International Civil Aviation Organization
NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN OFFICE
Fifth Central Caribbean Working Group Meeting (C/CAR WG/5)
Mexico City, Mexico, 21 to 24 February 2005

Agenda Item 3: **Activities for the development of the air navigation systems/services**
3.3 Communications, Navigation and Surveillance (CNS)

FOLLOW-UP ON THE DEVELOPMENT OF THE CNS SYSTEMS

(Presented by the Secretariat)

SUMMARY

This working paper presents an analysis of the follow-up plan for the improvement and implementation of the Communications, Navigation and Surveillance systems in the Caribbean Region, based on the results of the review of the CNS conclusions of the C/CAR WG and C/CAR DCA, as well as the GREPECAS mechanism.

References:

- Report of C/CAR WG/3 Meeting, (Curacao, Netherlands Antilles, 24 – 28 March 2003).
- Report of the C/CAR WG/4 Meeting, (Santo Domingo, Dominican Republic, 9 to 13 February 2004).
- Report of the GREPECAS/12 Meeting, (Havana, Cuba, 7-11 June 2004).
- Report of the C/CAR DCA/7 Meeting, (San Juan, Puerto Rico, 28- June to 01 July 2004).

1. Introduction

1.1 The Fourth Central Caribbean Working Group Meeting (C/CAR/WG/4), held in Santo Domingo, Dominican Republic, 9 – 13 February 2004, 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 related 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 and radar data sharing.

1.2 Regarding some issues above-mentioned, the C/CAR WG/4 Meeting, adopted Draft Conclusion 4/8 - *ATN/AMHS Training,* which was further approved by the C/CAR DCA/7 Meeting, as well as Decision 4/7 –*VHF/AMS Communications Coverage*; and Decision 4/10 – *Radar Data Sharing.*

1.3 Likewise, the GREPECAS/12 Meeting adopted conclusions related to the area of CNS systems covered by the Meeting and listed hereunder:

- Conclusion 12/33 CAR/SAM regional action for the preparation and support of ICAO's position for WRC-07.
- Conclusion 12/34 Priority and Improvement of the radio-frequency spectrum management.
- Conclusion 12/35 CAR/SAM regional action to improve protection against electromagnetic interference in the CNS Systems.
- Conclusion 12/36 Updating of the CAR/SAM Regions AFTN Plan.
- Conclusion 12/37 Improvement of the AFTN operation in the CAR/SAM Regions
- Conclusion 12/39 Additional inter-connection points for regional and inter-regional digital networks.
- Conclusion 12/41 CAR/SAM Seminar on development of ATN and its applications.
- Conclusion 12/42 Regional use of ACARS and FANS-1/A equipment during the transition phase.
- Conclusion 12/43 Implementation of Air-Ground Data Communications with VDL Mode 2 in the CAR/SAM Regions.
- Conclusion 12/44 Regional CAR/SAM guidance for the ADS-B data links introduction
- Conclusion 12/45 Amendment to the "Regional Guidelines for the transition to the Global Navigation Satellite Systems (GNSS)" and the "Regional Strategy for the introduction and application of non visual aids to approach, landing and departure".
- Conclusion 12/46 CAR/SAM regional activities for the SBAS and GBAS implementation.
- Conclusion 12/47 Submission to ICAO of the results on the study of ionospheric effects in the equatorial zone of the CAR/SAM regions.
- Conclusion 12/48 SAC-ASTERIX Code assignment plan for the CAR/SAM regions.
- Conclusion 12/49 General criteria for the implementation of SSR data exchange.
- Conclusion 12/50 Amendment to FASID Table CNS 4A Surveillance Systems.

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 the developments of the most important CNS issues and to review and develop the relevant subregional action plans which contribute to the coordination and implementation of these systems:

General matters

Protection of the aeronautical Radio-Frequency Spectrum

2.2 According to Conclusion 12/33 of GREPECAS, States and International Organizations with the view at preparing and supporting ICAO's position for the ITU World Radio Communication Conference – 2007, should:

a) *"support and follow-up ICAO work on the preparation and updating of ICAO's position for the WRC-07"*. In this sense, through a State letter Ref.: E 3/5-04/99, dated 30 November 2004, ICAO sent a project of ICAO's position for the ITU WRC-2007. Comments from States are expected to be received in Montreal not later than 31 January 2005. The Air Navigation Commission will proceed with the project's final test according to comments received from the States formulating the respective recommendations to the Council by the second trimester 2005. Upon the Council's approval, ICAO's position in the WRC-2007 will be informed to the contracting States and correspondent international organizations and presented in the ITU WRC-2007.

b) *"designate a focal point or a contact person with ICAO and with the national authority of radio-frequency spectrum management for the coordination of matters related with the WRC-*

07": To this date, no messages have been received in this NACC Regional Office from the States indicating the focal point person; although the person in charge of Mexico has coordinated with the ICAO CNS Regional Officer.

c) *"participate in an active manner in the preparatory work for the WRC-07 in the CITEL meetings of the Organization of American States (OAS)"*. In the ICAO NACC Regional Office only the information on Mexico's participation in the CITEL Meetings is available.

