International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

NACC/WG/5 — WP/12
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Fifth North American, Central American and Caribbean Working Group Meeting (NACC/WG/5)
Port of Spain, Trinidad and Tobago, 22-26 May 2017

Agenda Item 3: Implementation on Air Navigation Matters
3.3 ANI/WG Progress on AIM, ATM and CNS

PROGRESS REPORT ON AMHS TASK FORCE WORK PROGRAMME

(Presented by ANI/WG AMHS Task Force Rapporteur)

EXECUTIVE SUMMARY

This working paper presents the progress achieved by the Aeronautical Message Handling System (AMHS) Task Force since its creation in the ANI/WG/1 Meeting. Following the work programme of the Task Force and its deliverables, the note includes the results for these deliverables and recommendations for improving the Task Force function and coordination.

Action:	The suggested action is presented in Section 3.
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Security & Facilitation • Economic Development of Air Transport • Environmental Protection
References:	• NAM/CAR Regional Performance-Based Air Navigation Implementation Plan • Third NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/3), Mexico City, Mexico, 4 to 6 April 2016 • Air Navigation Services (ANS) Air Traffic Services (ATS) Safety Inspector Meeting/Workshop, Mexico City, Mexico, 20 to 24 February 2017

1. Introduction

1.1 The Aeronautical Message Handling System (AMHS) Task Force was formed in order to streamline activities related to air navigation implementation activities. Implementation of AMHS shall be completed in accordance with the Regional AMHS Implementation Plan.

1.2 Since the last Third NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/3)held in Mexico City, Mexico 4-6 April 2016 and after the successful transition from MEVA II to MEVA III in the Central Caribbean, transition process has tremendously improved in the Caribbean area.

2. AMHS TF Progress and Results

Terms of Reference (ToR) and Work Program

2.1 The ToR was revised to update existing membership. The revised ToR and Work Programme are presented under **Appendices A** and **B** to this Working Paper.

Activities carried out by the Task Force

2.2 With the increased activity in AMHS interoperability testing following MEVA III implementation, topics have been identified which might need to be addressed in preparation for future States' implementation activities:

1. Router equipment should be deployed to support IP point-to-point serial links between States and provide gateway Network Address Translation (NAT) to a private Local Area Network (LAN) hosting AMHS Message Transfer Agent (MTA) and other equipment. Expertise identifying this equipment and designing a private LAN is sometimes required.

2. NAM/CAR IP addressing scheme omitted /30 IP address assignments for US-Jamaica; US-Panama; and US-Bermuda links. This should be revised and NAM/CAR IP scheme document updated during the next AMHS Task Force Meeting. Proposed address assignment shown in **Appendix C.**

3. States are expected to provide MTA host IP addresses conforming to the ICAO IP addressing scheme adopted by the CAR/SAM Regions (http://www.icao.int/NACC/Documents/eDOCS/CNS/NAMCAR-IPv4AddressingSchemeFinal.pdf). A single IP address identifying redundant AMHS MTA equipment is desirable. Expertise for the configuration of NAT and associated router configurations is sometimes needed.

4. AMHS interoperability testing is often necessary using the same equipment currently providing operational Aeronautical Fixed Telecommunication Network (AFTN) traffic. In this case, extreme care must be taken to ensure that AMHS test messages do not 'leak' into the operational AFTN network. Careful review of test scenarios and address routing configuration is needed.

5. Care should be taken for implementation of AFTN-AMHS gateways supporting Air Traffic Services Inter-facility Data Communications (AIDC) messages. Carriage Return/Line Feed insertion ('folding of any line longer than 69 characters' - ICAO 9880 Part II, 4.5.2.2.11.d) can corrupt these messages and it is recommended that this feature be suppressed.
6. Prior to AMHS cutover, it is often desirable to exchange recorded operational AFTN traffic. This provides an environment for operator training and other development activities. Investigation of this capability and/or other stepwise traffic transitions is required.

2.3 Based on the above mentioned information, the following Draft Conclusion is proposed:

DRAFT CONCLUSION
NACC/WG/5/XX REVISION OF THE NAM/CAR IP ADDRESSING PLAN

That, the NAM/CAR IP Addressing Plan be review and updated accordingly to include /30 IP addresses assignments for the following:

a) United States – Jamaica
b) United States – Panama
c) United States - Bermuda

2.4 During the ANI/WG/3 Meeting, the AMHS Regional Plan was reviewed and updated accordingly. Since the last meeting, Cuba, Trinidad and Tobago, Sint Maarten and COCESNA have successfully transitioned from AFTN to AMHS.

