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International Civil Aviation Organization
South American Regional Office
Third Meeting of Air Navigation and Safety Directors of the SAM Region
(Lima, Peru, 22 to 24 August 2016)

Agenda Item 1: Declaration of Bogota: Follow-up to the implementation of air navigation priorities

FOLLOW UP TO THE IMPLEMENTATION OF AMHS INTERCONNECTION AND NATIONAL IP NETWORKS

(Presented by the Secretariat)

SUMMARY

This working paper presents the progress made in the implementation of AMHS interconnections and national IP networks in the SAM Region since the Fourteenth Meeting of Civil Aviation Authorities (RAAC/14).

References

- Second meeting of Air Navigation and Safety Directors - Lima, Peru, 14-16 September 2015.
- Fourteenth meeting of Air Navigation Authorities (RAAC/14) – Santiago, Chile, 27, 28, and 30 October 2015.
- Sixteenth workshop/meeting of the SAM Implementation Group (SAM/IG/16) - Lima, Peru, 19-23 October 2015.
- Seventeenth workshop/meeting of the SAM Implementation Group (SAM/IG/17) - Lima, Peru, 9 -13 May 2016.
- Fourth meeting of the GREPECAS Programmes and Projects Review Committee (CRPP/4) - Lima, Peru, 12 -14 July 2016.
- Summary of AMHS teleconferences (4 November, 7 December 2015 and 29 January and 21 March 2016).

ICAO strategic objectives:	• *A – Safety* • *B – Air navigation capacity and efficiency*

1. Introduction

1.1 AFTN-to-AMHS migration in the SAM Region started in 2005 with the first AMHS implementation in Argentina. To date, all SAM States have an AMHS system, with the exception of French Guiana, which continues using AFTN.

1.2 With the implementation of AMHS, most SAM States have been able to modernise their communications, implementing IP communication networks, thus starting the implementation of the ATN (aeronautical telecommunication network), which will be used also for transporting other ATN ground-ground and air-ground applications (AIDC, ATIS D, ADS, CPDLC, etc.).

1.3 The CAAS addressing scheme and an IPv4 addressing plan were taken into account for AMHS implementation in the SAM Region, both of which can be found at the website of the ICAO SAM Office http://www2010.icao.int/SAM/Pages/ES/eDocumentsDisplay_ES.aspx?area=CNS.

1.4 Intra- and inter-regional connection of AMHS systems is aimed at replacing the current AFTN circuits with new circuits capable of carrying larger amounts of information (ATS data) at a greater speed, using the regional digital network REDDIG II. The ultimate goal is the total migration of all AFTN circuits to AMHS links.

1.5 The interconnection of AMHS systems is one of the regional air navigation priorities of the Declaration of Bogota. It is expected that 100% of the 26 AMHS interconnections required in the SAM Region is to be implemented by the end of 2016. In order to support the implementation of AMHS interconnections in the SAM Region, guidance documents were developed, such as the *Guide for the operational interconnection of AMHS systems* and a model Memorandum of Understanding (MoU) for the implementation of AMHS interconnections. These documents can be found in the website mentioned in paragraph 1.3 of this working paper. Likewise, two AMHS courses were conducted, the CNS group met within the context of SAM implementation (SAM/IG) meetings, and many teleconferences were held. The States designated focal points to coordinate the implementation of AMHS interconnections, the updated list of which appears in **Appendix A** to this working paper.

1.6 The implementation of national IP networks is also considered as a regional air navigation priority in the Declaration of Bogota. It is foreseen that 80% of SAM States will have national IP networks by the end of 2016. In order to support SAM States, an IP network implementation security guide has been drafted, which can be found at http://www2010.icao.int/SAM/Pages/eDocumentsDisplay.aspx?area=CNS.

2 Discussion

AMHS interconnection

2.1 Significant progress has been made in the implementation of the AMHS interconnection since the RAAC/14 meeting, at which time it was reported that no new AMHS interconnection had been implemented so far. In this sense, it should be noted that the AMHS interconnection between Brasilia and Lima became operational on 14 December 2015, and the AMHS interconnection between Argentina and Venezuela started operating in June 2016.

2.2 Full connections using the P1 protocol and positive AMHS operational tests were carried out between Brazil and Spain, and Argentina and Brazil. These interconnections are expected to become operational in September 2016.

2.3 Argentina–Peru, Argentina-Uruguay, and Peru-Venezuela completed their connections using the P1 protocol, and are expected to become operational by the end of 2016. **Appendix B** contains a table showing the status of implementation of all AMHS interconnections.

2.4 The goal of the Declaration of Bogota was to achieve 26 AMHS interconnections by the end of 2016. To date, 11 AMHS interconnections have been implemented, from which 6 are in the operational phase and the remaining are awaiting the completion of operational tests, totalling 42% of the total to be implemented.