2.3 Regarding Conclusion 12/34 paragraph d) of GREPECAS, some frequency assignments have been detected without the international coordination through the ICAO NACC Office. Therefore, States and Territories are invited to coordinate all the aeronautical frequency assignments through the ICAO Regional Office.

Communications

2.4 It should be reminded that the function of the communication systems is to improve the coverage, accessibility, capability, integrity, security and performance of the aeronautical communication in accordance with the ATM requirements. The communication elements should provide the speech and data communications between the aeronautical users and ATS/ATM units in the Region, as well as through the data interchange with the aeronautical automated systems. Also, we should develop the communications systems in support of the navigation and surveillance specific functions.

A) Ground-ground communication development

AFTN Plan implementation status

2.5 Through Conclusion 12/36, the GREPECAS updated the AFTN Plan, nevertheless, the Meeting could recommend new updates to this Plan. Likewise, through Conclusion 12/37, ICAO NACC and SAM Regional Offices and the States, Territories and International Organizations were guided to continue updating the AFTN routing lists in accordance with the amendments made to the AFTN Plan, as well as, an action plan was recommended to some States and Territories in order to improve the circuits and AFTN centres. Therefore, the Meeting should review the status of execution of these Conclusions of GREPECAS suggesting actions for its compliance.

Implementation status of the ATS speech circuits Plan

2.6 In the Central Caribbean the AFS communication requirements including ATS speech circuits are being efficiently supported, mainly through the VSAT MEVA Digital Network. Other circuits are implemented through leasing channels to commercial service providers presenting some deficiencies. For example, according to information available from the Secretariat, the speech circuit ATS Belize APP – Merida ACC presents deficiencies (Table CNS 1C to the FASID establishes the requirement Type A for this circuit). Notwithstanding, the Meeting could have information of cases in which these requirements are not being adequately provided and could recommend actions to solve problems that might exist.

Development and interconnection of regional/subregional digital network

2.7 The MEVA/10 Meeting, held in Mexico City from 13 to 15 December 2004, approved the Service Provider for the MEVA II Network. It is expected that the MEVA Team Management Group (TMG) will complete the elaboration and recommendation of a Transition Plan towards MEVA II.

2.8 On the other hand, Conclusion 12/36 of GREPECAS, among other aspects, recommended the implementation of a station/node of the MEVA II Network in Merida, Mexico with the purpose to contribute to the completion of a digital platform supplying homogeneous interoperability in the CAR/SAM Regions, providing the interconnection of the network in Mexico with the MEVA II, with

CAMSAT, as well as, with the NAM Region networks, this would improve the AFS communications services efficiency.

Implementation of the ATN ground portion

2.9 As a result of the Conclusion 4/8 of the C/CAR WG and the Conclusion 12/41 of GREPECAS, ICAO is organizing for the first semester of 2005 a CAR/SAM Seminar on the development of ATN and its applications. Additionally, the Secretariat deems appropriate that this meeting will recommend actions to continue the efforts for the implementation of the ATN ground portion, proceeding to develop action plans for the transition of AFTN to the AMHS.

A) Development of the air-to-ground communications

2.10 The Table CNS 2A of the FASID contains the CAR/SAM Aeronautical Mobile Service (AMS) Regional Plan and the Aeronautical Mobile Service by Satellite (AMSS). The Table includes speech and data communications requirements through VHF, HF and satellite, as well as, data communications of Mode S. The part of the table corresponding to the area coverage of the Meeting is shown in the **Appendix** to this paper.

Review of the status of the aeronautical mobile service VHF and HF speech communications implementation

2.11 Based on Conclusion 10/29 of GREPECAS and Conclusions 2/9 and 3/10 of the C/CAR Working Group, which deals with the deficiencies resulting from a lack of VHF/AMS coverage, and information received in the ICAO NACC Regional Office and in the Group Meetings, taking into account the Decision 4/7 of the C/CAR WG/4, it is expected that the Working Group informs the Meeting their results related to the VHF/AMS coverage.

2.12 With respect to the coverage area of the Meeting, according to information provided by the States, Territories, International Organizations and airspace users, the Secretariat considers that the VHF/AMS areas of poor coverage related to this Meeting, which are in the process to be resolved, are the following:

a) the Norwest portion of the FIR CENAMER of which COCESNA has an action plan to solve the deficiency with the support of Cayman Islands, as well as, other areas. Therefore, COCESNA and Cayman Islands are expected to inform the Meeting the status of the actions to resolve the above-mentioned deficiency; and
b) the Central part of the Gulf of Mexico, in which Mexico and the United States are executing an action plan to complete the VHF coverage.

