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

Follow up AMHS interconnection activities
(Presented by the Secretariat)

EXECUTIVE SUMMARY	
This Working Paper present information about the activities made to follow up the Conclusion 21/16 *Interconnection of AMHS systems between AFI and SAM* Regions and the status of AMHS in the SAM and AFI Region	
Action:	Suggested Action is presented in Section 3.
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency
References:	• Eighteenth workshop/meeting of the SAM implementation group (SAMIG/17 Lima Peru 9 to 13 May 2016) • Summary AMHS/AIDC Teleconference AFI/SAM Regions (8th September 2016, 3rd October 2016, 2nd December 2016 and 9th May 2017)

1. Introduction

1.1 The SAT/21 noted the progress made in the implementation of AMHS in the AFI and SAM regions and identified Argentina, Brazil, Senegal and South Africa for the establishment of transcontinental AMHS connection and encouraged the identified Centers to nominate AMHS interconnection focal points and initiate with the assistance of SAT Secretariat (ICAO Regional Offices Lima and Dakar) the elaboration of a study for the interconnection of their AMHS systems in accordance with the AFI and SAM regional ATN routing tables. In this respect the Conclusion 21/16*: Interconnection of AMHS systems between AFI and SAM Regions* was formulated.

2 Analysis

2.1 The Conclusion 21/16 considered that in order to implement the AMHS circuits between Buenos Aires and Johannesburg and Recife and Dakar, Argentina , Brazil , Senegal and South Africa ,nominate by the end of July 2016 AMHS interconnection focal points and initiate the elaboration of a study for the interconnection of their AMHS systems in accordance with the AFI and SAM regional ATN routing tables and organize in this respect a monthly AMHS focal points teleconference with secretariat (ICAO Regional Offices Lima and Dakar) to follow up the progress**.**

2.2 The list of focal point in order to coordinate the activities of AMHS interconnection is presented as **Appendix A** of this working paper. To initiate the coordination and the establishment of activities necessary from the migration of AFTN circuit to AMHS circuit between Brazil and Senegal and Argentina and South Africa four teleconferences were made.

2.3 Argentina, Brazil, Senegal and South Africa reported through the teleconference made that their AMHS are fully implemented and in reference at the AMHS interconnection they reported their Regional and Interregional activities.

2.4 Argentina reported that at regional level they made AMHS successful interconnection operational trials between the MTA of Ezeiza - Lima, Ezeiza-Montevideo and Ezeiza Santiago. From the 17th May the AMHS between Brasilia-Ezeiza entries in a pre-operational phase. With respect to AMHS interregional connections, Argentina informed about their initial coordination with Spain for the AMHS circuit implementation. They initially considered the possibility to implement the AMHS circuit through a MPLS circuit through their local communication service communication provider.

2.5 Brazil reported their successful AMHS operational interconnection with Spain (MTA Brasilia –MTA Madrid 16th May 2017) through the CAFSAT, with Colombia (MTA Bogotá 22nd May 2017), with Guyana (MTA Georgetown 10th May 2017) and with Uruguay (MTA Montevideo 10th May 2017).

2.6 Regarding inter-regional AMHS interconnection connections between AFI and SAM Region, It was considered during the teleconference to use the SAM and WACAF Regional guidelines for the implementation of AMHS interconnection based on the Appendix E of EUR AMHS Manual, version 4.0, EUROCONTROL. Additionally it was informed that in the SAM Region was developed a model of Memorandum Of Understanding for the implementation of AMHS interconnection l, this information is available at the following link: http://www2010.icao.int/SAM/Pages/eDocumentsDisplay.aspx?area=CNS that would be used in order to establish all the technical and operational considerations .

2.7 For the AMHS trials between AFI and SAM Region it was recommended to use the Spain – Brazil AMHS interoperability trials document that is presented as **Appendix B** of this working paper.

2.8 In reference at the AMHS interconnection between Brazil and Senegal (Recife –Dakar) it is important to know that in Brazil the main AMHS system is in Brasilia so the AMHS connection is Brasilia -Dakar. Recife is a place where is installed the node of CAFSAT and AFISNET that communicated with Dakar.

2.9 Brazil informed that their plan is implement the AMHS circuit between Brasilia and Dakar through the AFISNET and not through the CAFSAT network. For the AMHS interconnection implementation between Brasilia and Dakar through the CAFSAT , Brazil reported that will be postponed until more technical information of how implement this circuit in the CAFSAT is obtained. (This circuit once implemented will the backup of the AMHS circuit through the AFISNET. The focal point of Senegal agreed in all the consideration above considered for the AMHS interconnection between Brasilia and Dakar.

2.10 In the fourth teleconference made the 9th of May 2017 , Brazil reported that the installation of the AFISNET node in Recife was completed and they are ready to coordinate the AMHS trials with Dakar. It is expected that during the SAT/22 final coordination will be made between Brazil and Senegal for the implementation of AMHS trials between Brasilia and Dakar.

2.11 In relation at the initial coordination for AMHS trials between Argentina and South Africa (MTA Ezeiza – MTA Johannesburg) Argentina reported in the fourth teleconference that considering the limited availability of the CAFSAT node in Ezeiza (Buenos Aires) the AMHS trials between the

MTA of Johannesburg and the MTA of Ezeiza would be made as originally planned , through the public internet via a VPN circuit , the configuration circuit is presented as Appendix A of the WP of SAT/22 related to the follow up of AIDC between AFI and SAM Region .

2.12 In this respect it was suggested that Argentina and South Africa AMHS focal point restart the coordination as soon as possible in order to implement AIDC trials between the MTA of Ezeiza and the MTA of Johannesburg for the week of 22nd of May 2017 using the configuration mentioned in paragraph 2.11. It is expected that Argentina and South Africa report at SAT/22 the result of the coordination.

2.13 Additionally to the AMHS initially coordination for the implementation of AMHS activities between Argentina South Africa and Brazil Senegal (Conclusion SAT 21/16) during the third AMHS/AIDC teleconference it was considered that SAT/22 analyze the possibility to implement a new AMHS circuit between AFI and SAM not established in the SAM and AFI Regional Air Navigation Plan as the circuit between Luanda (Angola) and Brasilia.

2.14 The focal point of Angola reported news about the CAFSAT in Luanda informing that the CAFSAT node in Luanda was completed the week of the 28th November 2016 and the system provides ATS/DS with Recife and an additional data link with Lisbon. Initial ATS/DS tests carried out with Recife indicates the system is working fine. As far AMHS system in Luanda is concerned, the system is operational since 2012 and is linked with Brazzaville as part of AFI Plan and all neighboring states.

Status of AMHS interconnection in the SAM Region

2.15 As **Appendix C** to this working paper the AMHS interconnection requirements in the SAM Region are presented including dates and status of implementation

3. Action required

3.1 The meeting is invited to take note of the information of this working paper and analyze the content of section 2 and their associated Appendixes (A and B).

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