



International Civil Aviation Organization

NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN OFFICE

Fourth Central Caribbean Working Group Meeting (C/CAR WG/4)

Santo Domingo, Dominican Republic, 9 to 13 February 2004

C/CAR WG/4-WP/06

20/01/04

Agenda Item 3: Activities and specific developments of the air navigation
3.2 Communications, Navigation and Surveillance (CNS)
Task Forces Radar Data Sharing and VHF/AMS Coverage

**FOLLOW-UP AND COORDINATION FOR THE IMPLEMENTATION OF THE CNS SYSTEMS
IN THE CENTRAL CARIBBEAN**

(Presented by the Secretariat)

SUMMARY

This working paper proposes for consideration by the Meeting actions for the follow-up and coordination of the improvement and implementation of the Communications, Navigation and Surveillance systems in the Central Caribbean, based on the results of the review of the CNS agenda items of the C/CAR WG/3 and C/CAR DCA/6 Meetings, as well as the GREPECAS mechanism.

References:

- Report of the Third Central Caribbean Working Group Meeting (Curaçao, Netherlands Antilles, 24 – 28 March 2003).
- Report of the Sixth Meeting of Directors of Civil Aviation of the Central Caribbean (Nassau, Bahamas, 2 – 4 July 2003).

1. Introduction

1.1 The Third Central Caribbean Working Group Meeting (C/CAR/WG/3), held in Curaçao, Netherlands Antilles, 24 to 28 March 2003, with respect to the CNS agenda items of their work programme, reviewed those tasks in accordance with the CNS guidelines agreed by the First Meeting of Directors of Civil Aviation of North America, Central America and the Caribbean, held in Grand Cayman, October 2002. From those tasks relevant to the Central Caribbean, essentially the following continue in force:

- Development and interconnectivity of regional digital networks.
- Improvement of and compliance with the required VHF/HF AMS coverage.
- Transition from AFTN to ATN. Implementation of ATN ground portion.
- GNSS Implementation.
- Radar data sharing

1.2 Regarding some issues mentioned in the above paragraph, The C/CAR WG/3 Meeting adopted the following draft Conclusions: 3/9 - *FASID CNS 4A Table update*; 3/10 *Complementary Actions for the Improvement of VHF/AMS coverage in the Central Caribbean* and 3/11 *Implementation of ATN Ground Portion*. Subsequently, the C/CAR DCA/6 Meeting through Conclusion 6/1 approved, among others, these conclusions and guided the C/CAR Working Group to follow them up.

1.3 Likewise, the C/CAR Working Group, in order to develop some of the mentioned tasks, created the Task Forces on VHF/AMS Coverage and on Radar Data Sharing.

2. Discussion

2.1 According to the background expressed in paragraphs 1.1 to 1.3 of this working paper, the Meeting is invited to continue to follow up of the developments of the relevant CNS issues, and to review and develop the relevant subregional action plans to contribute the coordination and implementation of these systems:

General

Review of the FASID CNS Tables

2.2 According to Conclusion 3/9 – *FASID CNS 4A Table Update*, formulated by the C/CAR WG/3 Meeting, it was expected to receive in the ICAO NACC Regional Office before 28 November 2003, information from the C/CAR States/Territories on their respective radar surveillance systems. But only a little information has been received, therefore, this paper proposes to the Meeting to try to gather the requested information to finalize this Conclusion. To facilitate this task, in the **Appendix**, the information which is available in the Secretariat on the Central Caribbean correspondent parts of the Table CNS 4A is presented.

Communications

Review of VHF/ AMS communications coverage

2.3 Based on Conclusion 10/29 of GREPECAS and in the Conclusions 2/9 and 3/10 of the C/CAR Working Group, which deal with the deficiencies due to the lack of VHF/AMS coverage, in the ICAO NACC Regional Office and in this Groups meetings, information has been received from: Aruba, Cayman Islands, Cuba, Dominican Republic, Haiti, Jamaica and Turks and Caicos. From the results of the analysis of the information received, the following different facts and characteristics are appreciated:

- a) Information has not been obtained on the VHF/AMS coverage from all States/Territories of the Central Caribbean;
- b) in some cases only technical data from the VHF/AMS stations is available to use that information, this would require search for data on the information of ground topography of the surrounding area of the station to be able to calculate and outline the coverage diagrams with accuracy;
- c) in other cases, theoretically calculated coverage diagrams have been received; but without considering the degradation that the surrounding topography can cause to the coverage, that is, ideal circular coverage diagrams are presented;
- d) few theoretically calculated diagrams have been received, considering the effect of the topography of the surrounding terrain to the VHF station. These coverage diagrams are the ones that facilitate the establishment of the areas of poor coverage;
- e) no coverage diagrams have been received measured by a flight testing aircraft. This is normally necessary for verification of critical areas; and
- f) also, the coverage diagrams received are represented in different scales, which makes the joint representation on a map or diagram difficult.