2.13 On the other hand, regarding Port-of-Prince ACC, Table CNS 2A only contains two VHF frequency requirements, one for the Area Control Centre (ACC) and the other one for General Purposes (GP), nevertheless, Haiti recently coordinated with the ICAO NACC Office an additional VHF frequency assignment for the ACC service. Therefore, the Meeting could consider the possibility to propose an amendment to the requirements in respect to Haiti, adding a frequency for ACC service.

2.14 With respect to the HF voice radio-communications, in accordance with the requirements contained in Table CNS 2A of the FASID, depending on the Secretariat's available information the status is as follows::

a) Havana ACC, Cuba has executed an equipment modernization plan of its station in 6 HF frequencies in the CAR-A family.
b) CENAMER ACC, COCESNA has their HF station functioning with 6 frequencies of the CAR-A family and 2 SAM-1 frequencies.
c) Merida ACC, Mexico is executing a plan to improve their station radio-communications service with 5 frequencies in the CAR-A family.

d) San Juan ACC, Puerto Rico has their station functioning with 5 frequencies CAR-A, one frequency CAR-B and 5 frequencies NAT-A.
e) Piarco ACC, Trinidad and Tobago is implementing a new HF speech radio-communications equipment in their station with 3 frequencies CAR-A, one frequency CAR-B and 2 frequencies SAM-2.
f) New York, United States has their station functioning with the families CAR-A and CAR-B frequencies.

2.15 Likewise, the CNS 2A Table contains the requirements of the speech implementation by satellite for the Caribbean ACCs, which should be on service in the years 2006 and 2008. The **Attachment** to the Appendix of this paper provides an explanation of these requirements.

2.16 The Meeting should consider that expressed in the above paragraphs and determine the actions that could be adopted to continue improving the VHF and HF speech radio-communications coverage and the AMSS service.

Implementation of air-ground data links

2.17 Through its Conclusion 12/42, the GREPECAS recommended to the CAR/SAM States, Territories and International Organizations and airspace users to continue implementing feasible applications to be used with data links via ACARS (Aircraft Communications Addressing and Reporting System) and FANS-1A aircraft equipment during the transition to the ATN bit oriented data links.

2.18 Likewise, the Conclusion 12/43 of the GREPECAS, based on Recommendation 7/3 of the AN-Conf/11, recommended the planning or continuation of the air-ground data communications with VDL Mode 2 implementation as an infrastructure support to the air-ground sub-networks to enable the ATN applications evolutionary implementation according to the operational requirements.

2.19 The Table CNS-2A of the FASID also contains implementation VHF and HF data requirements and by satellite for the ACC's Region, and an explanation is included in the Attachment to the Appendix of this paper.

2.20 Taking into account the above considerations, the Meeting should review the VHF, HF and by satellite data implementation plan.

Navigation

2.21 The objective of the Navigation systems is to improve the coverage and to allow the navigation capacity in all phases and airspaces, including approach and landing, at the same time maintaining or improving the integrity, precision and performance in conformity with the ATM requirements. New elements of air navigation should be implemented in the Region aimed at providing a specific function of a precise position, reliable and continuous in all airspace by introducing the Global Navigation Satellite System (GNSS).

Implementation of GNSS and application of non visual aids approach, landing and departure

2.22 Based on the Conclusion 12/45 of the GREPECAS, which was issued in accordance with the results of the AN-Conf/11, the States, Territories and International Organizations should take into account the new *"Regional guidelines for the transition to the global navigation satellite systems (GNSS)"* and the *"Regional strategy for the introduction and application of non visual aids to approach, landing and departure"*.

2.23 On the other hand, the State letter Ref.: AN 7/1.3.84-04/11, dated 27 February 2004 sent by ICAO, is in the process of amending Annex 10, Volume I related to the strategy for the introduction and application of non visual aids in the approach and landing. It is foreseen that the proposal of amendment be applied by November 24, 2005.

2.24 As a result of the GREPECAS Conclusion 12/46, the States, Territories and International Organizations should continue participating in the trials, planning and implementation activities of SBAS and GBAS, carried out by the RLA/00/009 and RLA/03/902 projects.

Surveillance

2.25 The Region should continue improving the radar surveillance systems, as well as implementing the new surveillance systems to improve and increase the surveillance efficiency in the oceanic and distant zones, at the same time and in conformity with the ATM requirements, improve the comprehension of air traffic situations in the flight deck.

Update of the surveillance plan corresponding to the Central Caribbean

2.26 GREPECAS/12 Meeting through its Conclusion 12/50 updated the Table CNS 4A of the FASID – *FASID Surveillance Plan*. Nevertheless, the States, Territories, International Organizations participating in the Meeting could provide new information for the corresponding Central Caribbean Surveillance Regional Plan update, especially on the Primary Surveillance Radar (PSR), Secondary Surveillance Radar (SSR) and Automatic Dependent Surveillance (ADS). Additionally, taking into account to that expressed in the Agenda Item 3, paragraphs 3.2.3.44 to 3.2.3.46 of the GREPECAS/12 Meeting Report, the Meeting should review the plans to implement SSR Mode S and the functioning improvement of the airborne collision avoidance system (ACAS), as well as reviewing the plans for the implementation of ADS-C and ADS-B surveillance functions in the Region.

