
PLENARY MEETING

**Addendum 1 to
Document 6400(Add.24)-
E
9 September 2019
Original: English**

Member States of the Inter-American Telecommunication Commission (CITEL)

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 10

{Temporary information note to be deleted before the submission via CPI of this document to the WRC-19 Secretariat: In accordance with Resolution 804 (Rev. WRC-12), Administrations are invited to use the template provided in Annex 2 to that Resolution (TIES-protected) when proposing agenda items for WRCs. This template may be filled out for each of the proposed WRC agenda item and annexed to this document.}

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention.

Introduction

WRC-19 agenda item 10, recommends to Council items to include in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible items for future conferences, in accordance with Article 7 of the Convention. For this agenda item, CITEL PCC.II offers the included preliminary proposal for the WRC-23 agenda to consider regulatory provisions for updating Appendix 27 of the Radio Regulations in support of aeronautical wideband HF modernization.

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention.

Background Information:

Historically, aeronautical HF (High Frequency) Radio communications has been recognized as the primary long-range communication system for safe, efficient air travel in remote or oceanic areas beyond the range of ground-based VHF radios. Current aeronautical HF analog single sideband

systems are susceptible to static crashes from lightning and man-made noise, as well as selective fading as the atmosphere continually changes. Future HF voice systems can move to more advanced digital voice as many CODECS (Coder/Decoders) are now available commercially. Modem technology has evolved significantly over the last 27 years and techniques such as Automatic Link Establishment allow HF radios to find and link on the best available frequency at a given time. The use of spectrally efficient modulation techniques and bonding consecutive HF channels for aeronautical wideband HF will enable technology improvements that will support high rate data transmissions.

Development of the next generation of aeronautical HF data communications will enable achieving Required Communications Performance (RCP)-240¹ compliance for the delivery of ATC traffic, provide for a digital voice capability that will address the frequent complaints about the noisy nature of analog HF voice communications, and enable reduction in flight crew workload by automatically assigning frequencies to aircraft radios by leveraging modern protocols. This effort will allow aeronautical HF and aeronautical satellite communications (SATCOM) to work well together in a complementary and synergistic fashion to offer better performance, reliability and availability than either system alone. Having both space-based and modernized terrestrial HF long range communication mitigates single point of failure concerns associated with vulnerabilities which differ for each system (e.g., solar events, rain fade, jamming, hardware failures, etc.).

Proposal:

A review of Appendix 27 of the ITU Radio Regulations is necessary to consider the revision of the relevant regulatory framework to realize the above for commercial aviation safety of life applications and enable the coexistence of current HF systems alongside modernized HF systems that deliver the above mentioned capabilities.

¹ Manual on Required Communication Performance, ICAO Doc 9869 AN/462, 2006

ADD IAP/6400A24A1/1

DRAFT NEW RESOLUTION [IAP/10(A) - 2023]

Agenda for the 2023 World Radiocommunication Conference

The World Radiocommunication Conference (Geneva, 2015),

considering

- a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference should be established four to six years in advance and that a final agenda shall be established by the Council two years before the conference;
- b) Article 13 of the ITU Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention relating to their agendas;
- c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

resolves

to recommend to the Council that a world radiocommunication conference be held in 2023 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-19 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action in respect of the following items:

1.[XXX] to consider, on the basis of ITU-R studies in accordance with Resolution **[IAP/10(A)/APPENDIX-27] WRC-19**), appropriate regulatory actions, updates to revise Appendix 27 of the Radio Regulations in support of aeronautical Wideband HF modernization;

resolves further

to activate the Conference Preparatory Meeting,

invites the Council

to finalize the agenda and arrange for the convening of WRC-23, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-23,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: The aeronautical use of the various HF frequency bands in the range 2 850 – 22 000 kHz is essential to long distance aeronautical communications in remote and oceanic areas. Since the last substantive review of RR Appendix 27 of the ITU Radio Regulations, use of HF by aviation has continued to change and grow, especially for HF Datalink (HFDL) services used by many aircraft. Aviation is evaluating future developments within the HF band, using new technology to significantly improve capacity, connectivity, and quality of service for aviation data and voice,

including increased channel bandwidths for greater data throughput. Such developments within existing aviation HF allocations would provide aviation with additional capabilities, improving safety, global coverage and link diversity to L-band SATCOM systems thus allowing updated HF systems to work well together in a complementary and synergistic fashion with Satcom systems to better maintain communications at all times. In light of the evolving HF technologies, RR Appendix 27 need to be reviewed to ensure they meet the current and future aeronautical requirements by allowing for bonding contiguous HF channels and allow digital modulations that support higher data rates while ensuring that interference outside of the assigned multi-channel bands is no greater than the interference of individually utilized channels.

