



**Agenda Item 3: Report of activities and deliverables of the INTEROP TF and Subgroups
b) CNS Implementation. Progress of the Subgroups.**

IMPLEMENTATION OF THE NEW AMHS SYSTEM IN URUGUAY

(Presented by Uruguay)

Summary	
This work paper presents the progress of the implementation activities of interconnection of the AMHS system of Uruguay with adjacent and non-adjacent MTAs of the CAR/SAM region for the exchange of aeronautical messaging.	
References	
- Twenty-Eighth Workshop/Meeting of the SAM Implementation Group (SAM/IG/28); - Twenty-Seventh Workshop/Meeting of the SAM Implementation Group (SAM/IG/27).	
ICAO's Strategic Objectives:	<i>A – Safety</i> <i>B – Air Navigation Capacity and Efficiency</i> <i>ASBU: AMET-B0/4 (IWXXM) and COMI-B0/7 (AMHS)</i>

1. BACKGROUND

1.1 Uruguay installed in February 2014 an AMHS system of the Frequentis California Company, beginning with the interconnection works between the SUMU-SAEZ and SUMU-SBBR MTAs.

1.2 In October 2016, the SUMU-SBBR interconnection tasks began, achieving the establishment of a P1 connection between both MTAs in November 2016. In December 2016, the messaging exchange was carried out on the X400 platform and the tests of the EURO 020-400 manual were passed. It should be noted that Uruguay did not have a test server at that time, so the tests were carried out on the system with real traffic. While these tests were being carried out and due to an erroneous AFTN message that came from Brazil is that the saturation of the SUMU MTA occurs, so it was decided to close the connection and consult the system manufacturer.

1.3 In December 2016, a P1 SUMU-SAEZ connection was also established. The preliminary tests were carried out according to the EURO 020-400 manual, but they could not be passed because there were some problems with the outgoing messages from SAEZ.

1.4 Due to the problems that arose in the tests of the different systems, it was decided to hold a technical meeting in Montevideo in November 2018 in order to solve them. It also began to handle the possibility of making a new SUMU-SPIM connection through the Lima MTA in order to increase redundancy and traffic safety.

1.5 In December 2021, the procurement process of the new AMHS system of the Frequentis California Company begins, which includes the IWXXM weather information management functionality.

1.6 On January 15, 2022, it is reported that the AFTN / AMHS Gateway of Argentina would stop having technical support as of January 31, 2022, so a new AFTN connection was sought because the Montevideo Center would only be connected through the gateway with Brazil and would not have the necessary redundancy for the system. Talks were held with Venezuela to establish a temporary SUMU-SVMI connection through its gateway and after making changes in the configurations of the systems, the connection was achieved and ready for pre-operational tests. They could not be carried out because it was not possible to finalize the signature between authorities of the formalization note necessary for the temporary connection with Venezuela.

1.7 In early February 2022, discussions were held with Peru to establish an AFTN connection between SUMU and SPIM through its AFTN/AMHS Gateway. On February 18, the operational connection between the COM centers of Lima and the COM center of Montevideo is established.

1.8 In November 2022, the servers of the new AMHS System were installed. Pre-operational tests were also carried out with Peru to establish a SUMU-SPIM P1 connection, which were successfully completed on November 25, 2022. Pre-operational tests with Argentina to establish a P1 SUMU-SAEZ connection were then initiated, which culminated successfully on November 29, 2022. Pre-operational tests began to be coordinated with Brazil to achieve a SUMU-SBBR P1 connection but due to availability problems to perform the tests they had to be postponed until February 2023, successfully culminating this connection on February 9, 2023.

1.9 On December 7, 2022 at 5:30 UTC, the total migration of our AFTN system to the AMHS system was carried out, establishing the P1 operational connections between SUMU-SPIM and SUMU-SAEZ operating both with high performance.

1.10 On February 14, 2023 at 12 UTC the operational connection P1 between SUMU-SBBR was established also operating with high performance.

2. CURRENT SITUATION

2.1 Uruguay now has a new 100% AMHS system from Frequentis California. This system has redundant servers, as well as test servers and a contingency server that will be configured later. In addition, it has 26 AMHS UAs terminals distributed throughout the country and with 3 P1 operational connections between the MTA of the COM center of Montevideo and the MTAs of the COM centers of Lima, Brasilia and Buenos Aires, thus obtaining a double triangulation that increases redundancy and traffic safety. It also incorporates the functionality of handling meteorological information in IWXXM format, thus complying with the requirements requested by ICAO.

2.2 With the interconnections reached by URUGUAY, it was possible to complete 100% of AMHS connections in the SAM region.

2.3 It is worth highlighting and thanking the excellent willingness and commitment provided by the technical and operational teams of Peru, Argentina, Brazil, Venezuela and REDDIG Administration, as well as the authorities and technical teams of ICAO, who collaborated with the work carried out to achieve both the temporary AFTN connections prior to the migration to the new AMHS system and the P1 operational connections between the MTAs.

3. CONCLUSION

3.1 The Meeting is invited to:

- a) The meeting is invited to take note of the information contained in the present document; and
- b) Continue working on improving the interconnections of the different systems through the aeronautical messaging system between the States of the CAR/SAM Region.

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