Radar data sharing

2.27 Regarding the implementation of the radar data sharing, the C/CAR WG/3 Meeting guided the States, Territories, International Organizations and the Radar Data Sharing Task Force, to continue their planning and implementation work taking into account the "*Regional Guidelines for the Exchange of SSR Radar Data" published by GREPECAS* through its Conclusion 11/47. The C/CAR WG/4 Meeting through Decision 4/10 also indicated to the Task Force, to develop action plans for the implementation of the radar data sharing, which could be presented in the C/CAR WG/5 Meeting, in order to support the over-all ATM implementation.

2.28 According to that expressed in the above-mentioned paragraph and in conformity with the Terms of Reference and Work Programme of the Radar Data Sharing Task Force, it is expected that this Meeting be informed on the work carried out by the Group. Moreover, the Meeting could contribute advancing on the tasks development.

Other issue related to CNS

2.29 Furthermore, the Meeting could start developing other tasks related to the CNS systems which are contained in their work programme, recommending the inclusion of other tasks in their programme.

3. **Suggested actions**

3.1 The Meeting is invited to a:

a) take note of the contents of this working paper;

b) review the CNS general issues, considering the expressed in paragraphs 2.2 and 2.3 of this paper;

c) review the communications systems considering the expressed in paragraphs 2.4 to 2.20;

d) review the navigation systems considering the expressed paragraphs 2.21 to 2.24 of this paper;

e) review the surveillance systems, considering the expressed in paragraphs 2.25 to 2.28; and

f) review other issues, considering the expresses in paragraph 2.15 of this paper.

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APPENDIX/APÉNDICE

Table CNS 2A — Tabla CNS 2A
AERONAUTICAL MOBILE SERVICE AND AMSS
SERVICIO MÓVIL AERONÁUTICO Y SMAS

EXPLANATION OF THE TABLE

Column

1 The name of the State and the locations within the same where the service is provided.

2 The required services or functions are provided. Suitable abbreviations for these services or functions are listed below.

ACC-L	Area control service for flights up to FL 250.
ACC-SR-I	Area radar control service up to FL 250.
ACC-SR-U	Area radar control service up to FL 450.
ACC-U	Area control service up to FL 450.
AFIS	Aerodrome flight information service.
APP-L	Approach control services below FL 120.
APP-I	Approach control service below FL 250.
APP-PAR	Precision approach radar service up to FL 40.
APP-SR-I	Surveillance radar approach control service up to FL 250.
APP-SR-L	Surveillance radar approach control service up to FL 120.
APP-SR-U	Surveillance radar approach control service up to FL 450.
APP-U	Approach control service below FL 450.
ATIS	Automatic terminal information service.
D-ATIS	Data link-automatic terminal information service.
CLRD	Clearance delivery.
FIS	Flight information service.
VHF-ER	VHF — Extended range.
GP	Facility providing VHF or HF en-route general purpose system (GPS) communication. These facilities provide air-ground radiotelephony for all categories of messages listed in Annex 10, Volume II, 5.1.8. This system of communication is normally indirect, i.e. exchanged through the intermediary of a third person who is usually a communicator at an aeronautical station.
SMC	Surface movement control up to limits of aerodrome.
TWR	Aerodrome control service.
VOLMET	VOLMET broadcast.

3 Number of voice VHF channels for the corresponding services indicated in column 2. The number of implemented channels is shown in parentheses.

4 Number of VHF channels for data communication for the corresponding services indicated in column 2. The implementation date (month/year) is shown in parentheses.

5 HF network designators for the corresponding services indicated in column 2. The number of implemented frequencies is shown in parentheses.

6 Requirement for HF data link (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.

7 Requirement for satellite voice communications (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.

8 Requirement for satellite data communications (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.

9 Requirement for Mode S data communications (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.

10 Remarks.

Note.— The implementation year for the data links and satellite voice communication are indicated by two digits.

EXPLICACIÓN DE LA TABLA

Columna

1 El nombre del Estado y de las localidades dentro del mismo donde se proporciona el servicio.

2 Se proporcionan los servicios o funciones que se requieren. Se enumeran a continuación las abreviaturas correspondientes a estos servicios o funciones.