Implementation of national IP networks

2.5 To date, national IP networks have been implemented in Argentina, Brazil, Chile, Ecuador, Paraguay, and Uruguay, accounting for 55% of total implementation foreseen by the end of 2016. In accordance with the Declaration of Bogota, 80% of the States of the Region should have implemented IP networks by the end of the period 2014-2016. By 2018, 100% implementation must have been reached. **Appendix C** to this working paper shows the implementation of national IP networks, by State.

3 Suggested action

3.1 The Meeting is invited to:

a) take note of the information presented in this paper; and

b) review and comment on the activities for the implementation of AMHS interconnections and national IP networks mentioned in section 2 of this working paper and its respective appendices, and report on plans for attaining the AMHS implementation goal of the Declaration of Bogota.

- END -

APÉNDICE A / APPENDIX A

NATIONAL FOCAL POINTS/PUNTOS FOCALES NACIONALES
IMPLEMENTATION OF INTERCONNECTION OF AMHS SYSTEM /IMPLANTACIÓN INTERCONEXIÓN DE SISTEMAS AMHS

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
ARGENTINA	DGCTA/ANAC	Javier Vittor	Especialista CNS	(54 11) 4480-2362 (54 911) 6894-0692	javiervittor@gmail.com
		Moira Callegari	Jefe departamento CNS (ANAC)	(54 11) 594-13097	mcallegare@anac.gob.ar
BOLIVIA	AASANA	Remigio Blanco	Responsable de Telecomunicaciones AASANA	(591 2) 237-0340	rblanco@aasana.bo
BRAZIL/ BRASIL	DECEA	Francisco Almeida	Jefe de División de Coordinación técnica SDTE/DECEA	(55 21) 2101-6461 (55 21) 99499-6762 (5521) 98552-0829	franciscoalmeida@hotmail.com
		Tomy Marques de Souza	Asesor de comunicaciones	(21) 21016392 (5521)982547971	tomytms@decea.gov.br
COLOMBIA	UAEAC	Gabriel Guzmán	Especialista de Comunicaciones	(571) 296-2940 (57) 317-656 7202	gabriel.guzman@aerocivil.gov.co
CHILE	DGAC	Christian Vergara	Especialista comunicaciones	(56 2) 836-4005 (56 2) 644-8345	cvergara@dgac.gob.cl
ECUADOR	DAC	Raul Avellan	Especialista CNS coordinador sistema AMHS	(593 4) 269-2829 (593 9) 9530-2735	raul.avellan@aviacioncivil.gob.ec
GUYANA	Guyana Civil Aviation	Mortimer Salisbury	Supervisor - AN & T	(592) 261-2569	mbsalisbury2000@yahoo.com
GUYANA FR.	Service de la Navigation Aérienne aux Antilles-Guyane (SNA-AG)	Michel Areno	Head French Guiana ACC	(594) 694455617	michel.areno@aviation-civile.gouv.fr

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
PANAMA	Autoridad Aeronáutica Civil (AAC)	Daniel de Avila	Supervisor Dep. de COM	(507) 315 9877/78/44	ddavilah@hotmail.com
		Abdiel Vásquez	Jefe Depart. CNS	(507) 315-32/78/44	abvasquez@aeronautica.gob.pa
PARAGUAY	DINAC	Víctor Morán Maldonado	Jefe Departamento de Comunicaciones	(595 21) 758 5208 (595 21) 758 5252 (595 21) 758 5286	moranchu@gmail.com
		Alejandro Ibarrola	Jefe sección AMHS		aleiba40@gmail.com
PERÚ	CORPAC	Jorge Garcia	Jefe de Comunicaciones	(511) 2303131	jgarcia@corpac.gob.pe
		Raúl Anastasio Granda	Supervisor Comunicaciones AMHS-AFTN Área de Comunicaciones Fijas Aeronáuticas	(511) 230-1018	ranastacio@corpac.gob.pe
SURINAM/ SURINAME	Ministry of Transport, Communication and Tourism, Civil Aviation Department	Mitchell Themen	CNS Technical Division	(597) 325-123 (597) 325-172 (597) 497-143	mickiano@live.com
URUGUAY	DINACIA	Wilson Pelayo	Jefe de Comunicaciones	(598) 26826224	wiledda@hotmail.com
VENEZUELA	INAC	Samuel Sánchez	Jefe coordinación AMHS		s.sanchez@inac.gob.ve
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APPENDIX B

