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ITUWORKSHOPS

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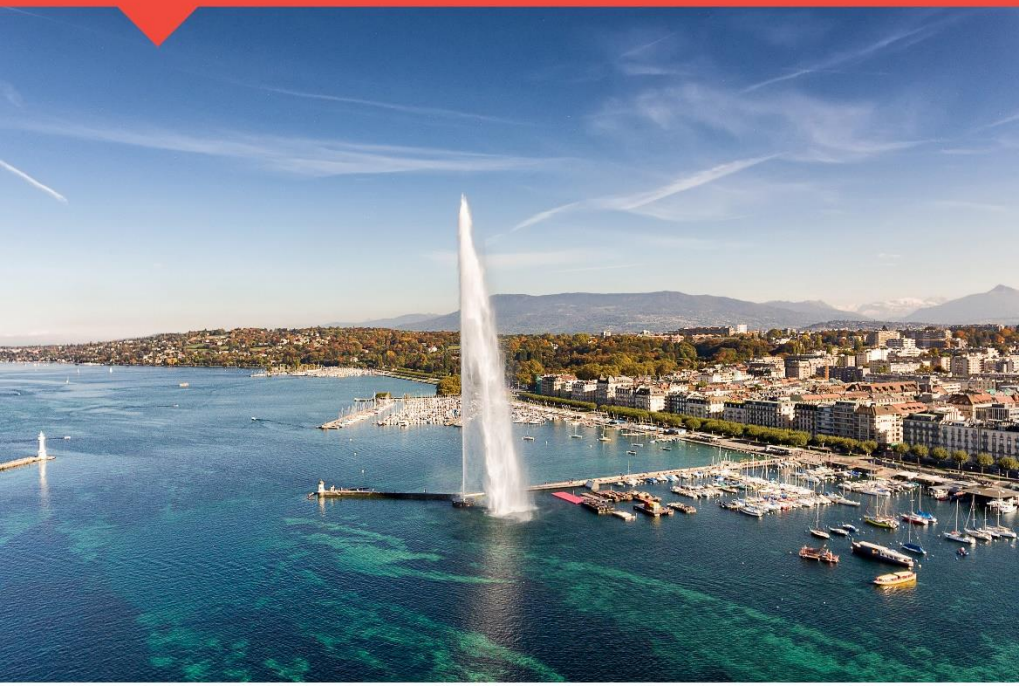

ITUWRC WORLD RADIOCOMMUNICATION CONFERENCE

Organized by:

90th Anniversary CCIR - ITU-R Study Groups (1927-2017)

ITU

1st ITU INTER-REGIONAL WORKSHOP ON WRC-19 PREPARATION (Geneva, 21-22 November 2017)

Maritime & Aeronautical Issues WRC-19 agenda items 1.8, 1.9 (1.9.1 & 1.9.2), 1.10, 9.1 (9.1.4)

Presented by John Mettrop

Agenda Item 1.8

to consider possible regulatory actions to support Global Maritime Distress Safety Systems (GMDSS) modernization and to support the introduction of additional satellite systems into the GMDSS, in accordance with Resolution **359** (**Rev.WRC 15**)

Responsible Group	WP 5B
Latest CPM Text	5B/411 Annex 1 (Issue A) & 4C/261 Annex 14 (Issue B)
Contributing Groups	**WP 4C**(in charge of developing studies and draft CPM text on resolves 2 and sending that to WP 5B), **WP 7D**, (WP 1A), (WP 3M), (WP 5A)

Resolution 359 (Rev.WRC 15)

Consideration of regulatory provisions for updating and modernization of the Global Maritime Distress and Safety System

resolves to invite ITU-R

1 to conduct studies, taking into consideration the activities of IMO, as well as information and requirements provided by IMO, in order to determine the regulatory provisions to support GMDSS modernization;

