



**Agenda Item 4**

**Air Navigation Matters**

**4.2 Follow-up on the implementation of the NAM/CAR Regional Performance Based Air Navigation Plan (RPBANIP) in Eastern Caribbean**

**FOLLOW UP TO AMS COMMUNICATIONS IMPROVEMENTS, AMHS AND AIDC IMPLEMENTATION AND ADS-B ACTIVITIES**

(Presented by the Secretariat)

SUMMARY	
This working paper presents for review the progress in the planning and implementation of AMS Communication improvements, AMHS and AIDC implementation and ADS-B activities.	
<b>References:</b>	
<ul style="list-style-type: none"><li>33rd Eastern Caribbean Working Group (E/CAR/WG/33) Meeting, Barbados, June 2012</li></ul>	
<b>Strategic Objectives</b>	<i>This working paper is related to Strategic Objectives: A. Safety – Enhance global civil aviation safety C. Environmental Protection and Sustainable Development of Air Transport</i>

**1. Introduction**

1.1 Some air navigation services and systems are progressing in their implementation faster due to the nature of the service and the operational impact to the regularity and safety of the operations, such is the case of the improvements to aeronautical mobile service (AMS) communications, the regional coordination on the ATS Message Handling System (AMHS), initial implementation of AIDC using CPL-LAM messages and the trials and analysis on ADS-B data. All these issues are considered in the Regional performance Objective - RPO 9 *Optimization and Modernization of Communication Infrastructure* of the RPBANIP.

1.2 During the E/CAR/WG/33 meeting Conclusion E/CAR/WG 33/8 *Action Plan for AIDC Implementation Using CPL - LAM Messages* was formulated and the following updates were commented by the CNS Committee and the participants:

- a) In May 2011 Trinidad and Tobago formalized an agreement with ARINC for the provision of HF service in the PIARCO Oceanic airspace to seek improving this service

- b) In compliance with the Air Navigation Plan requirements for Trinidad and Tobago, FANS-1A services from ARINC were approved and an agreement was signed in June 2012 for the provision of ADS-C and CPDLC services.
- c) Improvement with new VHF AMS frequencies and equipment were achieved in the PIARCO FIR
- d) France informed their latest progress with the implementation of ADS-C and CPDLC in French Guyana and ADS-B surveillance for general aviation users.
- e) ICAO presented a brief review on the ADS-B and Multilateration (MLAT) work and activities in the CAR Region, urging the States to support the ADS-B data analysis, informing their plans or activities related to ADS-B and encouraging participation in the ADS-B Ad-hoc groups by designating a focal point by State for future coordination. Barbados and ECCAA were invited to designate a point of contact for this participation by 30 June, 2012.

## 2. Discussion

2.1 The following progress has been made through the Adhoc groups, teleconferences and bilateral coordination as follows:

### *Improvements to Aeronautical Mobile Service (AMS) communications*

2.1.1 Identification of problems made, survey conducted and a regional follow-up table was prepared (**Appendix A** to this paper). Similarly this information was discussed with the airspace users through IATA, through a presentation (**Appendix B**) to the 34th Latin America & Caribbean Regional Coordinating Group of IATA held in Miami, United States, from 21 to 22 May 2013. Also other operational issues were commented with IATA regarding flight plans issuing and deficiencies identification. Deficient HF communication service in PIARCO FIR was noted.

2.1.2 IATA expressed its support for these improvements, highlighting:

- Airlines and IATA are committed to supporting improvements toward identification of communication deficiencies in the region
- Airlines will provide IATA with feedback of deficiencies/improvements to be coordinated with ICAO
- IATA POC on ATM issues: Marco Vidal
- IATA POC on FPL issues: Floyd Abang
- All deficiencies presented in the working paper, were reaffirmed as areas of required improvement in the region.

