Agenda Item 3: Communications, navigation and surveillance (CNS) (By CNS Working Group)

Follow-up the implementation of AMHS and AIDC interconnection in the SAM Region

(Presented by Secretariat)

SUMMARY

This working paper presents the current situation on the interconnection of the ATS Message Handling System (AMHS), the interconnection of automated systems between adjacent ACCs, and the goals expected in the short term regarding associated indicators and metrics.

References

- Air Navigation System Performance-Based Air Navigation System Implementation Plan for the SAM Region (PBIP) (Version 1.3, May 2013);
- Eleventh Workshop/Meeting of the SAM Implementation Group (SAM/IG/11), RLA/06/901 Project (Lima, Peru, 13-17 May 2013);

ICAO Strategic Objectives:	*A - Safety* *C - Environmental protection and sustainable development of Air Transport*

1. **Background**

1.1 In the SAM Region, the interconnection of AMHS and AIDC system represent the short-term (2013-2018) priorities implementation approved by the SAM Civil Aviation Authorities through the Declaration of Bogota, in the RAAC/13 meeting (Bogotá Colombia 4-6 December 2013).

AMHS interconnection

1.2 Since 2005, the SAM Region started a plan to migrate the Aeronautical Fixed Service Network (AFTN) to AMHS. To date, practically all SAM States count with an AMHS implemented, with the exception of French Guiana (France).

1.3 The objective of AMHS interconnection is to replace the current AFTN circuits by new AMHS links that permit the transmission of a greater number of information (ATS data) at a higher speed, through the REDDIG network.

Interconnection of AIDC system

1.4 The interconnection of AIDC systems between adjacent ACCs has the objective of reducing the aeronautical incident risks generated by voice coordination activities between ACC centres and, at the same time, improve the planning phases for a more efficient flight control from/to the corresponding Flight Information Regions (FIR).

1.5 Follow-up to the interconnection of AIDC systems is being carried out at the SAM/IG meetings, through which guidelines have been drafted in support of this implementation, as well as missions to States, to be found in the ICAO SAM website, under the electronic documents section.

2. **Analysis**

2.1 Hereunder is an analysis of the current situation and short-term goals for AMHS and AIDC interconnection.

AMHS interconnection

2.2 AMHS interconnection started in 2010, date when many of the SAM States had implemented their AMHS. To date, four are the numbers of AMHS systems interconnected. The connections were carried out through REDDIG, using IP protocol.

2.3 With the aim of establishing technical, operational and administrative commitments when interconnecting automated systems, a model Memorandum of Understanding (MoU) was drafted for its application in the SAM Region. In this manner, States starting the interconnection describe the activities and dates required for the interconnection, as well as the technical and operational staff responsible for the coordination of the activities.

2.4 The total regional AMHS interconnections required are 26. **The goal is to have 100% of the AMHS interconnected by the end of 2016**, four of these are already implemented; the remainder would be implemented as follows: one for 2013, 11 for 2014, 5 for 2015 and 5 for 2016. The State implementation distribution is shown in **Appendix A** to this working paper.(Table in Appendix A contains also an interregional AMHS circuit (Brazil –Spain).

2.5 The difficulty to date to complete AMHS interconnection, is software incompatibility between the AMHS installed in Argentina, Brazil, Paraguay and Venezuela (same manufacturer) with the AMHS installed in the rest of the countries of the Region (different manufacturers). In this respect, Brazil is currently updating its AMHS software. This updating will permit interconnection of the Brasilia AMHS with the other Regional and Interregional AMHS systems.

2.6 At interregional level, AMHS trial was made between Brazil and Spain with successful result. The mean of communication used for the trial was the CAFSAT network. Therefore, conditions would be appropriate in order that real traffic is exchanged between both Regions as of the end of the last quarter of 2014.

International AIDC operational connection in the SAM Region

2.9 Currently no AIDC is implemented between adjacent ACC in the SAM Region. AIDC trials were made with the following results:

- Successfully between Asunción and Ezeiza. In this respect, Argentina and Paraguay have started with the necessary arrangements for AIDC operation, scheduled for December 2014.