2.4 The C/CAR Working Group established a Task Force on VHF/AMS Coverage, and initially thought that the Task Force could have appropriate software to calculate or verify the VHF/AMS coverage of all Central Caribbean stations, especially those that provide communications for the services of area control and approach control. However, it appears to be that this Task Force does not have the mentioned software.

2.5 On the other hand, according to the information gathered by the Secretariat, the Central Caribbean poor coverage areas identified are the following:

- a) Northeastern portion of the CENAMER FIR. COCESNA has an action plan to resolve this deficiency.
- b) West, East and Southwest portions of the Kingston FIR. Jamaica informed in the C/CAR WG/3 Meeting that this deficiency was resolved through the installation of additional VHF stations in Grand Cayman and in Jamaica.
- c) Northwestern portion of the Curaçao FIR. Netherlands Antilles informed in the C/CAR WG/3 Meeting that this deficiency has been resolved by the installation of new high power radio transmitter equipment and high gain antennas.
- d) Other areas.

2.6 The Meeting should consider all what is expressed in the previous paragraphs and determine the actions that can be adopted to continue the review of the VHF/AMS coverage. Likewise, to review the work performed by the VHF/AMS coverage Task Force and guide its future work.

Implementation of the ATN ground portion

2.7 The C/CAR WG/3 Meeting agreed the Conclusion 3/11, which refers to support for the First ATN Task Force meeting of the CNS Committee of the ATM/CNS Subgroup of GREPECAS. This Meeting was carried out, therefore this action could be considered as finalized.

2.8 Likewise, in accordance with the results of the review of this agenda item by the C/CAR WG/3 Meeting, it is consider that this Working Group should support and follow up the work that is being done by the GREPECAS mechanism. However, the Secretariat considers appropriate that this Meeting take into account the importance and feasibility to propose to carry out a training activity on ATN/AMHS and recommend actions to continue the efforts for the implementation of the ATN ground portion, proceeding to develop the action plans for the transition of AFTN to the AMHS.

Navigation

Implementation of GNSS

2.9 The C/CAR WG/3 recommended that the States/Territories/International Organizations should continue publishing and updating the legislations/regulations authorizing the use of GNSS in their respective terminal areas and en-route airspace.

2.10 Furthermore, the need to consider the AN-Conf/11 results on the implementation of the GNSS and the regional guidelines derived from the AN-Conf/11 results, which are expected to be issued by the GREPECAS/12 Meeting to be held in June 2004.

Follow-up to the CAR/SAM SBAS/GNSS Augmentation Systems trials

2.11 Likewise, the C/CAR Working Group should stay informed on the status and results of the SBAS/WAAS augmentation systems trials which are being carried out in the CAR/SAM Regions under RLA/00/009 Project; as well as the SBAS/EGNOS trials, which are initiating in the CAR/SAM Regions under Project RLA/03/902 and on the world development of the GNSS implementation, considering the AN-Conf/11 results. It is expected that the Third ATM/CNS Subgroup Meeting review the status of these trials.

Surveillance

Follow-up to the C/CAR Radar Surveillance Plan

2.12 As mentioned in paragraph 2.2 of this working paper, the C/CAR Working Group should continue its efforts to update Table CNS4A of the FASID. The C/CAR WG/3 noted that information was received from Cuba, Dominican Republic and Jamaica. Subsequently, no information corresponding to the Central Caribbean has been received, especially on the implementation of the Primary Surveillance Radar (PSR), and Secondary Surveillance Radar (SSR).