ACC-L	Servicio de control de área hasta el FL 250
ACC-SR-I	Servicio de control de área radar hasta el FL 250
ACC-SR-U	Servicio de control de área radar hasta el FL 450
ACC-U	Servicio de control de área hasta el FL 450
AFIS	Servicio de información de vuelo de aeródromo
APP-L	Servicio de control de aproximación por debajo del FL 120
APP-I	Servicio de control de aproximación por debajo del FL 250
APP-PAR	Servicio radar para la aproximación de precisión hasta el FL 40
APP-SR-I	Servicio de aproximación de control con radar de vigilancia hasta el FL 250
APP-SR-L	Servicio de aproximación de control con radar de vigilancia hasta el FL 120
APP-SR-U	Servicio de aproximación de control con radar de vigilancia hasta el FL 450
APP-U	Servicio de control de aproximación por debajo del FL 450
ATIS	Servicio automático de información terminal
D-ATIS	Servicio automático de información terminal por enlace de datos
CLRD	Servicio de entrega de autorización de tránsito
FIS	Servicio de información de vuelo
VHF-ER	VHF ―Alcance ampliado
GP	Instalación que proporciona comunicaciones VHF o HF en ruta para fines generales (GPS). Estas instalaciones suministran transmisión radiotelefónica aeroterrestre en todas las categorías de mensajes citadas en el Anexo 10, Vol II, 5.1.8. En este sistema las comunicaciones son normalmente indirectas, es decir, que son intercambiadas por intermedio de un tercero que habitualmente es un operador de comunicaciones de una estación aeronáutica.
SMC	Control del movimiento en la superficie hasta los límites del aeródromo.
TWR	Servicio de control de aeródromo.
VOLMET	Radiodifusiones VOLMET.

3 Número de canales VHF para comunicaciones orales para los correspondientes servicios indicados en la Columna 2. El número de canales implantados se indica entre paréntesis.

4 Número de canales VHF para comunicaciones en datos para los correspondientes servicios indicados en la Columna 2. La fecha de implantación (mes/año) se indica entre paréntesis.

5 Designadores de red HF para comunicaciones orales para los correspondientes servicios indicados en la Columna 2. El número de frecuencias implantados se indica entre paréntesis.

6 Requisito para enlace de datos HF (x) para los correspondientes servicios indicados en la Columna 2. La fecha de implantación (mes/año) del servicio se indica entre paréntesis.

7 Requisito para comunicaciones orales por satélite (x) para los correspondientes servicios indicados en la Columna 2. La fecha de implantación (mes/año) del servicio se indica entre paréntesis.

8 Requisito para comunicaciones de datos por satélite (x) para los correspondientes servicios indicados en la Columna 2. La fecha de implantación (mes/año) del servicio se indica entre paréntesis.

9 Requisito para comunicaciones de datos en Modo S (x) para los correspondientes servicios indicados en la Columna 2. La fecha de implantación (mes/año) del servicio se indica entre paréntesis.

10 Observaciones.

Nota.―El año de implementación para los enlaces de datos y comunicaciones orales por satélite se indican en dos dígitos.

TABLE CNS 2A – TABLA CNS 2A

(Part of the CAR Region/Parte parcial de la Región CAR)

CNS

Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
BAHAMAS									
MYBS ALICE TOWN/ South Bimini, Bimini I.	TWR	1							
MYSM COCKBURN TOWN/ San Salvador I.	TWR	1							
MYGF FREEPORT/Intl., Grand Bahama I.	APP-U APP-L TWR SMC	1 1 1 1							
MYEG GEORGETOWN/ Georgetown, Exuma Intl.	APP-L TWR	1 1							
MYEM GOVERNOR'S HARBOUR/ Governor's Harbour, Eleuthera I.	APP-L TWR	1 1							
MYNA NASSAU	ACC-U GP ACC-L	3 1 1							
MYNN NASSAU/Intl., New Providence I.	APP-I TWR SMC APP-SR-I	1 1 1 1							
MYEH NORTH ELEUTHERA/ New Providence I.	TWR	1 1							
MYLS STELLA MARIS/Long Island I.	TWR	1							
MYAT TREASURE CAY/ Treasure Cay, Abaco I.	TWR APP-L	1 1							
MYGW WEST END/West End, Grand Bahama I.	TWR	1							
CAYMAN ISLANDS (United Kingdom)									
MWCB CAYMAN BRAC/ Gerrard Smith Intl.	TWR SMC	1 (1) 1							
MWCR GEORGETOWN/ Owen Roberts Intl.	APP-I TWR SMC ATIS	1 -1 1 1 (1)							

Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
CUBA									
MUCM CAMAGUEY/ Ignacio Agramonte	APP-SR-L TWR	1 1 (1)							
MUCL CAYO LARGO DEL SUR/Vilo Acuña	APP-L TWR	1 (1) 1 (1)							
MUCA CIEGO DE AVILA/ Máximo Gómez	APP-L TWR	1 1 (1)							
MUHA HABANA	ACC-SR-U ACC-SR-I GP-U	5 (4)-ER 3 (1)-ER 2 (1)	2 (06/06)	CAR-A (6)	X (06/06)				
MUHA HABANA/José Martí	APP-SR-L APP-SR-I TWR SMC ATIS	1 1 (1) 1 (1) 1 (1) 1 (1)							
MUHG HOLGUIN/Frank País	APP-SR-L TWR	1 1(1)							
MUCU SANTIAGO DE CUBA/ Antonio Maceo	APP-SR-I TWR SMC	1 (1) 1 (1) 1							
MUVR VARADERO/Juan Gualberto Gomez	APP-SR-L TWR SMC	1 1 (1) 1							
DOMINICAN REPUBLIC									
MDBH BARAHONA/ Maria Montes Intl.	TWR	1 (1)							
MDHE HERRERA/ Herrera Intl.	TWR	1 (1)							
MDLR LA ROMANA/ La Romana Intl.	APP-L TWR	1 (1) 1 (1)							
MDPP PUERTO PLATA/ Gregorio Luperon	APP-SR-I TWR SMC	1 (1) 1 (1) 1 (1)							
MDPC PUNTA CANA/Punta Cana Intl.	APP-L TWR	1 1 (1)							
MDST SANTIAGO/Cibao Santiago Intl.	APP-L TWR	1 1 (1)							
MDCS SANTO DOMINGO	ACC-U ACC-SR-U	4 1 (1)	1 (06/08)						

CNS

Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
	GP	1							
MDSD SANTO DOMINGO/ De las Américas Intl.	APP-SR-I TWR SMC ATIS CLRD	2 (1) 1 (1) 1 (1) 1 (1) 1							
HAITI									
MTCH CAP HAITIEN/Intl.	APP-L TWR	1 1 (1)							
MTEG PORT-AU-PRINCE	ACC-SR-U GP	1 (1) 1	1 (06/08)						
MTPP PORT-AU-PRINCE/Intl.	APP-SR-I APP-I TWR SMC	1 1 (1) 1 (1) 1							
HONDURAS									
MHTG TEGUCIGALPA (CENAMER)	ACC-SR-U GP	7 (4) 1	3 (06/08)	CAR-A (6) SAM-1 (2)	X (06/08)	X (06/08)	X (06/08)		
JAMAICA									
MKJK KINGSTON	ACC-SR-U ACC-U GP	1 5 (2) 1	2 (06/06)		X (06/06)	X (06/06)	X (06/06)		
MKJP KINGSTON/Norman Manley Intl.	APP-SR-1 APP-I TWR SMC	1 1 (1) 1 1 (1)							
MKJS MONTEGO BAY/ Sangster Intl.	APP-SR-I APP-I TWR SMC	1 1 1 (1) 1 (1)							

Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
MEXICO									
MMAA ACAPULCO/Gral. Juan Alvarez Intl.	APP-SR-I APP-SR-L ATIS SMC TWR GP	1 (1) 1 (1) 1 1 1 (1) 1							
MMBT BAHIAS DE HUATULCO/ Bahías de Huatulco	TWR	1 (1)							
MMCP CAMPECHE/Ignacio Alberto Acuña Ongay Intl.	TWR	1 (1)							
MMUN CANCUN/Cancún Intl.	APP-L APP-I SMC TWR ATIS CLRD GP	1 (1) 1 (1) 1 1 (1) 1 1 1							
MMCM CHETUMAL/ Chetumal Intl.	TWR	1 (1)							
MMCU CHIHUAHUA/Gral. Roberto Fierro Villalobos Intl.	APP-I TWR ATIS GP	1 (1) 1 (1) 1 1							
MMMC CIUDAD ACUÑA/Intl.	AFIS	1 (1)							
MMCS CIUDAD JUAREZ/ Abraham González Intl.	APP-I TWR	1 1 (1)							
MMCZ COZUMELCozumel/ Intl.	TWR	1 (1)							
MMCL CULIACAN/Fidel Bachigualato	APP-I TWR GP	1 (1) 1 (1) 1							
MMDO DURANGO/Pte. Guadalupe Victoria, Intl.	TWR	1 (1)							
MMGL GUADALAJARA/ Don Miguel Hidalgo y Costilla Intl.	APP-SR-I APP-SR-L ATIS SMC TWR CLRD GP	1 (1) 1 (1) 1 (1) 1 (1) 1 (1) 1 1							