2.5 Aruba, Cayman Islands and Jamaica already started interoperability testing as part of the transition process. The AMHS Regional Plan was updated to show the States that have successfully transition from AFTN to AMHS. This is shown under **Appendix D** of this Working Paper

2.6 The list of active Task Force Members depicted below was revised and updated accordingly:

State	Point of Contact	Email
Cuba	Carmen de Armas	carmen.dearmas@iacc.aivanet.cu
	Carlos Jiménez Guerra	carlosm.jimenez@iacc.avianet.cu
Dominican Republic	Fernando Casso	fernando.casso@idac.gov.do
Trinidad and Tobago	Veronica Ramdath	vramdath@caa.gov.tt
United States	Dulce M. Rosés	dulce.roses@faa.gov
	Al O'Neill	al.oneill@faa.gov
COCESNA	Reybin Sanabria	Reybin.sanabria@cocesna.org

2.7 The AMHS TF work continues with communication among the members and ICAO. Close coordination with the GREPECAS CAR D Project is kept in order to improve results of each group.

Deliverables and results

2.8 **Task –** Coordination, implementation and trials for ATN ground application/AMHS Implementation

Deliverables

- Update AMHS Regional Plan – **COMPLETED**
- Assistance to AMHS implementing States – **COMPLETED**
- Recommendations for facilitating implementation of AMHS - **COMPLETED**

2.9 **Task –** CAR Router Plan

Deliverables - Revise router plan based on requirements from Member States – **VALID**

2.10 **Task –** AMHS Transition Plan

Deliverables - Revise and update ATN Transition Plan - **COMPLETED**

3. Actions by the Meeting

3.1 The Meeting is invited to:

a) review and approve the AMHS TF ToR and work programme;

b) evaluate the progress of the AMHS TF;

c) review and approve the draft conclusion for the new IPv4 Addressing scheme as presented in paragraph 2.3, and

d) propose any other action or task, as deemed necessary.

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APPENDIX A

ATS MESSAGE HANDLING SYSTEM (AMHS) IMPLEMENTATION TASK FORCE

Terms of Reference

1. Background

During the first ANI/WG meeting, an AMHS Implementation Task Force was formed in order to streamline related air navigation implementation activities. This Task Force shall complete AMHS implementation in accordance with the Regional AMHS Implementation Plan as well as update and report progress to the ANI/WG based on the action plan for these tasks.

2. Responsibilities

The Task Force is responsible for:

a) Work Programme Management
b) Coordination, implementation and trials of ATN ground applications/AMHS implementation (AMHS Regional Plan)
c) Revising and updating the IPv4 address plan and other CAR Region technical implementation issues in accordance with ICAO technical principles and guidelines

3. Working Methods

The Task Force will:

a) Present its work programme containing activities in terms of objectives, responsibilities, deliverables and timelines
b) Avoid duplicating work within the ANI/WG and maintain close coordination among the existing entities to optimize use of available resources and experience
c) Designate, as necessary, Ad hoc Groups to work on specific topics and activities and organize clearly defined tasks and activities
d) Coordinate tasks to maximize efficiency and reduce costs via electronic means including emails, telephone and teleconference calls, and convene meetings as necessary
e) Report on and coordinate the progress of assigned tasks to the ANI/WG

4. ***Work Programme*** - is included in Appendix B

5. *Membership*

Task Force Member - Name	State/T/IO	email
Carmen Dearmas	Cuba	Carmen.dearmas@iacc.avianet.cu
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APPENDIX B