### *Regional coordination on the ATS Message Handling System (AMHS)*

2.1.3 Result of the AMHS implementation meetings/workshop, a regional implementation plan has been adopted mainly interconnecting the different ANSPs in the CAR Region and the Atlanta AMHS MTA System. An evaluation and update of this Plan will be carried out in September 2013 in the ICAO/FAA AMHS Implementation Follow up Workshop/Meeting.

2.1.4 The Regional AMHS Implementation Plan is available at ICAO NACC Regional website:

<http://www.mexico.icao.int/fasid/ACTION%20PLAN%20AMHS%20implementation%2018%20April%202012.pdf>

*Initial implementation of AIDC using CPL-LAM messages*

2.1.5 Following the exchange of information on the operational benefit achieved with the initial implementation of AIDC using the CPL and LAM messages, a regional teleconference was conducted and an initial implementation plan for AIDC was formulated as requested by conclusion E/CAR/WG/33/8. The revision of the NAM Interface Control Document (ICD) and the CAR/SAM ICD was agreed to be review by the GREPECAS C Project *Automation and Improvements to Situation Awareness*. **Appendix C** presents this initial planning.

*Trials and analysis on ADS-B data.*

2.1.6 The current ADS-B implementation information: strategy, trials, tests, points of contact and agreements are available at: <http://www.mexico.icao.int/CNS.html#Surveillance>

2.1.7 A follow-up workshop on ADS-B implementation will be carried out on October 2013 in the ICAO NACC Regional Office in Mexico City.

### **3. Suggested Action**

3.1 The meeting is invited to:

- a) take note of this information and its appendices;
- b) urge Trinidad and Tobago to review and complete the AMS Follow-up Table shown in Appendix A and propose actions in its solution;
- c) suggest actions to join and follow-up the ADS-B Adhoc Group activities;
- d) review the AMHS and AIDC planning for updates; and
- e) take any action deem necessary.

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## CONCLUSION 3 IMPROVEMENTS TO AMS COMMUNICATION SERVICES IN THE CAR REGION Update: 2 April 2013

State/Organization	Type deficiency (No coverage, poor quality, intermittent failure)	Deficiency description (include if permanent, time of day, other considerations)	ATS Route + pair of waypoints	Has been reported by airlines, ATCO or other sources	Solution				
					Planned Solution (add more pages as needed)	Target date of solution:	Is participation of adjacent FIR or airline users requested?	Focal point for deficiency details and solution	Remarks
						Month- year			
COCESNA	poor quality, and no coverage in some aereas in some hours	Lack of HF AMS Communications in ATS routes in the Pacific Ocean	UL 312: Artom (1°25'N, 87°28'W). Vodir (5°31'N, 90°39'W), Rotro (8°52'N, 95°31'W),  UL 344: Pogam (9°49'N, 93°53'W)	yes	COCESNA's HF improvements	1 phase, 15 January 2013 (RX System)	Testing the new systems when installed.	Juan Carlos Trabanino (juancarlos.trabanino@cocesna.org) and Roger Alberto Pérez (roger.perez@cocesna.org)	
						2nd Phase, 15 November 2013 (TX System)  1 February 2013 FANS 1A (one year contract/test)			
Jamaica	Main radio 128.35 MHz No coverage	Permanent	U/G448/Levor Levor, north to about 100 miles south of GCM. U/G448/North Levor UM782	Airline & ATCO	Radios to be placed at Puerto Cabezas (Nicaragua)	No determined	Yes, Participation from adjacent FIR	Carl Gaynair ( mats@jcaa.gov.jm) and Orville Shaw (oshaw@jcaa.gov.jm)	There is no radar coverage or intermittent radar coverage for the area as well as no or poor radio communication. as well as no or poor radio communication. Radar sharing agreement being contemplated. Links from the radios to Kingston will be via Satellite
	Main radio 128.35 MHz poor quality/ Intermittent failure	Permanent (During the afternoon especially when there is increased cloud cover and/or precipitation)	UL465 Arnal and south of Arnal UG 448, UB 767, UL 465, UG 633, UR 644, UG 877	Airline & ATCO	Radios to be placed at Puerto Cabezas (Nicaragua)	No determined	Yes, Participation from adjacent FIR		Intermittent radar coverage as well as no or poor radio communication. Radar sharing agreement being contemplated
Haiti	Lack or deficient AMS coverage	permanent	Port-au-Prince FIR	Adjacent FIRs and airlines	??	??	???	Yves André-César (yacesar@hotmail.com)	??
Mexico	lack of AMS coverage	permanent	ATS routes near Acapulco tow	Airline & ATCO	??	??	???	Ever Molina (emolinac@sct.gob.mx)	??
	no coverage in some aereas in some hours: Mazatlan Oceanic FIR	Lack of HF AMS Communications in ATS routes in the Pacific Ocean	No fixed ATS routes	??	??	??	??		??
PIARCO	HF Com	permanent	Oceanic airspace PIARCO FIR	??	ADS-C/CPDLC	2013	??	Veronica Ramdath (vramdath@gmail.com)	



