchanges between Guadalupe and Martinique and between Martinique and Saint Lucia. The meeting was also informed that radar exchange between France (Martinique and Guadalupe), Barbados, Antigua and Trinidad and Tobago was under study.

APÉNDICE A / APPENDIX A

CUADRO RESUMEN CONCLUSIONES CAR/SAM AIS/ATM/CNS 02/00
SUMMARY OF CAR/SAM AIS/ATM/CNS 02/00 CONCLUSIONS

N°Conclusión Conclusión N°	Título / Title	Estado/ State	Observaciones/ Remarks
1/14	Mejoras del centro AFTN de Guyana / Improvements in the Guyana AFTN centre	Vigente / Effective	Mejoras previstas para mediados del 2004./ Improvements foreseen for mid 2004.
1/15	Implantación de un circuito digital Maiquetía-Piarco / Implementation of a Maiquetía - Piarco digital circuit	Reformulada / Reformulated	Conclusión 2/10 - Implantación de un nodo REDDIG en Trinidad Tobago / Conclusion 2/X Implementation of a REDDIG node in Trinidad and Tobago
1/17	Implantación de canales orales VHF y análisis de cobertura / Implementation of VHF speech channels and coverage analysis	Vigente / Effective	No se ha completado en su totalidad./ Has not been fully completed.
1/18	Implantación de canales orales HF / Implementation of HF speech channels	Vigente / Effective	No se ha completado en su totalidad. / It has not been fully completed.
1/20	Compartición de datos radar / Radar data sharing	Vigente / Effective	No ha habido hasta la fecha entre los Estados de la Subregión compartición de datos radar. En el GREPECAS/11 a través de la conclusión 11/47 se recomienda el uso del protocolo Asterix como protocolo Regional para el intercambio de datos radar. / To date, no radar data sharing has taken place among thrStates of the Sub-Region. GREPECAS/11, through Conclusion 11/47, recommended the use of the Asterix protocol for regional exchange of radar data.

APÉNDICE/APPENDIX B

ESTADO/ TERRITORIO STATE/ TERRITORY	PLANES DE IMPLANTACION RADAR/ RADAR IMPLEMENTATION PLAN	PLAN DE ASIGNACION DE DIRECCIONES DE AERONAVES DE 24-BITS/ 24 BIT AIRCRAFT ADDRESS ALLOCATION PLAN	PLAN DE IMPLANTACIÓN DE SISTEMAS DE RADIOAYUDAS/ RADIO AID IMPLEMENTATION PLAN
Antillas Holandesas/ Netherlands Antilles	No hay plan a corto plazo/ No short-term plan	A ser suministrado/ To be supplied	Reemplazo de NDB en Bonaire a corto plazo/ Replacement of NDB in Bonaire in a short term
Brasil/ Brazil	Cambio SSR convencional a monopulso e implantación protocolo Asterix en Manaus, Boa Vista, Sao Gabriel de Cachoeira, Tabatinga y Belen durante el período 2004-2005/ Change of conventional SSR to monopulse and Asterix protocol implementation in Manaus, Boa Vista, Sao Gabriel de Cachoeira, Tabatinga and Belen during the period 2004 -2005	A ser suministrado/ To be supplied	No se tiene prevista implantación a corto plazo de nueva radioayuda/ No short-term radio aid implementation foreseen
Guyana	No hay plan a corto plazo/ No short-term plan	A ser suministrado/ To be supplied	
Guyana Francesa	No hay plan a corto plazo/ No plan in short term	A ser suministrado/ To be supplied	Instalación de VOR Doppler en 2004/ Installation of VOR Doppler in 2004
Suriname		A ser suministrado/ To be supplied	
Trinidad & Tobago	No hay plan a corto plazo/ No short-term plan	A ser suministrado/ To be supplied	Instalación DME/localizador y reemplazo NDB en Tobago a corto plazo. Installation DME/localizer and replacement of a NDB in Tobago in a short term
Venezuela	Sistema Radar Primario/Secundario Maiquetía para el 2005 Para el 2007 radar primario/secundario en Barcelona, Puerto Ayacucho y Puerto Ordaz. Radar secundario en Lagunazo, Los Colorados y Santa Elena de Uairen. Actualización tecnológica de los sistemas de vigilancia de Porlamar, Barquisimeto y Maracaibo/ Primary/secondary radar system in Maiquetía for 2005. Primary/secondary radar system in Barcelona, Puerto Ayacucho and Puerto Ordaz. Secondary radar in Lagunazo, Los Colorados and Santa Elena de Uairen, for 2007. Technological updating of the surveillance systems of Porlamar, Barquisimeto and Maracaibo.	A ser suministrado/ To be supplied	Se tiene previsto para el año 2007 de nuevas instalaciones de sistemas DVOR/DME en la TMA de Maiquetía (Los Roques, Punta San Juan, Ño León, Maiquetía, Cabo Codera). Así mismo se tiene previsto un nuevo ILS en Maiquetía para el año 2007/. New DVOR/DME system facilities in Maiquetía TMA foreseen for 2007 (Los Roques, Punta San Juan, Ño León, Maiquetía, Cabo Codear). New ILS system in Maiquetía for 2007.