ATS MESSAGE HANDLING SYSTEM (AMHS) IMPLEMENTATION TASK FORCE

WORK PROGRAMME

Task	Deliverables	Start Date	End Date	Responsible	Status	Remarks
Revision of CAR IPv4 Addressing Scheme	Study Results of Configuration of IP Backbone Network	27 Sept 2013	June 2018	Dominican Republic, United States, COCESNA	Valid	Stud pending review of current IPv4 address allocation
	Revised/updated IPv4 plan for CAR Region to remove redundancies	27 Sept 2013	Feb 2014	Dominican Republic (Fernando Casso)	Completed	Final version to be sent to ICAO: April 2014
Coordination, implementation and trials for ATN ground applications/AMHS implementation (AMHS Regional Plan)	Updates AMHS Regional Plan	Oct 2015	May 2017	United States	Completed	
	Assistance to AMHS implementing States	Feb 2014	Oct 2016	All	Completed	Go Teams were not needed anymore
	Recommendations for facilitating implementation of AMHS	Jan 2014	Oct 2014	Dominican Republic, United States, COCESNA	Completed	
CAR Router Plan	Revised router plan based on requirements from Member States	18 Nov 2013	April 2018	Dominican Republic, United States, COCESNA	Valid	United States, Dominican Republic and COCESNA, will continue reviewing plan
AMHS Transition Plan	Revised and updated ATN Transition Plan	18 Nov 2013	Sept 2017	Cuba, Dominican Republic, United States, COCESNA	Valid	
Training	Periodically identify AMHS training matters as needed	27 Sept 2013	June 2018	All	On-going	

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NAM/CAR IP Addressing Scheme

No.	Subnet/Subred	Admin & local host / Admin y Receptor local	Via	Links/Enlace	IPv4 Address / Dirección IPv4
59	10.31.224.232/30	Jamaica	MEVA	Network Address / Dirección de Red	10.31.224.232/30
				Jamaica (Kingston)	10.31.224.233/30
				United States / Estados Unidos (Atlanta)	10.31.224.234/30
				Broadcast Address / Dirección de Multidifusión	10.31.224.235/30
60	10.31.224.236/30	Panama MEVA	MEVA/REDDIG	Network Address / Dirección de Red	10.31.224.236/30
				Panama	10.31.224.237/30
				United States / Estados Unidos (Atlanta)	10.31.224.238/30
				Broadcast Address / Dirección de Multidifusión	10.31.224.239/30
61	10.31.224.240/30	Bermuda	U.S.A. domestic network	Network Address / Dirección de Red	10.31.224.240/30
				Bermuda	10.31.224.241/30
				United States / Estados Unidos (Atlanta)	10.31.224.242/30
				Broadcast Address / Dirección de Multidifusión	10.31.224.243/30

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CAR Region AMHS Implementation Matrix

Update: March 2017	CAR Region AMHS Implementation Matrix												
Administration	STATUS	System Description					System implementation milestones				(COM CHART) Connection with	POC	Remarks
		Location of Facility	AMHS Facility Type	AMHS Vendor	Current Facility Type	Current Vendor	AMHS System Procurement Date	AMHS System Implementation Date	AMHS Interoperability Test	AMHS Service Cutover			
Aruba	**Establishment of Testing Circuit**	Aruba		Thales							United States	Joselito Andrade	**5-2015** In the process of changing AFTN PAD. No projected date for AMHS **12-2016** Csigned Technical Letter **3-2017** System-System test
Bahamas		Nassau					1Q2011 mtg FAA Feb11	Jun 2011	Jun2011 begin testing		United States	Hillard Walker	Q2 2011: will engage an Isode Integrator to provide an AMHS **5-2015 No recent updates**
Cayman Islands	**In Interoperability Testing**	Grand Cayman	MTA + UA	Frequentis	AFTN switch	Frequentis	end 1Q2011	4Q 2014	2Q2015	TBD	United States	Wayne DaCosta	**5-2015 System implemented but not operational. Interoperability testing in process** **4-16 Testing has been suspended until further notificatin from Cayman 3-2017 Initiated testing again**
Dominican Republic	Implemented	Santo Domingo	AMHS - MTA/UAs	Ubitech	AFTN Switch		already	Jan2011	May 2012	Oct 2013	United States	Fernando Casso	Originally implemented on MEVA II. Succesfully transitioned to MEVA III
Cuba	Implemented	La Habana	AMHS - MTA/UAs	ISODE/ In-house	AFTN Switch	Own system	N/A	TBD	2014Q4 - 2015Q2	Mar 2017	United States	Carlos Jimenez y Layla Rodriguez, Carmen de Armas	**3-201 7Parts of the Interoperability Testing performed on MEVA II; testing resumed under MEVA III and completed transition Mar 2017.**
Haiti	Under Study	Port-au-Prince	TBD	TBD	AFTN User	DSA	10/15	03/16	05/16	09/16	United States	Emmanuel Jacques	**06/15 - Current vendor needs to be verify. Updated system implementation milestone.**
COCESNA	System Implemented-ready for testing	Tegucigalpa	AMHS Gateway	ISODE/ In-house	AFTN Switch	COCESNA	N/A	TBD	TBD	TBD	Belize - MTA	Mayda Avila	**5-15 Testing with FAA on hold pending notification from COCESNA** **3-2017 - COCESNA/US implementation completed**
								TBD	TBD	TBD	Guatemala - MTA	Oscar Villela	
								1Q 2013	1Q 2013	1Q 2013	Managua - MTA		
								TBD	1Q 2013	TBD	Mexico - MTA		
								TBD	TBD	TBD	San Jose - MTA		
								1Q 2013	1Q 2013	1Q 2013	San Pedro Sula - MTA		
								TBD	TBD	TBD	San Salvador - MTA		
								1Q2011	Jun 2012	**Mar 2017**	United States		
Jamaica	Establishment of Testing Circuit	Kingston	AMHS G/W	TBD	AFTN Switch	TBD	Q2-2012		Aug 2012	Oct 2012	United States	Derrick Grant	5-15 No updates 4-16 Updating ATN system, Completion projected for end of 2017. **3-2017 Established testing circuit**
Mexico	Coordination initiated	Mexico									Centro-America United States		5 2015 Initiated coordination with SENEAM 4-16 No updates provided at this time.