AMHS INTERCONNECTION REQUIREMENT AND DATE OF IMPLEMENTATION

STATES	AMHS INTERCONNECTION REQUIREMENTS	DATE OF IMPLEMENTATION	COMMENTS
Argentina	Bolivia	Dec 2016	
	Brazil	Sep 2016	Pending operational implementation. Final operational tests for AMHS interconnection between Brasilia and Ezeiza were successfully completed on 18 May 2016
	Chile	Dec 2016	
	Paraguay	Mar 2012	Implemented and operational
	Peru	Oct 2016	Positive P1 connectivity between MTA Ezeiza y MTA Lima (March 2016). Pending operational tests.
	Uruguay	Dec 2016	
	Venezuela	June 2016	Implemented and operational
Bolivia	Argentina	Dec 2016	
	Brazil	Dec 2016	
	Peru	Dec 2016	
Brazil	Argentina	Sep 2016	Pending operational implementation. Final operational tests for AMHS interconnection between Brasilia and Ezeiza were successfully completed on 18 May 2016
	Bolivia	Dec 2016	
	Colombia	Dec 2016	
	Guyana	Dec 2016	
	French Guiana	TBD	
	Paraguay	Oct 2016	Tests of P1 interconnectivity started mid July 2016 MTA
	Peru	Dec 2015	Implemented and operational 14 December 2015
	Suriname	Dec 2016	
	Uruguay	Dec 2016	
	Venezuela	Dec 2016	
	Spain	Sep 2016	Pending operational implementation. Operational tests successfully completed. Connection made through CAFSAT.
	United States	Mar 2017	Technical coordination began on May 2016
Chile	Argentina	Dec 2016	
	Peru	Dec 2016	

STATES	AMHS INTERCONNECTION REQUIREMENTS	DATE OF IMPLEMENTATION	COMMENTS
Colombia	Brazil	Dec 2016	
	Ecuador	Dec 2016	
	Panama	Dec 2016	
	Peru	Sep 2010	Implemented and operational
	Venezuela	Dec 2016	
Ecuador	Colombia	Dec 2016	
	Peru	Julio 2012	Implemented and operational
	Venezuela	Dec 2016	
French Guiana (France)	Brazil	TBD	AMHS pending implementation
	Venezuela	TBD	AMHS pending implementation
Guyana	Brazil	Dec 2016	
	Suriname	Jun 2011	Implemented and operational
	Venezuela	Dec 2016	
Panama	Colombia	Dec 2016	
Paraguay	Argentina	Mar 2012	Implemented and operational
	Brazil	Oct 2016	IP interconnectivity tests began mid July 2016
Peru	Argentina	Oct 2016	Positive P1 connectivity between MTA Ezeiza y MTA Lima (March 2016)
	Bolivia	Dec 2016	
	Brazil	Dec 2015	Implemented 14 December 2015
	Chile	Dec 2016	
	Colombia	Sep 2010	Implemented
	Ecuador	Jul 2012	Implemented
	Venezuela	Oct 2016	Positive P1 connectivity between MTA Lima y MTA Maiquetia. Pending operational tests
Suriname	Brazil	Dec 2016	
	Guyana	Jun 2011	Implemented and operational
	Venezuela	Dec 2016	
Uruguay	Argentina	Dec 2016	Positive P1 connectivity between Ezeiza and Montevideo achieved. Pending tests between Montevideo and Ezeiza (March 2016)
	Brazil	Dec 2016	
Venezuela	Argentina	Jun 2016	Implemented and operational
	Brazil	Dec 2016	
	Colombia	Dec 2016	
	Ecuador	Dec 2016	

STATES	AMHS INTERCONNECTION REQUIREMENTS	DATE OF IMPLEMENTATION	COMMENTS
	Guyana	Dec 2016	
	French Guiana	TBD	AMHS pending implementation
	Peru	Jun 2016	Positive P1 connectivity between MTA Lima y MTA Maiquetia. Pending operational tests
	Suriname	Dec 2016	

APPENDIX C / APENDICE C

IMPLEMENTATION OF DOMESTIC IP NETWORKS /
IMPLANTACION DE REDES IP NACIONALES

STATE/ESTADO	IP APPLICATIONS IMPLEMENTED/ APLICACIONES IP IMPLANTADAS	IMPLEMENTATION DATE OF DOMESTIC IP NETWORK FOR ALL IP APPLICATIONS/ FECHA DE IMPLANTACION DE RED IP NACIONAL PARA TODAS LAS APLICACIONES EN IP
Argentina	AMHS, DATA RADAR, IP VOICE/VOZ IP	2005
Bolivia	AMHS	2016
Brazil/Brasil	AMHS, DATA RADAR, IP VOICE/VOZ IP	2015
Chile	AMHS	2015
Colombia	AMHS, RADAR	2016
Ecuador	AMHS, RADAR	2014
French Guiana (France) / Guyana Francesa (Francia)	No	2018
Guyana	AMHS	2018
Panamá	AMHS, RADAR	2016
Paraguay	AMHS	2014
Perú	AMHS, RADAR	2016
Suriname/Surinam	AMHS	2018
Uruguay	AMHS RADAR	2014
Venezuela	AMHS	2016

Green = Implemented
Verde = Implantada

- END / FIN -