



Agenda Item 5: Assessment of operational requirements for the implementation of communication, navigation, and surveillance (CNS) improvements for en-route and terminal area operations

FOLLOW-UP TO THE AMHS INTERCONNECTION

(Presented by the Secretariat)

SUMMARY	
This working paper presents information on the status of implementation of the AMHS interconnection.	
REFERENCES	
<ul style="list-style-type: none">• Report of the Eleventh Workshop/Meeting of the SAM Implementation Group (SAM/IG/10) (Lima, Peru, 13-17 May 2013); and• Project D2 – SAM ATN ground-ground and air-ground applications	
ICAO Strategic Objectives:	<i>A – Safety</i> <i>C – Environmental protection and sustainable development of air transport</i>

1. **Introduction**

1.1 A plan to migrate from the aeronautical fixed telecommunication network (AFTN) to the AMHS was started in 2005 in the SAM Region. To date, practically all SAM States have implemented an AMHS system, with the exception of French Guiana (France) and Uruguay. Uruguay expects to have its AMHS system in operation by the end of the first quarter of 2014.

1.2 The interconnection of AMHS systems is aimed at replacing the existing AFTN circuits with new ones in order to transmit more information (ATS data) at a greater speed, using the regional REDDIG digital network.

2. **Discussion**

2.1 The interconnection of AMHS systems started in 2010, at which date many SAM States had already implemented AMHS systems. To date, four AMHS interconnections have been completed. Connections were done through the REDDIG regional network, using the IP protocol.

2.2 **Appendix A** to this working paper lists all AMHS interconnections required for the SAM Region, the interconnections already implemented, and existing and expected MoUs.

2.3 A total of 26 AMHS interconnections are required. The goal is to have 100% of AMHS interconnections completed by late 2016. Four have already been implemented, and the remainder will be implemented as follows: one in 2013, 11 in 2014, 5 in 2015, and 5 in 2016. The implementation by State is shown in **Appendix B** to this working paper.

2.4 The difficulty being faced for completing the AMHS interconnection is software compatibility of AMHS systems installed in Argentina, Brazil, Paraguay, and Venezuela (same make) with AMHS systems installed in the other countries of the Region (different makes). In this regard, Brazil is currently updating its AMHS system software. With this update, it will be possible to interconnect the AMHS systems of Brazil (Brasilia and Manaus) with the other AMHS systems of different makes in the Region. It is expected that software updating will be completed in late 2013; accordingly, implementation would start in 2014. The activities carried out in Brazil will contribute to the implementation of the remaining interconnections.

2.5 Another activity to take into account after completing the interconnection is the completion of the database with all AMHS addresses in the directory of each AMHS system.

2.6 The intervention of the equipment manufacturer might be required to complete pending activities, and this involves a cost.

AMHS course

2.7 In order to support the interconnection of AMHS systems in the SAM Region, and thanks to the support of project RLA/03/901, a second course on the ATS messaging system (AMHS COM) and interconnection aspects was held in Lima, Peru, on 24-28 June 2013, with the participation of 34 attendants. The course was developed by Instilux, an institute attached to Eurocontrol. The course was successful and met the expectations.

3. Suggested action

3.1 The Meeting is invited to:

- a) take note of the information presented herein;
- b) analyse the implementation goals listed in section 2 and Appendices A and B, and update them based on the corresponding national action plans; and
- c) discuss any other matters it may deem appropriate.

APPENDIX A

ACTION PLAN FOR THE INTERCONNECTION OF AMHS SYSTEMS IN THE SAM REGION

ITEM	ACTIVITY	RESPONSIBLE	EXPECTED RESULT	STATUS	FINALIZATION DATE
1	<p>MoU for the interconnection of AMHS currently implemented in the SAM Region:</p> <p>a) Argentina-Brazil b) Argentina-Chile c) Argentina-Peru d) Argentina-Paraguay e) Brazil-Colombia f) Brazil-Paraguay g) Brazil-Peru h) Chile-Peru i) Colombia-Peru j) Colombia-Panama k) Colombia-Venezuela l) Peru-Venezuela m) Brazil-Suriname n) Guyana-Venezuela o) Suriname-Venezuela p) Brazil-Guyana q) Guyana-Suriname r) Brazil-Venezuela s) Bolivia-Peru t) Bolivia-Brazil u) Bolivia-Argentina v) Ecuador-Peru w) Ecuador-Colombia x) Ecuador-Venezuela y) Uruguay-Argentina z) Uruguay-Brazil</p> <p>The AMHS interconnection MoU in French Guiana (France) and Uruguay should be drafted once AMHS installation is completed at national level.</p>	SAM States involved	MoU for interconnection of AMHS systems between SAM States having AMHS implemented	a), b) c), d), f), g), i), l), q) & v) completed	<p>Date estimates for pending MoU</p> <p>b) May 2014 h) May 2014 j) May.2014 k) May.2014 m) Oct 2015 n) Oct 2014 o) Oct 2015 p) Oct 2014 r) May 2014 s) Oct 2015 t) Oct 2015 u) Oct 2015 w) May 2014 x) Oct 2014 y) May 2015 z) May 2015</p>