- Partially successful (correct in one direction, but not in the other) between Ecuador-Peru (started in March 2014) and Chile-Argentina (started in April 2014). In both cases, tests will continue until solving the inconveniences to enable the start-up.

- The results of the trials scheduled between Curitiba–Asuncion and Colombia–Panama are being awaited for, while more tests between Peru–Colombia and Ecuador–Colombia were requested.

2.7 **Appendix B** to this working paper shows a chart containing SAM interconnection requirements, where it can be observed that **by the end of 2015, the goal is 15 interconnections**. Per year (2013-2015) implementation distribution is the following: 1 in 2013, 9 in 2014 and 5 in 2015.

Operational benefits in AMHS and automated systems (radar data and AIDC exchange) interconnection

2.8 Successful AMHS and automated systems interconnection, through AIDC will permit a greater supporting data integrity for the application of reduced separation, which directly translates into an increase in flow capacity between sectors or through the FIR limits.

2.9 Reduced separation can also be used to offer, with greater frequency, flight levels closer to the optimum; in certain cases, this also translates into a lesser wait en-route and, as a consequence, a greater efficiency. From it, controller workload is reduced. In addition, safety will be increased through the mitigation of incidents caused in operational errors related with flight reporting, coordination and transfer between adjacent FIRs.

3. Action suggested

3.1 The Meeting is invited to:

a) take note of the information presented; and

b) analyse and comment upon the implementation goals for AMHS and AIDC interconnection indicated in Section 2 and Appendices A and B,

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APPENDIX A / APENDICE A

AMHS INTERCONNECTION REQUIREMENTS AND DATES OF IMPLEMENTATION 2013-2016 IMPLEMENTATION GOALS / REQUERIMIENTOS DE INTERCONEXIÓN AMHS Y FECHAS DE IMPLANTACION METAS DE IMPLANTACION 2013-2016

STATE/ESTADO	AMHS INTERCONNECTION REQUIREMENT/ REQUERIMIENTO DE INTERCONEXIÓN AMHS	IMPLEMENTATION DATE/ FECHA IMPLANTACION	REMARKS/ OBSERVACIONES
Argentina	Bolivia	Mar 2016	
	Brasil	Dec 2013	Successful trials / Pruebas exitosas
	Chile	Dec 2014	
	Paraguay	Mar 2012	Implemented / Implantado
	Perú	Jul 2014	
	Uruguay	Dic 2015	
Bolivia	Argentina	Mar 2016	
	Brasil	Abr 2016	
	Perú	May 2016	
Brazil	Argentina	Dic 2013	
	Bolivia	Abr 2016	Successful trials / Pruebas exitosas
	Colombia	Dic 2014	
	Guyana	Mar 2015	
	French Guiana / Guyana Francesa	TBD	AMHS implementation pending / Falta implantación AMHS
	Paraguay	Jul 2014	
	Perú	Jul 2014	
	Surinam	Mar 2016	
	Spain / España	Nov 2014	
	Uruguay	Dic 2015	
	Venezuela	Dic 2014	
Chile	Argentina	Dic 2014	
	Peru	Dic 2014	
Colombia	Brazil	Dic 2014	
	Ecuador	Dic 2014	
	Panamá	Dic 2014	

STATE/ESTADO	AMHS INTERCONNECTION REQUIREMENT/ REQUERIMIENTO DE INTERCONEXIÓN AMHS	IMPLEMENTATION DATE/ FECHA IMPLANTACION	REMARKS/ OBSERVACIONES
	Peru	Sep.2010	Implemented / Implantado
	Venezuela	Mar 2015	
Ecuador	Colombia	Dic 2014	
	Perú	Julio 2012	Implemented / Implantado
	Venezuela	May 2015	
French Guiana (France) / Guyana Francesa (Francia)	Brazil	TBD	AMHS implementation pending / Falta implantación AMHS
	Venezuela	TBD	AMHS implementation pending / Falta implantación AMHS
Guyana	Brazil	Mar 2015	
	Surinam	Jun 2011	Implemented / Implantado
	Venezuela	Dic.2014	
Panamá	Colombia	Dic.2014	
Paraguay	Argentina	Mar 2012	Implemented / Implantado
	Brazil	Jul.2014	
Perú	Argentina	Jul 2014	
	Bolivia	May 2016	
	Brasil	Jul.2014	Successful trials / Pruebas exitosas
	Chile	Dic 2014	
	Colombia	Sep.2010	Implemented / Implantado
	Ecuador	Julio 2012	Implemented / Implantado
	Venezuela	Dic 2014	
Suriname, Paramaribo	Brazil	Mar 2016	
	Guyana	Jun 2011	Implemented / Implantado
	Venezuela	Mar.2016	
Uruguay, Montevideo	Argentina	Dic 2015	
	Brazil	Dic 2015	