ADD IAP/6400A24A1/2

DRAFT NEW RESOLUTION [IAP/10(A)/APPENDIX-27] (WRC-19)

Consideration of regulatory provisions for updating Appendix 27 of the Radio Regulations in support of aeronautical wideband HF modernization

The World Radiocommunication Conference (Sharm el-Sheik Egypt, 2019),

considering

- a) That with the availability of advanced technologies and demonstrated capabilities of aeronautical wideband HF through channel bonding, faster data rates and better voice communications are possible;
- b) That aeronautical wideband HF must co-exist with existing aeronautical analog voice and data HF systems;
- c) that desirable properties of HF propagation enable global coverage for aircraft;
- d) that aeronautical analog voice and narrow band digital HF systems are the primary means for international and domestic aviation to communicate with aircraft in remote and oceanic areas;
- e) the operational need for the modernization of data link services in the HF band for messages related to the safety and regularity of flight for use by international civil aviation;
- f) that current aeronautical HF systems are limited by the available technology, and are insufficient to meet many modern aircraft information requirements without being augmented by aeronautical safety satellite communications;
- g) that the use of the frequencies in the frequency bands allocated to the aeronautical mobile (route) service (AM(R)S) in the bands between 2 850 – 22 000 kHz is governed by the provisions of **Appendix 27**;

noting

- a) the special arrangements clause in RR Appendix 27 for classes of emissions other than J3E or H2B;
- b) the existing regional frequency allotments are detailed in RR Appendix 27 for aeronautical HF in the AM(R)S service;
- c) that RR Appendix 27 provides international and regional allotments for HF channels within the AM(R)S;

- d) the current aeronautical HF narrow band digital communications are detailed in ITU-R Recommendation M.1458;
- e) that inter-system compatibility between internationally standardized aeronautical equipment is the responsibility of ICAO;
- f) that new HF channel bonding technology allows for variable bandwidths of up to 48 kHz, in 3 kHz steps;

recognizing

- a) the need for improving aeronautical HF performance in support of internationally recognized aviation performance standards as defined by ICAO;
- b) that Annex 10 Volume III to the Convention on International Civil Aviation is a part of International Standards and Recommended Practices (SARPs) for the current aeronautical narrow band HF communications systems used by international civil aviation;
- c) that the modernization of aeronautical HF communications will not require any changes to **Article 5** of the Radio Regulations;
- d) that 3 023 kHz and 5 680 kHz as designated for search and rescue **Appendix 15** of the Radio Regulations;

resolves to invite ITU-R

- 1 to identify any necessary modifications to Appendix 27 regarding the allotment of aeronautical wideband HF channels for the aeronautical mobile (R) service in the frequency bands between 2 850 - 22 000 kHz and without any change to Article 5 of Radio Regulations;
- 2 to identify any necessary transition arrangements for the introduction of new aeronautical wideband HF systems and any consequential changes to Appendix 27;
- 3 to recommend how new aeronautical wideband HF systems can be introduced while ensuring compliance with safety requirements,
- 4 to complete studies in time for WRC-23

further resolves to invite WRC-23

to consider necessary changes to **Appendix 27**, on the basis of the studies conducted under the *resolves to invite ITU-R* above;

invites

International Civil Aviation Organization to actively participate by providing requirements and information that should be taken into account in ITU-R studies;

instructs the Secretary-General

to bring this Resolution to the attention of the International Civil Aviation Organization

SUP IAP/6400A24A1/3

RESOLUTION 810 (WRC-15)

Preliminary agenda for the 2023 World Radiocommunication Conference

The World Radiocommunication Conference (Geneva, 2015),

Reasons: This Resolution must be suppressed, as WRC-19 will create a new Resolution that will include the agenda for WRC-23.

ATTACHMENT

**PROPOSAL FOR FUTURE AGENDA ITEM TO UPDATE ITU RADIO REGULATION
APPENDICES 27 IN SUPPORT OF WIDEBAND HF**

Subject: Proposed Future WRC Agenda Item for WRC-2023 to support updates to ITU Radio Regulations in support of Wideband HF

Origin: the CITEL Member States

Proposal: To review and update the relevant sections of ITU RR Appendix 27 in support of Wideband HF for aviation applications while ensuring compatibility with legacy HF uses.

Background/reason:

The aeronautical use of the various HF frequency bands in the range 2 850 – 22 000 kHz is essential to long distance aeronautical communications in remote and oceanic areas. Since the last substantive review of RR Appendix 27 of the ITU Radio Regulations, use of HF by aviation has continued to change and grow, especially for HF Datalink (HF DL) services used by many aircraft. Aviation is evaluating future developments within the HF band, using new technology to significantly improve capacity, connectivity, and quality of service for aviation data and voice, including increased channel bandwidths for greater data throughput. Such developments within existing aviation HF allocations would provide aviation with additional capabilities, improving safety, global coverage and link diversity to L-band SATCOM systems thus allowing updated HF systems to work well together in a complementary and synergistic fashion with Satcom systems to better maintain communications at all times. In light of the evolving HF technologies, RR Appendix 27 need to be reviewed to ensure they meet the current and future aeronautical requirements by allowing for bonding contiguous HF channels and allow digital modulations that support higher data rates while ensuring that interference outside of the assigned multi-channel bands is no greater than the interference of individually utilized channels.

Radiocommunication services concerned:

Terrestrial HF Radio communication

Indication of possible difficulties: none foreseen

Previous/ongoing studies on the issue: N/A

Studies to be carried out by: ITU-R WP5B

with the participation of:
ICAO

ITU-R Study Groups concerned: SG 5

ITU resource implications, including financial implications (refer to CV126): minimal

Common regional proposal: Yes/No

Multicountry proposal: Yes/No

Number of countries:

Remarks