**ORGANIZACIÓN DE AVIACIÓN CIVIL INTERNACIONAL**  
*Agencia Especializada de las Naciones Unidas*

## **34th Latin America & Caribbean Regional Coordinating Group**

(Miami, United States, May 21st and 22nd, 2013)

### **Users participation and contribution to Air Navigation Improvements in the CAR Region**

## **AGENDA**



-  Introduction
-  Aeronautical Mobile Service communications improvements
-  Missing, Duplication and Rejection of Flight Plans
-  Operational Air Navigation deficiencies notification by IATA

Página 2

## INTRODUCTION



### Regional Air Navigation Implementation Working Groups (<http://www.mexico.icao.int/RegionalGroups.html>):

- ✈ Harmonized implementation of Air navigation in the Region
- ✈ Carried out activities under a performance-based basis
- ✈ Regional meetings- annually
- ✈ in agenda- identification of improvements and needs for operational improvements
- ✈ Regional Implementation Plan (RPBANIP)
- ✈ NAM/CAR ANI/WG establishment

Página 3

## Aeronautical Mobile Service communications improvements




- ❖ According to the CAR/SAM Air Navigation Plan, Doc 8733 Air-ground voice communications facilities should be recommended to meet effectively and reliably the agreed requirements for ATS as well as, to the extent required, all other classes of traffic acceptable on the AMS.
- ❖ The facilities should employ voice communications based on available transmission media (e.g. HF, VHF, satellite).
- ❖ This decision should be based on system performance and financial criteria to comply with operational needs.

Página 4

Aeronautical  
communications improvements

Mobile

Service



### Detection of lack or deficient service of AMS communications


Under the NAM/CAR Regional Performance based Air Navigation Implementation Plan (RPBANIP) and as part of the Regional Performance Objective 9. *Optimization and Modernization of Communication Infrastructure*, activities had been agreed for improvements to the AMS communications in the CAR region.

Página 5

Aeronautical  
communications improvements

Mobile

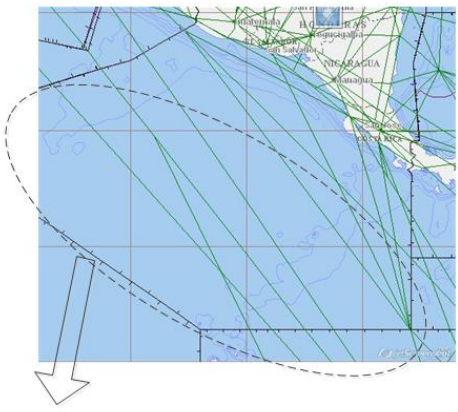
Service



Carencia de comunicaciones SMA HF en rutas ATS del Pacífico

Several areas with deficient quality and coverage of AMS communications in the upper and lower airspace as shown below:

Pacific Oceanic Airspace:  
FIR Central America



Comunicaciones HF muy deficientes o falta completa de comunicaciones HF

Página 6

Aeronautical Mobile Service

### LACK OF AMS VHF COMMUNICATIONS IN CENTRAL CARIBBEAN

Lack/deficient VHF AMS coverage in Central Caribbean

Carencias working on improving VHF Communications for these ATS routes: Ad-hoc group: Rep Demy/Carency/Heath/romania

ATS Routes bordering Central American FIR - SW part of Kingston FIR

ATS Routes bordering Southern part of Kingston FIR - Panama FIR: DUSLIN FL 350

Página 7

Aeronautical Mobile Service

### Carencias o deficiencias en comunicaciones VHF en Pacifico Mexicano


Lack - deficient AMS VHF Communications in routes close to the Pacific coasts – near Acapulco and boundary with Central America FIR

Carencia – pobre calidad de las comunicaciones AMS VHF en las rutas cercanas a la costa del Pacifico- cercanas a Acapulco y frontera con FIR Centroamericana


Página 8



Aeronautical Mobile Service  
communications improvements




There is a lack of VHF communications coverage in the low airspace ATS routes for example: El Salvador, Guatemala, Nicaragua and Costa Rica where some improvements with a extension of radio repeaters is being implemented to optimize the service and safety of flights.



Página 9

Aeronautical Mobile Service  
communications improvements




**Follow-up to improvements to service of AMS communications**

- In 2012, a survey was carried out to identify other communication deficiencies as well as the corrective actions planned for its solution and or improvements.
- The progress and effort carried out by the States to solve these deficiencies has been followed-up and coordinated by adhoc groups that will report to the ANI/WG. These ad-hoc groups are formed by the participating States/ANSPs.

The WGs and ICAO identified that the users' participation in identifying and validating the solutions or improvements was of prime importance to ensure the best results of the improvement activities.

Página 10

## Aeronautical Mobile Service communications improvements



### Follow-up to improvements to service of AMS communications

#### CURACAO


**Deficiency:** No AMS VHF communications in the Northwest (NW) part of the Curacao FIR (PALAS to OROSA)

**Improvement/solution:** Improvement to AMS VHF communications by Curacao ANSP: Dutch ANSP with the replacement of their Voice Communication System and interface system between VCSS and high site, with a new antenna installation and antenna amplifier.

**Date of testing:** February 2012 with the participation of Copa Airlines and IATA and with adjacent FIRs in July 2012.


**Date of confirmation of solution:** March 2013

**Solution confirmed by:** users 'reports



Página 11

## Aeronautical Mobile Service communications improvements




### Follow-up to improvements to service of AMS communications

#### JAMAICA

**Deficiency:** No AMS VHF communications in the Southwest (SW) part of the Kingston FIR (PLEVOR and ARNAL) and PESTO waypoint

**Improvement/solution:** Improvement to AMS VHF communications by Kingston ACC with the implementation of a radio VHF repeater in Puerto Cabezas. This implementation is made with coordination with COCESNA.

**Date of testing:** Nov 2012 up to today. Technical problems for transmitting the radio signal. Trials to be made shortly



Página 12

**HAITI**

**Improvement/solution:**  
Need to habilitate remote radio site and replace radio and associated systems. TBD



Página 13

**Deficiency:** Poor HF communication in the Pacific Oceanic Airspace of the Central American FIR in waypoints ARTOM, VODIR, ROTRO and POGAM

**Improvement/solution:** Improvement to AMS communications by CENAMER ACC with the implementation of a new HF system (late 2013), a radio VHF repeater in Isla Coco and ADS\_C/CPDLC trials in 2013 These implementations are made by COCESNA.

**Date of testing:** middle 2013

**Deficiency:** Deficient VHF Communications in routes close to the Pacific coasts – near Acapulco and boundary with Central America FIR

**Improvement/solution:** Improvement to AMS communications by SENEAM with the implementation of a new radio equipment (TBD)

**Deficiency:** Lack or deficient VHF radio coverage for FIS/APP within Managua, Aurora and el Coco TMAs

**Improvement/solution:** Improvement to radio coverage had been implemented in Nicaragua and Costa Rica since early 2013.