CNS

Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
MMGM GUAYMAS/Gral. José María Yáñez Intl.	TWR	1 (1)							
MMHO HERMOSILLO/Gral. Ignacio Pesqueira Garcia Intl.	APP-I ATIS TWR SMC	1 (1) 1 (1) 1 (1) 1							
MMZH IXTAPA-ZIHUATANEJO/ Ixtapa-Zihuatanejo Intl.	APP-I TWR	1 (1) 1 (1)							
MMLP LA PAZ/Gral. Manuel Márquez de León Intl.	APP-I TWR	1 (1) 1 (1)							
MMLO LEON/Guanajuato	APP-L TWR	1 1 (1)							
MMLT LORETO/Loreto Intl.	TWR	1 (1)							
MMZO MANZANILLO/Playa de Oro Intl.	APP-L TWR	1 1 (1)							
MMMA MATAMOROS/Gral. Servando Canales	APP-L TWR	1 1 (1)							
MMMZ MAZATLAN/Gral. Rafael Buelna Intl.	ACC-SR-L ACC-SR-U APP-I SMC TWR ATIS GP	4 4 (5) 1 (1) 1 1 (1) 1 (1) 1	5 (06/08)		X (06/08)	X (06/08)	X (06/08)		
MMMO MERIDA/Lic. Manuel Crescencio Rejón Intl.	ACC-SR-L ACC-SR-U APP-I ATIS GP TWR	3 4 (4) 1 (1) 1 1 (1) 1 (1)	3 (06/08)	CAR-A (5)	X (06/08)	X (06/08)	X (06/08)		
MMML MEXICALI/Gral. Rodolfo Sánchez Taboada Intl.	APP-I TWR	1 1 (1)							
MMMX MEXICO/Lic. Benito Juárez Intl.	ACC-SR-L ACC-SR-U APP-SR-I APP-SR-L ATIS GP SMC TWR CLRD	5 5 (7) 1 (1) 1 (1) 1 (1) 1 (1) 1 (1) 1 (1) 1 (1)	3 (06/08)		X (06/08)	X (06/08)	X (06/08)		

Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
MMAN MONTERREY/ Aeropuerto Del Norte Intl.	TWR	1 (1)							
MMMY MONTERREY/Gral. Mariano Escobedo Intl.	ACC-SR-L ACC-SR-U APP-SR-I APP-SR-L ATIS GP SMC TWR	2 2 (3) 1 (1) 1 (1) 1 (1) 1 1 (1) 1 (1)	3 (06/08)		X (06/08)	X (06/08)	X (06/08)		
MMMM MORELIA/ Gral. Francisco Mujica Intl.	APP-L TWR	1 1 (1)							
MMNG NOGALES/Nogales Intl.	AFIS	1							
MMNL NUEVO LAREDO/ Quetzalcoatl Intl.	APP-L TWR	1 1 (1)							
MMPG PIEDRAS NEGRAS/Intl.	ATIS	1 (1)							
MMPR PUERTO VALLARTA/ Lic. Gustavo Díaz Ordaz Intl.	APP-SR-I APP-SR-L ATIS SMC TWR	1 (1) 1 (1) 1 1 1 (1)							
MMRX REYNOSA/Gral. Lucio Blanco Intl.	APP-L TWR	1 1 (1)							
MMSF SAN FELIPE/ San Felipe Intl.	AFIS	1 (1)							
MMSD SAN JOSE DEL CABO/San José del Cabo Intl.	APP-I TWR GP	1 1 (1) 1							
MMTM TAMPICO/Gral. Francisco Javier Mina Intl.	APP-I TWR GP	1 (1) 1 (1) 1							
MMTP TAPACHULA/ Tapachula Intl.	TWR	1 (1)							
MMTJ TIJUANA/ Gral. Abelardo L. Rodríguez Intl.	APP-SR-I APP-SR-L ATIS GP TWR SMC	1 (1) 1 (1) 1 (1) 1 (1) 1 (1) 1							
MMTO/TOLUCA/Lic. Adolfo Lopez Mateos	TWR GP	1 (1) 1							
MMTC TORREON/Torreón	APP-L	1 (1)							

CNS

Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
Intl.	TWR	1 (1)							
MMVR VERACRUZ/Gral. Heriberto Jara Intl.	APP-L TWR	1 (1) 1 (1)							
MMVA VILLAHERMOSA/ C.P.A. Carlos Rovirosa	APP-L TWR	1 1 (1)							
MMZC ZACATECAS/Gral. Leobardo Ruíz Intl.	APP-I TWR	1 1 (1)							
NETHERLANDS ANTILLES (Netherlands)									
TNCF CURACAO	ACC-U GP	3 (2)-ER 1 (1)	2 (06/08)		X (06/08)	X (06/08)	X (06/08)		
TNCB KRALENDIJK/ Flamingo, Bonaire I.	APP-I TWR	1 1 (1)							
TNCE ORANJESTAD/ F.D. Rossevelt, St. Eustacius I.	TWR	1							
TNCM PHILIPSBURG/Prinses Juliana, St. Maarten I.	APP-I TWR SMC	1 1 1							
TNCC WILLEMSTAD/Hato, Curacao I.	APP-I TWR SMC APP-SR-I	1 1 (1) 1 1 (1)							
PUERTO RICO (United States)									
TJBQ AGUADILLA/Rafael Hernández Intl.	TWR	1 (1)							
TJFA FAJARDO/Diego Jiménez Torres	TWR	1 (1)							
TJMZ MAYAGUEZ/Mayaguez	SMC TWR	1 1							
TJPS PONCE/Mercedita	TWR SMC APP-L	1 1							
TJZS SAN JUAN	ACC-U GP-U	11	4 (06/08)	CAR-A (6) CAR-B (1) NAT-A (5)	X (06/08)	X (06/08)	X (06/08)		

Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
TJSJ SAN JUAN, PUERTO RICO/Luis Muñóz Marin Intl.	ATIS TWR SMC APP-SR-I	1 (1) 2 (1) 1 (1) 2 (2)							
TJVQ VIEQUES/Antonio Rivera	TWR	1 (1)							
TRINIDAD AND TOBAGO									
TTZP PIARCO	ACC-SR-U ACC-U GP	3 4 (2) 1 (1)	2 (06/08)	CAR-A (3) CAR-B (1) SAM-2 (2)	X (06/08)	X (06/08)	X (06/08)		
TTPP PORT OF SPAIN/ Piarco Intl., Trinidad I.	APP-I APP-SR-I TWR SMC ATIS	1 2 (1) 1 (1) 1 (1) 1 (1)							
TTCP SCARBOROUGH/ Crown Point, Tobago I.	APP-I TWR SMC	1 (1) 1 (1) 1 (1)							
TURKS AND CAICOS ISLANDS (United Kingdom)									
MBGT GRAND TURK/ Grand Turk Intl.	APP-L TWR	1 1 (1)							
MBPV PROVIDENCIALES/ Intl.	APP-L TWR	1 (1) 1 (1)							
MBSC SOUTH CAICOS/Intl.	APP-L TWR	1 1 (1)							
UNITED STATES									
KZWY NEW YORK	GP-U	1-ER	1 (06/08)	CAR-A CAR-B	X (06/08)	X (06/08)	X (06/08)		
	CLRD	1	1 (06/01)						

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ATTACHMENT TO THE APPENDIX/
ADJUNTO AL APÉNDICE

A- SUMMARY OF THE IMPLEMENTATION OF SPEECH BY SATELLITE CONTAINED IN TABLE CNS2A FASID / RESUMEN DE LOS REQUISITOS DE IMPLEMENTACIÓN DE VOZ POR SATÉLITE CONTENIDOS EN LA TABLA CNS 2A DEL FASID				
State/Territory/International Organization Estado/Territorio/ Organización	**Centre/Centro**	**Number of channels required/ Número de canales requeridos**	**Implementation date/ Fecha de Implementación**	**Remarks/ Observaciones**
JAMAICA	Kingston ACC	x	June/Junio de 2006	
MEXICO	Mazatlán ACC	x	June/Junio de 2008	
	Mérida ACC	x	June/Junio de 2008	
	México ACC	x	June/Junio de 2008	
	Monterrey ACC	x	June/Junio de 2008	
NETHERLANDS ANTILLES/	Curaçao ACC	x	June/Junio de 2008	
TRINIDAD & TOBAGO	Piarco ACC	x	June/Junio de 2008	
UNITED STATES	San Juan ACC, Puerto Rico	x	June/Junio de 2008	
	New York	x	June/Junio de 2008	
COCESNA	Cenamer ACC	x	June/Junio de 2008	

B- SUMMARY OF THE IMPLEMENTATION DATA BY VHF, HF AND SATELLITE CONTAINED IN TABLE CNS 2A OF THE FASID/ RESUMEN DE LOS REQUISITOS DE IMPLEMENTACIÓN DE DATOS VHF, HF Y POR SATÉLITE CONTENIDOS EN LA TABLA CNS 2A DEL FASID				
State/Territory/International Organization Estado/Territorio/ Organización	**Centre/Centro**	**Number of channels required/ Número de canales requeridos**	**Implementation date/ Fecha de Implementación**	**Remarks/ Observaciones**
CUBA	Habana ACC	Data/Datos VHF and/y HF	June/Junio 2006	
DOMINICAN REPUBLIC	Santo Domingo	Data/Datos VHF	June/Junio 2008	
HAITI	Port-au-Prince ACC	Data/Datos VHF	June/Junio 2008	
JAMAICA	Kingston ACC	Data/Datos VHF, HF and/y Satellite	June/Junio de 2006	
MEXICO	Mazatlán ACC Mérida ACC México ACC Monterrey ACC	Data/Datos VHF, HF and/y Satellite Data/Datos VHF, HF and/y Satellite Data/Datos VHF, HF and/y Satellite Data/Datos VHF, HF and/y Satellite	June/Junio 2008 June/Junio 2008 June/Junio 2008 June/Junio 2008	
NETHERLANDS ANTILLES	Curaçao ACC	Data/Datos VHF, HF and/y Satellite	June/Junio 2008	
UNITED STATES	San Juan ACC, Puerto Rico New York	Data/Datos VHF, HF,and/y Satellite Data/Datos VHF, HF and/y Satellite	June/Junio 2008 June/Junio 2008	
COCESNA	Cenamer ACC	Data/Datos VHF, HF and/y Satellite	June/Junio 2008	