STATE/ESTADO	AMHS INTERCONNECTION REQUIREMENT/ REQUERIMIENTO DE INTERCONEXIÓN AMHS	IMPLEMENTATION DATE/ FECHA IMPLANTACION	REMARKS/ OBSERVACIONES
Venezuela	Brazil	Dic 2014	
	Colombia	Mar 2015	
	Ecuador	May 2015	
	Guyana	Dic.2014	
	French Guiana / Guyana Francesa	TBD	AMHS implementation pending / Falta implantación AMHS
	Perú	Dic.2014	
	Surinam	Mar.2016	

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APPENDIX B / APENDICE B

INTERCONNECTION OF AUTOMATED SYSTEMS – DATES OF IMPLEMENTATION
FECHAS DE IMPLANTACIÓN INTERCONEXION SISTEMAS AUTOMATIZADOS

State/ Estado	AIDC and Radar Data Interconnection Requirements/ Requerimientos de Interconexión AIDC y Datos Radar	MoU Date of Implementation/ Fecha Implantación MoU	AIDC and Radar Data Interconnection Date/ Fecha Interconexión AIDC y Datos Radar	Remarks/ Observaciones
Argentina	Bolivia	TBD	TBD	Bolivia has no automated systems / Bolivia no cuenta con sistemas automatizados
	Brazil/Brasil	2009	Aug 2014	Radar data exchange pending definition / Pendiente definición intercambio datos radar
	Chile	2010	Jul 2014	Radar data exchange will be gradually implemented / Se implantará el intercambio de datos radar en forma gradual
	Paraguay	May 2014	Dec 2014	
	Uruguay	2009	Jun 2014	
Bolivia	Brasil	TBD	TBD	Bolivia has no automated systems / Bolivia no cuenta con sistemas automatizados
	Chile	TBD	TBD	
	Paraguay	TBD	TBD	
	Peru	TBD	TBD	
Brazil/Brasil	Colombia	Oct 2014	Jul 2015	
	Guyana	TBD	TBD	Define requirement / Definir requerimiento
	French Guiana (France)	TBD	TBD	Define requirement / Definir requerimiento
	Paraguay	Oct 2014	Mar 2015	
	Peru	2012	Sep 2014	Radar data exchange pending definition / Pendiente definición intercambio datos radar
	Suriname	TBD	TBD	Define requirement / Definir requerimiento
	Uruguay	2009	Aug 2014	Radar data exchange pending definition / Pendiente definición intercambio datos radar
	Venezuela	2011	Dic 2013	

State/ Estado	AIDC and Radar Data Interconnection Requirements/ Requerimientos de Interconexión AIDC y Datos Radar	MoU Date of Implementation/ Fecha Implantación MoU	AIDC and Radar Data Interconnection Date/ Fecha Interconexión AIDC y Datos Radar	Remarks/ Observaciones
Chile	Peru	Jun 2014	Mar 2015	
Colombia	Ecuador	May 2014	Dic 2014	
	Panamá	May 2014	Dic 2014	
	Peru	Oct 2014	Jul 2015	
	Venezuela	Dec 2014	Dic 2015	
Ecuador	Peru	Oct 2013	Jun 2014	
French Guiana (France) / Guyana Francesa (Francia)	Surinam	TBD	TBD	Define requirement / Definir requerimiento
Guyana	Surinam	TBD	TBD	Define requirement / Definir requerimiento
	Venezuela	TBD	TBD	Define requirement / Definir requerimiento

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