Página 14

## Aeronautical Mobile Service communications improvements



### Follow-up to improvements to service of AMS communications

The WGs and ICAO identified that the users' participation in identifying and validating the solutions or improvements was of prime importance to ensure the best results of the improvement activities.

IATA is requested through its members to support these improvements efforts by:

- identifying deficiencies in COM: Existing and new
- participate in the evaluation of improvements by designating a Point of Contact (PoC) for this coordination with ICAO
- participation in ADS-C/ CPDLC trials informing on current aircraft fleet avionic capability

Página 15

## Missing, Duplication and Rejection of Flight Plans



- ❖ States and Service Providers have identified a significant percentage of lost/missing, errors in, and duplication of flight plans which impacts safety and efficiency of the Air Traffic Services.
- ❖ Problem has been analyzed by the different Working Groups and the NAM/CAR States/Territories and COCESNA were urged to implement actions to avoid errors, missing and duplication of flight plans to ensure the safety and optimize efficiency of air navigation services. (NACC/WG Conclusion 3/3)
- ❖ With the implementation of the new ICAO model Flight Plan, many improvements have been made to the ATS Systems/ procedures, including training of FPL filing, however the errors, missing and duplication of flight plans are still a significant concern.

Página 16

## Missing, Duplication and Rejection of Flight Plans



### Actions taken by ANSPs:

- ❖ Several multinational and national analyses have been carried out by the Eastern Caribbean States, Central American States, Cuba, Dominican Republic and United States
- ❖ More automation on AFTN/FPL terminal and system
- ❖ New Flight Plan Processing systems implemented
- ❖ Centralized FDP System in the Eastern Caribbean being implemented by July 2013
- ❖ Training of staff and procedures improvements

IATA is requested through its members to support these improvements efforts by:

- report problems related with FPLs from the users perspective (Dispatcher, pilots, etc.)
- participate in the discussion on the action plans to evaluate the causes of these problems; and
- designate a Point of Contact (PoC) for this coordination with ICAO

Página 17

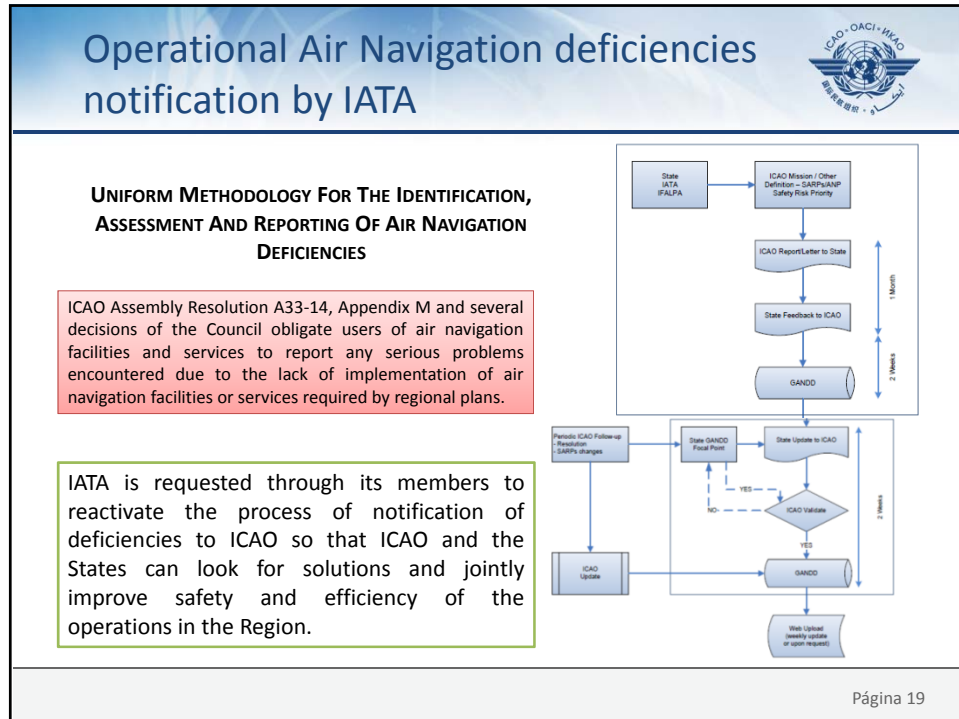
## Operational Air Navigation deficiencies notification by IATA



