Agenda Item 3: Report of activities and deliverables of the INTEROP TF and Subgroups
b) Implantación CNS. Avances de los Subgrupos.

BRAZILIAN PROPOSAL FOR WRC-23 AGENDA ITEM 1.7

(Presented by Brazil)

SUMMARY

This Work Paper presents Brazil's proposal for agenda item 1.7 of the World Radiocommunication Conference (WRC-23), which will be submitted for discussion at the next meeting of the Inter-American Telecommunications Commission (CITEL), May 22 to 26, 2023, with the aim of reaching an official position from the Americas region for this agenda item at WRC-23.

References

- Twentieth Meeting of the Regional Group for Planning and Execution of the Caribbean and South America (GREPECAS/20), Salvador, Brazil, November 16-18, 2022;
- Fifth Virtual Meeting of the GREPECAS Programs and Projects Review Committee (CRPP) (eCRPP/05), Online, April 20 – 21, 2023;
- CPM23-2 chapter 2, AI 1.7: doc CPM23-2/263(Rev.1)-E;

  CITEL Preliminary Proposal AI 1.7: doc GT-CMR23-2022-40-066_i (English).

ICAO Strategic Objectives:	*A – Safety* *B – Air Navigation Capacity and Efficiency*

1. BACKGROUND

1.1 The level of aircraft traffic in oceanic and remote areas remains limited due to the difficulty of providing and maintaining suitable terrestrial communication, navigation and surveillance means, which results in applying a large separation distance between aircraft.

1.2 While currently there are other long-range communication systems, such as HF and controller to pilot data link communications (CPDLC) over SATCOM, available to facilitate communications between aircraft and ATC in remote and oceanic airspace, the performance of these current systems is not adequate to safely support close aircraft-to-aircraft separation in a similar fashion as to what is being applied in dense airspace where terrestrial VHF communications infrastructure is predominant.

1.3 Space-based VHF (SB-VHF) communication is a concept in which aircraft operating in remote regions and oceanic areas can communicate with the air traffic control (ATC) via low orbit satellites. ITU-R has indicated that an AMS(R)S system to cover remote areas will have to rely on non-geostationary satellites constellation with global coverage. This concept, when implemented, is expected to support air traffic management and flight operations in oceanic and remote airspace and will complement current aviation use of satellite-based navigation and surveillance technologies (e.g., ADS-B, ADS-C).

1.4 ICAO has circulated an orientation document to be considered by Member States participating in the upcoming World Radio Conference 2023 (WRC-23). Figure 1 presents an extract of the ICAO position for the International Telecommunication Union (ITU) WRC-23.

> To support ITU-R studies and the definition of relevant technical characteristics as called for by Resolution **428 (WRC-19).**
>
> To support a global allocation to the aeronautical mobile-satellite (route) service for both the Earth-to-space and space-to-Earth directions in the frequency band 117.975- 137 MHz and that the use of the allocation be limited to the relaying of aeronautical VHF air traffic management communications.
>
> To support that those systems shall operate in accordance with international Standards and Recommended Practices and procedures established in accordance with the Convention on International Civil Aviation.
>
> To ensure that any change to the regulatory provisions and spectrum allocation resulting from this agenda item do not adversely impact the operation of existing VHF systems in the band 117.975-137 MHz operating in the AM(R)S, including regional usage of terrestrial VHF, nor require any changes to aircraft equipage or to existing installations.

Figure 1 – Extract of ICAO position for WRC-23

1.5 The link below provides access to the entire document:

https://www.icao.int/safety/FSMP/Documents/ITU-WRC23/037english.pdf

2. WRC-23

2.1 WRC-23 agenda item 1.7 deals with a possible new allocation to the AMS(R)S within the frequency band 117.975-137 MHz, to relay standard VHF communications operating under the AM(R)S, and to complement terrestrial infrastructures over oceanic and remote areas.

2.2 Two relevant points under the WRC-23 Agenda Item 1.7 are:

- *to consider a new aeronautical mobile-satellite (R) service allocation in accordance with Resolution **428 (WRC-19)** for both the Earth-to-space and space-to-Earth directions of aeronautical VHF communications in all or part of the frequency band 117.975-137 MHz, while preventing any undue constraints on existing VHF systems operating in the aeronautical mobile (R) service, in the aeronautical radionavigation service, and in adjacent frequency bands.*

- Resolution **428 (WRC-19)** – *Studies on a possible new allocation to the aeronautical mobile-satellite (R) service within the frequency band 117.975-137 MHz in order to support aeronautical VHF communications in the Earth-to-space and space-to-Earth directions.*

2.3 This would not require modification to aircraft equipment nor additional equipment onboard, as the space segment would be able to receive and transmit to standard VHF radios already installed on board aircraft.

2.4 Voice is considered in the frequency band 117.975-136 MHz, and VHF digital data link Mode 2 (VDL Mode 2) application in the frequency band 136-137 MHz.

2.5 The major expected operational ATM benefits from the SB-VHF concept are:

a) Use of the same operational procedures for ATCOs in continental, oceanic and remote continental areas.

b) Improvement of safety for the aircraft operating in oceanic and remote continental areas, since full CNS services will be provided to the aircraft.
c) Significant increase of capacity in oceanic and remote continental areas.
d) Significant reduction in fuel burnt and therefore CO2 emissions due to the use of optimal and efficient routes.
e) No additional training for ATCOs, as operation is the same as in continental areas.
f) Increase of situational awareness for ATCOs that have more accurate information about the position of the aircraft and their flight intent.

2.6 The major expected operational airline benefits from the SB-VHF concept are:

a) Reduce flight crew workload using the same communication system (VHF) in all airspace, regardless of whether it is continental or oceanic/remote. This would contribute to simplify/standardize communication procedures and reduce potential communication errors.
b) No additional training for pilots/aircrew, as operation is the same as in continental areas.
c) No need of additional equipment onboards the aircraft. No impact at all on the current avionics system.
d) Increase of situational awareness for pilots that have more accurate information about the position of the aircrafts and their flight intent.

2.7 At the Conference Preparatory Meeting (CPM23-2) in March 2023, the final text for WRC-23 was approved with the definition of 5 methods: A, B1, B2, B3, B4 and B5.

2.8 Method B1 proposes a new allocation in the range 117.975-137 MHz with the addition of a power flux-density (PFD) limit, on AMS(R)S space stations unwanted emissions falling above 137 MHz, to ensure protection of adjacent band services above 137 MHz. Method B1 also proposes coordination for coexistence between AMS(R)S and other primary in-band services according to RR No. 9.11A with a coordination threshold proposed in Annex 1 of RR Appendix 5**.**

3. PRELIMINARY BRAZILIAN POSITION

3.1 Based on sharing and compatibility studies performed by the study group WP 5B and on Method B1 of the CPM23-2 Meeting, Brazil will present at the next CITEL meeting (May 22 to 26, 2023) an update to the output document (CITEL/GT/CMR-23/doc.066/22), supporting Method B1.

3.2 Bearing in mind that this agenda item, if adopted by ITU at WRC-23, will ensure an increase in the safety, capability and efficiency of air navigation, it is very important that SAM States support the ICAO Position in allocating the band 117.975 - 137 MHz to SB VHF.

4. SUGGESTED ACTIONS

4.1 The Meeting is invited to:

a) Take note and provide comments on the contents of this working documents; and

b) support the updated Method B1 (with updates of Brazil, that will be presented in the next CITEL meeting.