Update: March 2017	CAR Region AMHS Implementation Matrix												
		System Description					System implementation milestones				(COM CHART) Connection with	POC	Remarks
Administration	STATUS	Location of Facility	AMHS Facility Type	AMHS Vendor	Current Facility Type	Current Vendor	AMHS System Procurement Date	AMHS System Implementation Date	AMHS Interoperability Test	AMHS Service Cutover			
Curacao	Scheduled for testing	Curacao	AMHS MTA	Ubitech	AMHS System	Ubitech	May 2012	Jul 2012	Sept 2015	FeB 2016	Caracas- MTA	Jean Baptiste Getrouw	5-15 no updates
Trinidad and Tobago	Implemented- for testing	Port-of-Spain	AMHS ~~MTA~~/UAs/Gateway	Comsoft	AFTN Switch	Comsoft	Apr 2012	Sep 2012	Sep 12	Sep 12	Anguilla	Veronica Ramdath	5-15 Interoperabiity testing in
									Sep 12	Sep 12	Antigua	Randy Gomez	6-1-15 Testing to continue after MEVA III implementation. FAA to start coordination with T&T the week of 8 June 2015. End-to-end Testing will be coordinated in segment. 4-16 Interoperability testing in progress. 80% completed
									Sep 12	Sep 12	Barbados-UA		
									Oct 2012		Caracas- MTA		
									Sep 12	Sep 12	Dominica - UA		
									Sep 12	Sep 12	Fort-de-France- UA		
									Sep 12	Sep 12	Georgetown-UA		
									Sep 12	Sep 12	Grenada-UA		
									Sep 12	Sep 12	Montserrat-UA		
									Sep 12	Sep 12	Pointe-a-Pitre- MTA		
									Sep 12	Sep 12	Saint Kitts and Nevis-UA		
									Sep 12	Sep 12	Saint Lucia-UA		
									Sep 12	Sep 12	Saint Vincent-UA		
	In Interoperability								2015Q2	**Jan 2017**	United States		
Turks and Caicos	Scheduled for testing	Providenciales	MTA	Stonefield Sys	AFTN Term	Stonefield Sys	1Q 2012	2Q 2012	Feb 2013	Mar 2013	United States	Emmanuel Rigby John T. Smith	**5 2015 No updates**
Sint Maarten	**In Interoperability Testing**		AMHS MTA	IDS	AFTN Switch		2014Q1		2015Q3	Mar 2017	United States	Lloyd Hinds	**Completed Mar 2017**
United States		Atlanta	AMHS G/W	U.S.A.	AFTN Switch	U.S.A.	now	now			Aruba Brazil Caracas Cayman Centro America Curazao Grand Turk La Habana Kingston Lima Mexico Nassau-S Panama Port-au-Prince Port-of-Spain Saint Maarten Santa Domingo ~~Tortola~~	Dulce Roses	5-15 see notes

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