APPENDIX C

Chapter 1 APPENDIX A

GENERAL PRINCIPLES FOR THE DESIGN OF NATIONAL DIGITAL NETWORKS

a) Network design should be based on a cost-benefit analysis of the implementation of communication requirements;

b) Network design should be aimed at an efficient integration of voice and data communications through an appropriate network protocol;

c) The design should consider the implementation of existing communication requirements, as well as additional capacity for future services, such as those contemplated in the CNS/ATM system concept;

d) The design should be based on the application of communication standards developed by recognised international organisations and should offer, for data, an open network environment compatible with ATN inter-network services;

e) Network operation should provide for fast amortisation of the investment within the term of its expected lifetime;

f) The network should offer the possibility of technological updating throughout its useful life;

g) The network should allow for easy expansion of its topology and service capacity;

h) A high level of service availability and communication integrity should be achieved through the implementation of:

   i. an efficient network management system;

   ii. an adequate network capacity to meet the requirements;

   iii. an adequate level of facility redundancy; and

   iv. effective and efficient alternate media.

i) The quality of communications should meet aeronautical operational requirements;

j) The network should give priority to aeronautical safety communications over administrative communications and other non-safety-related services; and

k) Consider the possibility of implementing the network through the expansion of existing sub-regional virtual networks.

APÉNDICE D / APPENDIX D

ESTACIONES REMOTAS VHF DE ACC DE LA SUBREGIÓN E-CAR /SAM- NE
ACC VHF REMOTE STATIONS OF THE E-CAR /SAM- NE SUB-REGION

ESTADO/ TERRITORIO STATE/ TERRITORY	NOMBRE ACC/ ACC NAME	NOMBRE ESTACIÓN REMOTA VHF/ NAME OF REMOTE VHF STATION	COORDENADAS ESTACIÓN VHF/ COORDINATES OF VHF STATION	FRECUENCIA/ FREQUENCY	OBSERVACIONES/ REMARKS
Antillas Holandesas Netherlands Antilles	Curaçao			124.10 124.70 127.10	
Brasil/Brazil	Belem	Amapa		128.30 133.15	
		Araguaia		128.70	
		Belem		126.15 128.20 128.30 133.15 133.35	
		Carajas		133.70	
		Imperatriz		135.55 126.15	
		Sao Luis		134.70	
		Santarem		125.20	
	Manaus	Bracélos		133.00	
		Boa Vista		124.40	
		Cachoeira		133.90	
		Itacotiara		123.85	
		Manaus		123.80 124.30 124.50 125.50 126.30 124.70	
		Tabatinga		125.40	
		Tefe		125.00	

ESTADO/ TERRITORIO STATE/ TERRITORY	NOMBRE ACC ACC NAME	NOMBRE ESTACIÓN REMOTA VHF/ REMOTE VHF STATION NAME	COORDENADAS ESTACIÓN VHF/ VHF STATION COORDINATES	FREQ.	OBSERVACIONES REMARKS
Guyana	Georgetown	Timehri		128.60 124.20	
Guyana Francesa/ French Guyana	Rochambeau				
Surinam/Suriname	Paramaribo	Paramaribo		123.90 128.30	
Trinidad & Tobago	Piarco	Port-of-Spain (Antigua, Barbados, St. Lucia)		123.70 125.40	
Venezuela	Maiquetía	Lagunazo		128.5 125.2 126.6 126.0 128.7 127.95	
		Palma Real Las Palmas Los Colorados Cerro Catire Puerto Ayacucho Santa Elena de Üairén San Carlos de Río Negro		126.0 127.95 126.6 128.7 126.6 128.7 127.95 127.95 127.95	 En proyecto / Projected En proyecto / Projected

APÉNDICE / APPENDIX E

ENSAYO DE RADIO AYUDA A LA NAVEGACIÓN EN LA SUBREGION E-CAR/SAM/NE
TESTING OF RADIO NAVIGATION AIDS IN THE E-CAR/SAM/NE REGION

Estado/ Territorio State/ Territory	**Organismo Encargado de los Ensayos en Vuelo/ Body Responsible for Flight Testing**	**Frecuencia De Ensayos En Vuelo/ Flight Testing Frequency**	**Norma Utilizada/ Regulation Used**	**Pueden Suministrar Ensayo En Vuelo A Otros Estados/ Possibility To carry out Flight Testing in Other States**
Antillas Holandesas/ Netherlands Antilles	FAA	Esporádicamente cada año/ Sporadically each year	FAA	No
Brasil/Brazil	Grupo Especial de Inspección en vuelo GEIV/ Flight Inspection Special Group (GEIV)	VOR Clase A cada 12 meses/Class A VOR every 12 months VOR Clase B cada 8 meses/Class B VOR every 8 months VOR Clase C cada 4 meses/Class C VOR every 4 months ILS Clase A cada 6 meses/Class A ILS every 6 months ILS Clase B cada 4 meses/Class B ILS every 4 months ILS Clase C cada 2 meses/Class C ILS every 2 months	Propia	Sí/Yes
Guyana	FAA	VOR cada 18 meses/ VOR every 18 months ILS cada nueve meses/ ILS each nine months	FAA	No
Guyana Francesa/French Guyana	ASECNA	Cada seis meses/ Each 6 months		No
Suriname	FAA	Esporádicamente cada año/ Sporadically every year	FAA	No

Estado/ Territorio State/ Territory	**Organismo Encargado de los Ensayos en Vuelo/ Body Responsible for Flight Testing**	**Frecuencia De Ensayos En Vuelo/ Flight Testing Frequency**	**Norma Utilizada/ Regulation Used**	**Pueden Suministrar Ensayo En Vuelo A Otros Estados/ Possibility To carry out Flight Testing in Other States**
Trinidad & Tobago	FAA	NDB cada 18 meses/NDB every 18 months VOR cada 18 meses/VOR every 18 months ILS cada nueve meses/ILS every 9 months	FAA	No
Venezuela	Unidad de Inspección en vuelo de la INAC/ INAC Flight Inspection Unit	ILS cada 6 meses/ ILS every 6 months VOR cada 6 meses VOR every 6 months	OACI/ ICAO Doc 8071	Sí/Yes