



2019 World Radiocommunication Conference Agenda Item 1.10

Global Aeronautical Distress & Safety System (GADSS) Radio Regulatory Provisions

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WRC-19 Agenda Item 1.10

invites ITU-R

1. to conduct the relevant studies, taking into account information and requirements provided by ICAO for both the terrestrial and satellite components, including:
 - a) quantification and characterization of radiocommunication requirements related to GADSS, such as:
 - data traffic requirements for different system components of GADSS (such as the aircraft tracking, autonomous distress and flight data recovery systems) and their terrestrial and satellite components at each phase of the operation;
 - information on the radiocommunication requirement related to safety-of-life applications;
 - performance criteria for terrestrial and satellite systems;
 - b) analysis of the existing allocations to the relevant aeronautical services and determining whether any additional spectrum is required;
 - c) studies on sharing and/or compatibility with the existing services;
2. to undertake studies of the existing regulatory provisions to determine whether it might be necessary to apply additional regulatory measures,



GADSS What We Know?

- Concept Built on use of Existing Systems
- Deficiencies in Surveillance Capabilities
 - Identified as a result of AF 447 & MH 360 Incidents
 - Addressed at WRC-19
 - Allocation for satellite ADS-B
- No need for Additional Allocations Identified
- No need for Modifications to Existing Footnotes Identified



Why Do We Need Agenda Item 1.10

- **Normally Concentrate on Article 5**
- **Other Articles and Appendices of Interest**
 - Chapter V – Administrative provisions
 - Article **18** – Licences
 - Chapter VI – Provisions for services and stations
 - Article **28** – Radiodetermination
 - Chapter VII – Distress and safety communication
 - Article **30** – General
 - Appendix **12** – Special rules applicable to radio-beacons
 - Appendix **27** – Frequency allotment plan for the aeronautical mobile (R) service and related information



Why Do We Need Agenda Item 1.10

➤ Other Articles and Appendices of Interest

➤ Chapter VIII – Aeronautical Services

- Article 35 - Introduction
- Article 36 - Authority of the person responsible for the station
- Article 37 - Operator's certificate
- Article 38 - Personnel
- Article 39 - Inspection of stations
- Article 40 - Working Hours of stations
- Article 41 - Communication with stations in the maritime services
- Article 42 - Conditions to be observed by stations
- Article 43 - Special Rules relating to the use of frequencies
- Article 44 - Order of priority of communications
- Article 45 - General communication procedures



Potential Issues Within Articles 18, 28, 30,32 & 35-45

- **GADSS Related**
 - Pilot's authority
 - Secrecy
 - Additional Provisions
- **Aviation in General**
 - Technical
- **Provisions for Other Services**
 - Chapter V – Administrative Provisions
 - Article 18 – Licences
 - Chapter VI – Provisions for Services and Stations
 - Article 28 – Radiodetermination
 - Chapter VII – Distress and Safety Communication
 - Article 32 – Operational procedures for distress communications in the global maritime distress and safety system (GMDSS)



Current Proposal within the ITU

➤ Regulatory provisions

In accordance with invites 2 of ITU-R Resolution 426 (WRC-15), the following regulatory areas have been reviewed in order to determine if regulatory provisions were necessary to facilitate the introduction and use of GADSS.

➤ Chapter VII Distress and Safety Communications

It has been analysed how to reflect the existence of GADSS in the RR by either modifying Chapter VII or creating a new Chapter to describe GADSS and set forth appropriately the responsibility of ICAO and ITU in the definition of systems contributing to the GADSS. These provisions should:

- recognize GADSS but avoid any impact on GMDSS;
- introduce the definition of the GADSS, clarify its main functions and explain that this is a performance based concept;
- [underline the fact that the detailed information on GADSS is contained in the ICAO documents, rather than in the ITU RR;]
- [clarify that system used under GADSS may operate in different radiocommunication services already having allocation in the RR, not necessarily aeronautical ones. This also indirectly indicates that currently GADSS does not need additional allocations. The specific service and type of spectrum is selected based on the GADSS function;]
- [make a cross-reference with the two newly proposed provisions of Articles 36 and 37, which make exception from the general rules established in these Articles;]
- [reflect the absolute importance of information transmitted by autonomous distress tracking systems.]



Outstanding Questions within the ITU

➤ Chapter VIII Aeronautical Services

- Whether the provisions of Articles 18.4 and 36.3, taking into account the definition in Article 17, would require that aircraft tracking information be encrypted.
- Whether the provisions of Articles 36.1, 36.2, 37.1 and 37.2 would preclude GADSS including a provision that the aircraft autonomous distress tracking function could not be turned off.
- Whether Article 37.3 would preclude GADSS including, under some conditions, a provision for remote triggering of position reporting.

Editor's notes.

1) Views were expressed that no modification directly relative to the GADSS is required in this chapter, as others proposes that further study is required on three topics:

2) However, it can be noticed that general review may be needed and an agenda item for WRC-23 may be considered that could lead to modifications relative to general aeronautical issues.



Other Issues that may need Future WRC Action (1)

ARTICLE 36

Authority of the person responsible for the station

36.1 § 1 The service of a mobile station is placed under the supreme authority of the person responsible for the aircraft or other vehicle carrying the mobile station.

36.2 § 2 The person holding this authority shall require that each operator comply with these Regulations and that the mobile station for which the operator is responsible is used, at all times, in accordance with these Regulations.