### UNIFORM METHODOLOGY FOR THE IDENTIFICATION, ASSESSMENT AND REPORTING OF AIR NAVIGATION DEFICIENCIES

- ❖ Approved by the ICAO Council on 30 November 2001
- ❖ Definition of deficiency: situation where a facility, service or procedure does not comply with a regional air navigation plan or with related ICAO SARPS, and which situation has a negative impact on the safety, regularity and/or efficiency of international civil aviation.
- ❖ for the efficient identification, assessment and clear reporting of air navigation deficiencies.
- ❖ One of the main sources for collecting information is the users, where Appropriate international organizations, including IATA and IFALPA are valuable sources of information on deficiencies, especially those that are safety related.
- ❖ IATA as users of air navigation facilities, should identify facilities, services and procedures that are not implemented or are unserviceable for prolonged periods or are not fully operational.

Página 18



**CPL-LAM IMPLEMENTATION      Update: 9 May 2013**

State	1 Does your current Flight Data Processing System (FDP) have the capacity to process CPL-LAM messages? (Y/N) If not, when will your FDP have this capacity? Indicate date If yes, please indicate FDP model, manufacturer and any relevant equipment information to identify the system.	2 Indicate with what adjacent FIR/ATS Unit is the CPL-LAM implementation required:	3 Please indicate intended date for CPL-LAM testing and implementation:	4 Please provide Point of Contact for further CPL-LAM coordination (name, title, e-mail, phone number)	5 If CPL-LAM has been implemented, please provide bilateral agreement(s) for its operation, if applicable (for example ICD document)	6 CPL-LAM messages are transmitted through AFTN circuits, what is the current AFTN circuit speed and, if any, upgrade for CPL-LAM implementation:	7 Provide comment or concerns for CPL-LAM implementation
Cuba	yes - Oracle Version 9 modified by LITA-CUBA	FIR Miami	With Miami was started in 15 December 2011. Merida started in 9 March 2012. With the other FIRs the implementation date hasn't been established.	Manuel Vega Rodríguez, Operations Management Havana ACC (537) 649-7281 manuelvega@aeronav.ecasa.avianet.cu	NAM-ICD Version D	19200 BPS	We received many mistakes from the users in the FPL, in almost all fields. We have detected changes in the FPL forwarded by ACC's or ANSP offices related to FPL's presented by operators
		FIR Merida					LOA pending to be approved by Mexico
		FIR Kingston					
		FIR CENAMER					
		FIR Haiti					
Dominican Republic	No - For mid 2013 yes- TopSky-ATC, Thales ATM	KZMA/Miami ARTCC	1 Oct 2013 - Ready to test	Julio Cesar Mejia A. Enc. ATM, jmejia@idac.gov.do, 809 274-4322. Ext. 2103 + Fernando Casso, fcasso@idac.gov.do	NAM-ICD Versión D	AFTN: 9600 bps/ AMHS: 64 Kbps	
		TJZS/San Juan CERAP	1 Oct 2013 - Ready to test				
		TNCF/Curazao ACC	1 Oct 2013 - Ready to test				
		MTEG/Port au Prince ACC	TBD				