Implementation of radar data sharing

2.13 Regarding the implementation of radar data sharing, the C/CAR WG/3 Meeting suggested that the C/CAR Working Group, supported by the Radar Data Sharing Task Force, should continue its work on the planning and implementation of the exchange of radar data between ATM units in the Central Caribbean considering the “*Revised Regional Guidelines for the Exchange of Radar Data among ATM units*” published by GREPECAS, through its Conclusion 11/47. The Meeting also reviewed the Terms of Reference and Work Programme of the Radar Data Sharing Task Force. The Meeting also agreed that this Task Force should continue its work in a diligent manner in order to support the implementation of ATM in general.

2.14 According to that expressed in the above paragraph, it is expected that the Radar Data Sharing Task Force, informs to the Meeting on their work performed, likewise this Meeting could advance in the development of this task.

Other matters related with the CNS

2.15 Additionally, the C/CAR WG/4 may initiate the development of other tasks related with the CNS systems contained in its Work Programme, and to recommend the inclusion of other tasks in its programme.

3. Suggested actions

3.1 The Meeting is invited to continue its efforts towards the coordination, improvement and implementation of the communications, navigation and surveillance systems, developing subregional C/CAR action plans and following them up, bearing in mind the background expressed in paragraphs 1.1 to 1.3 of this paper, as well as the following suggested actions:

- a) note the contents of this working paper;
- b) develop the general CNS matters taking into account paragraph 2.2 of this paper;
- c) develop communication systems, considering the guidance expressed in paragraphs 2.3 to 2.8 of this paper;
- d) develop the navigation systems, considering the guidance expressed in paragraphs 2.9 to 2.11 of this paper;
- e) to continue to develop surveillance systems, considering the guidance expressed in paragraphs 2.12 to 2.14 of this paper; and
- f) the development of other matters related with the CNS systems that the Meeting may consider appropriate to deal with bearing in mind paragraph 2.15 of this paper.

Table/Tabla CNS 4A - SURVEILLANCE SYSTEMS/SISTEMAS DE VIGILANCIA (Part/Parte C/CAR)

State(Territory)/Location Estado(Territorio)/Ubicación	ATS Unite Served Unidad ATS Servida	PSR			SSR				ADS		Remarks Observaciones
		Function Función	Coverage Cobertura (NM)	Status Impl. Estado	Function Función	Modes Modos (A,C& S)	Coverage Cobertura (NM)	Status Impl. Estado	Type Tipo	Status Impl. Estado	
1	2	3	4	5	6	7	8	9	10	11	13
ARUBA (Netherlands) Aruba	Reina Beatrix APP	T	80	I	T	A/C	256	I*			*MSSR
BAHAMAS Nassau	Miami ACC Nassau APP	E/T		I	E	A/C		I			
CUBA Camagüey	Habana ACC Camagüey APP	E/T		I	E/T	A/C	200	I/P*			*MSSR
Holguín	Habana ACC Santiago de Cuba TMA	E/T		I	E/T	A/C	200	I/P*			*MSSR
Menocal	Holguín APP Habana ACC	E/T		I	E/T	A/C	200	I/P*			*MSSR
San Julián	Habana APP Varadero APP	E		I	E	A/C	200	I/P*			*MSSR
Sta. Clara	Habana ACC Varadero APP	E/T		I	E	A/C	200	I/P*			*MSSR
DOMINICAN REPUBLIC Barahona	Barahona APP	T		I	T	A/C		I			
Puerto Plata	Puerto Plata APP	T		I	T	A/C		I			
Santo Domingo	Santo Domingo ACC Santo Domingo APP	E/T		I	E/T	A/C		I			
HAITI	Port-au-Prince ACC Port-au-Prince APP				E/T	A/C		P*			*MSSR
JAMAICA Kingston	Kingston APP	T	80	I	E/T	A/C	250	I*			*MSSR
Montego Bay	Montego Bay APP	T	80	I	T	A/C	250	I*			*MSSR
Mount Denham	Kingston ACC	E	120	I	E	A/C	250	I*			*MSSR
NETHERLANDS ANTILLES (Netherlands) Willemstad	Curaçao ACC Curaçao APP	E	120	P	E	A/C	256	I*			*MSSR
Saint Maarten	Juliana APP	T	60	P	T	A/C	256	P*			*MSSR
PUERTO RICO (USA) San Juan	San Juan ACC San Juan APP	E/T		I	E	A/C		I			
TURKS & CAICOS IS. (UK) Grank Turk	Miami ACC				E	A/C		I			
VIRGIN IS. (USA) Saint Thomas	San Juan ACC	E		I	E	A/C		I			