36.3 § 3 Except as otherwise provided for in these Regulations, the person responsible, as well as all the persons who may have knowledge of any information whatever obtained by means of the radiocommunication service, are placed under the obligation of observing and ensuring the secrecy of correspondence

36.4 § 4 The provisions of Nos. 36.1, 36.2 and 36.3 shall also apply to personnel of aircraft earth stations



Other Issues that may need Future WRC Action (2)

ARTICLE 37

Operator's certificates

Section I – General provisions

37.1 § 1 1) The service of every aircraft station and every aircraft earth station shall be controlled by an operator holding a certificate issued or recognized by the government to which the station is subject. Provided the station is so controlled, other persons besides the holder of the certificate may use the radiotelephone equipment.

37.2 .

37.3 3) The service of automatic communication devices installed in an aircraft station or aircraft earth station shall be controlled by an operator holding a certificate issued or recognized by the government to which the station is subject. Provided the devices are so controlled, they may be used by other persons



Other Issues that may need Future WRC Action (3)

ARTICLE 18 Licences

18.1

18.2

18.3

18.4 § 2 . The holder of a licence is required to preserve the secrecy of telecommunications, as provided in the relevant provisions of the Constitution and the Convention. Moreover, the licence shall mention, specifically or by reference, that if the station includes a receiver, the interception of radiocommunication correspondence, other than that which the station is authorized to receive, is forbidden, and that in cases where such correspondence is involuntarily received, it shall not be reproduced, nor communicated to third parties, nor used for any purpose, and even its existence shall not be disclosed.



Other Issues that may need Future WRC Action (4)

ARTICLE 28

Radiodetermination Services

28.16 § 9 In the absence of prior arrangements, an aircraft station which calls a radio direction-finding station for a bearing shall use for this purpose a frequency on which the station called normally keeps watch.

Section IV – Radiobeacon stations

28.18 § 11 When an administration thinks it desirable in the interests of navigation to organize a service of radiobeacon stations, it may use for this purpose:

28.19 a) radiobeacons properly so-called, established on land or on ships permanently moored or, exceptionally, on ships navigating in a restricted area, the limits of which are known and published. The emissions of these radiobeacons may have either directional or non-directional patterns;

28.20 b) fixed stations, coast stations or aeronautical stations designated to function as radiobeacons, at the request of mobile stations.



Other Issues that may need Future WRC Action (5)

ARTICLE 32

Operational procedures for distress communications in the global maritime distress and safety system (GMDSS)

Section III – Distress traffic

32.60 C – Locating and homing signals

32.61 § 36 1) Locating signals are radio transmissions intended to facilitate the finding of a mobile unit in distress or the location of survivors. These signals include those transmitted by searching units, and those transmitted by the mobile unit in distress, by survival craft, by float-free EPIRBs, by satellite EPIRBs and by search and rescue radar transponders to assist the searching units.

32.62 2) Homing signals are those locating signals which are transmitted by mobile units in distress, or by survival craft, for the purpose of providing searching units with a signal that can be used to determine the bearing to the transmitting stations.

32.63 3) Locating signals may be transmitted in the following frequency bands:

117.975-137 MHz;

156-174 MHz;

406-406.1 MHz; and

9 200-9 500 MHz.



Other Issues that may need Future WRC Action (6/1)

Appendix 12 Section I – Aeronautical radiobeacons

- 1) The assignment of frequencies to aeronautical radiobeacons operating in the bands between 160 kHz and 535 kHz shall be based on a protection ratio against interference of at least 15 dB for each beacon throughout its service area.
- 2) The radiated power should be kept to the minimum value necessary to give the desired field strength at the service range.
- 3) The daylight service range of radiobeacons referred to in § 1) above shall be based on the following field strengths:
 - 4) Regions 1 and 2
 - 70 $\mu\text{V}/\text{m}$ for radiobeacons north of 30° N ;
 - 120 $\mu\text{V}/\text{m}$ for radiobeacons between 30° N and 30° S ;
 - 70 $\mu\text{V}/\text{m}$ for radiobeacons south of 30° S .
 - 5) Region 3
 - 70 $\mu\text{V}/\text{m}$ for radiobeacons north of 40° N ;
 - 120 $\mu\text{V}/\text{m}$ for radiobeacons between 40° N and 50° S ;
 - 70 $\mu\text{V}/\text{m}$ for radiobeacons south of 50° S .



Other Issues that may need Future WRC Action (6/2)

ICAO Annex 10 Volume 1

3.4.2.1 Recommendation.— The minimum value of field strength in the rated coverage of an NDB should be 70^omicrovolts per metre.

Note 1.— Guidance on the field strengths required particularly in the latitudes between 30°N and 30°S is given in 6.1 of Attachment C, and the relevant ITU provisions are given in Chapter VIII, Article 35, Section IV, Part B of the Radio Regulations.

A.— Minimum field strengths required at the boundary of the rated coverage:

Latitude	By day for 15 dB S/N ratio	By night for 15 dB S/N ratio
5°N – 5°S	320 μ V/m (+50 dB)	900 μ V/m (+59 dB)
5° – 15°N&S	85 μ V/m (+39 dB)	700 μ V/m (+57 dB)
15° – 25°N&S	40 μ V/m (+32 dB)	320 μ V/m (+50 dB)
25° – 35°N&S	18* μ V/m (+25 dB)	120 μ V/m (+42 dB)
>35°N&S	18* μ V/m (+25 dB)	150 μ V/m (+35 dB)

A star shown against a figure indicates that a higher value of field strength — probably 2 or 3 times the values shown (plus 6 to plus 10 dB) — may be necessary in the presence of high aircraft noise and/or industrial noise



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