Mexico	Yes- FDP=EUROCAT-X.V3 Model, Producer= THALES ATM, INFO= Four Control Centres, all Mexico covered	Central America (COCESNA/CENAMER)	Mexico FDP system available	Ing. Jose de Jesus Jimenez Director de Sistemas Digitales SENEAM/SCT/MÉXICO xxxxxx@sct.gob.mx 55 57 86 55 32	NAM-ICD Versión D	19200 bps	Mexico already counts with the implementation of CPL/LAM information exchange between: MZT ≤ ≥ LAX, MZT ≤ ≥ ABQ, MTY ≤ ≥ ABQ, MTY ≤ ≥ HOU, MID ≤ ≥ HOU, MID ≤ ≥ HAB
United States	Yes - The domestic FDP is integrated into the Host Automation / En Route Automation Modernization (ERAM) systems. Lockheed-Martin (LMCO) is the prime contractor for the Host/ERAM system. The flight data function of the San Juan Combined Center / Radar Approach Control (CERAP) is integrated into the Miami Air Route Traffic Control Center (ARTCC) Host/ERAM. Ocean21 provides its own FDP processing in the oceanic environment. LMCO is also the contractor for Ocean21.	Current United States Domestic North American interfaces which have been implemented include: Canada (Seattle ARTCC-Vancouver ACC; Salt Lake ARTCC-Edmonton ACC/Winnipeg ACC; Minneapolis ARTCC- Winnipeg ACC/Toronto ACC; Cleveland ARTCC-Toronto ACC/Mazatlan ACC; Los Angeles ARTCC-Mazatlan ACC Cuba – Miami ARTCC – Havana ACC ACC; Boston ARTCC-Montreal ACC/Moncton ACC. Mexico – Houston ARTCC-Merida ACC/Monterrey ACC; Albuquerque ARTCC-Monterrey	Future initiatives being evaluated: - Additional NAM ICD Phase II message set enhancements (beyond CPL & LAM) of the Miami ARTCC – Havana ACC interface are being planned airspace/system capabilities for potential interfaces: Piarco FIR, Nassau FIR and Santa Domingo FIR tentatively for development in 2013. - Analysis of Caribbean and oceanic airspace/system capabilities for potential interfaces: Piarco FIR, Nassau FIR and Santa Domingo FIR	Dan Eaves, Federal Aviation Administration Air Traffic Control Specialist, Dan.Eaves@FAA.gov, 202-385-8492	NAM-ICD Versión D	US- Mexico: NADIN/AFTN 64 kbps X.25 US-Cuba : MEVA II 19.2 kbps connection to NADIN	None
COCESNA (CENAMER)	FDP System to be upgraded in 2013	Merida, Panama (in the future analyses connection with Havana, Kingston, Bogota and Guayaquil)	COCESNA still does not has date for testing and implementation	Juan Carlos Trabanino, Director ACNA, juan.trabanino@cocesna.org, (504) 2234 3360 ext. 1510 Roger Perez (roger.perez@cocesna.org) Mauricio Matus (mauricio.matus@cocesna.org) Carlos Carbajal (carlos.carbajal@cocesna.org)	NAM-ICD Version D	N/A (the current AFTN circuit speed is 1.2 kbps internally and 9.6 kbps the international)	The ability to process this type of messages will be complete once COCESNA have installed the New Control Centre. The required bandwidth must be analyzed prior to the implementation of this type of messages, however, considering only text messages we estimated that the actual bandwidth via AFTN is sufficient.
		Havana					
		Panama					
		Merida					
		Kingston					
		Bogota					
		Guayaquil					
Nassau					NAM-ICD Version D		
Port-au-Prince					NAM-ICD Version D		
PIARCO		SAL ACC		Ian Gomez, ATS Manager, TTCAA, igomez@ttcaa.tt	NAM-ICD Version D		
		NEW YORK ACC			NAT ICD		
		French Guyanne, Maiquetia, San Juan			???		
Curacao		Maiquetia ACC		Jacques Lasten, ATS Manager, DC-ANSP, j.lasten@dc-ansp.org			
		Kingston ACC			NAM-ICD Version D		