ITEM	ACTIVITY	RESPONSIBLE	EXPECTED RESULT	STATUS	FINALIZATION DATE
2	<p>Phase I Interconnection trials between MTAs of:</p> <p>a) Argentina-Brazil b) Argentina-Paraguay c) Brazil-Paraguay d) Colombia-Peru e) Argentina-Chile f) Argentina-Peru g) Brazil-Peru h) Guyana-Suriname i) Ecuador-Peru j) Brazil-Colombia k) Perú-Venezuela</p> <p>Types of tests to carry out: Network transportation; Network connectivity; Message exchange; Preparatory phase.</p> <p>Note: Inclusion has been made of only the AMHS interconnected between States having implemented and signed the MoU.</p>	Argentina, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Venezuela and REDDIG Administration	Interconnection trials between Argentina, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname and Venezuela MTAs	<p>a), f), g) message exchange trials were held between CIPE (Argentina)-Brasilia (Brazil) MTAs; the Manaus (Brazil)-Lima (Peru) MTAs, and the CIPE (Argentina)-Lima (Peru) MTAs.</p> <p>c) MoU was updated, as entrance node to Brazil will be Curitiba, and the network connectivity, and transport and exchange of messages tests will be carried out.</p> <p>b), d), h) and i) Operational interconnection trials completed</p> <p>c), e), j) No tests carried out</p> <p>k) network connectivity trials held</p>	<p>a) Jun 2012 Completed b) Mar 2012 Completed c) Mar 2014 d) Oct 2010 Completed e) Jun 2014 f) Mar 2014 g) May 2014 h) Jun 2011 Completed i) Jul 2012 Completed j) Jul 2014 k) Jul 2014</p>
3	<p>Operational interconnection implementation at the following MTA:</p> <p>a) Argentina-Brasil b) Argentina-Paraguay c) Brasil-Paraguay d) Colombia-Perú e) Argentina-Chile f) Argentina-Perú g) Brasil-Perú h) Guyana- Surinam i) Ecuador- Perú j) Brasil- Colombia k) Perú-Venezuela</p> <p>Note: Inclusion has been made of only the AMHS interconnected between States having implemented and signed the MoU.</p>	Argentina, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, and Venezuela	Operational implementation of AMHS systems	AMHS interconnection completed between following MTA, using P1 protocol and operational in b), d) h), i)	<p>a) Dec 2013 b) Mar 2012 operational c) Jul 2014 d) Nov 2010 operational e) Dec 2014 f) Jul 2014 g) Jul 2014 h) Jul 2011 Operational i) Jul 2012 Operational j) Dec 2014 k) Dec 2014</p>

APPENDIX B / APENDICE B

**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	
	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	
	Colombia	Dic 2014	
	Guyana	Mar 2015	
	Guyana Francesa	TBD	AMHS implementation pending/ Falta implantación AMHS
	Paraguay	Jul 2014	
	Perú	Jul 2014	
	Surinam	Mar 2016	
	Uruguay	Dic 2015	
	Venezuela	Dic 2014	
Chile	Argentina	Dic 2014	
	Peru	Dic 2014	
Colombia	Brazil	Dic 2014	
	Ecuador	Dic 2014	
	Panamá	Dic 2014	
	Peru	Sep.2010	Implemented/ Implantado
	Venezuela	Mar 2015	

STATE/ESTADO	AMHS INTERCONNECTION REQUIREMENT/ REQUERIMIENTO DE INTERCONEXIÓN AMHS	IMPLEMENTATION DATE/ FECHA IMPLANTACION	REMARKS/ OBSERVACIONES
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	
	Chile	Dic 2014	
	Colombia	Sep.2010	Implemented/ Implantado
	Ecuador	Julio 2012	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	
	Guyana Francesa	TBD	AMHS implementation pending/ Falta implantación AMHS
	Perú	Dic.2014	
	Surinam	Mar.2016	

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