2 to conduct studies, taking into consideration the activities of IMO and the recognition of additional satellite systems for use in the GMDSS, including consideration of the mobile-satellite service (MSS) allocations used and the potential impact of possible modifications to the provisions of the Radio Regulations on sharing and compatibility with other services and systems in the frequency band and adjacent frequency bands,

invites the 2019 World Radiocommunication Conference

1 to consider the result of ITU Radiocommunication Sector (ITU-R) studies and take necessary actions, as appropriate, to support GMDSS modernization;

2 to consider regulatory provisions, if appropriate, based on the ITU-R studies, and taking into consideration the activities of IMO, related to the introduction of additional satellite systems into the GMDSS, including consideration of the MSS allocations used, while ensuring the protection of all incumbent services, including those in adjacent frequency bands, from harmful interference, as stated in recognizing e),

Summary

The aim of this agenda item is to put in place the radio regulatory provisions necessary to support the International Maritime Organisations modernisation of the global maritime distress and safety service, including consideration of mobile satellite systems, whilst ensuring the protection of incumbent systems and services

Existing relevant Recommendations and Reports

Recommendations

ITU-R M.1184-2: Technical characteristics of mobile satellite systems in the frequency bands below 3 GHz for use in developing criteria for sharing between the mobile-satellite service (MSS) and other services

ITU-R M.1188-1: Impact of propagation on the design of non GSO mobile-satellite systems not employing satellite diversity which provide service to handheld equipment

ITU-R M.1583-1: Interference calculations between non-geostationary mobile-satellite service or radionavigation-satellite service systems and radio astronomy telescope sites

ITU-R M.2010-0: Characteristics of a digital system, named Navigational Data for broadcasting maritime safety and security related information from shore-to-ship in the 500 kHz frequency band; or the revised version;

ITU-R M.2058-0: Characteristics of a digital system, named navigational data for broadcasting maritime safety and security related information from shore-to-ship in the maritime HF frequency band; or the revised version;

Reports

ITU-R M.2201-0: Utilization of the frequency band 495-505 kHz by the maritime mobile service for the digital broadcasting of safety and security related information from shore-to-ships

ITU-R M.2369-0: Use of non-geostationary orbit mobile satellite systems to enhance maritime safety

Issue A
Modernisation of GMDSS

Method A

MF NAVDAT

The frequency band 495-505 kHz should be assigned for the use of international MF NAVDAT.

The limitation on the use of the bands 415-495 kHz and 505-526.5 kHz (505-510 kHz in Region 2) in the maritime mobile service only by radiotelegraphy should be removed. And the possibility of using these bands by national MF NAVDAT could be given.

HF NAVDAT

It is needed to modify RR Appendix 17 to allow the frequency bands described in most recent version of Recommendation ITU-R M.2058 to be used for HF NAVDAT system. Therewith proper regulatory provisions should be developed to ensure compatibility of HF NAVDAT systems with digital maritime mobile systems operating the frequency bands concerned subject to relevant existing allocations.

Issue B

Additional **Satellite Systems**

Method B

No useful text currently available but issue around the introduction of another satellite system into the GMDSS and potential interference to Radio Astronomy

Views
Iridium

- Addition of GMDSS satellite providers to the GMDSS will improve safe navigation and search-and-rescue operations through better geographical coverage, including in Polar regions not now covered by the sole current provider
- The International Maritime Organisation is in the process of incorporating the Iridium system into the GMDSS, expected 2018; this necessitates the ITU taking action to address frequency matters
- Iridium has operated in an existing MSS allocation for 20 years. No new frequency allocations are needed
- Measures proposed include entry of the frequency band into Appendix 15, and minor modifications to the footnotes to reflect a safety service
- GMDSS is provided in sea areas remote from radioastronomy facilities and will have no impact on them. The 2nd generation satellite replacements will, however, reduce the interference currently experienced by Radio Astronomy from 2018

Views
Science Community

- Since 1998 the radio astronomy service (RAS) in the 1610.6-1613.8 MHz band has been experiencing harmful interference from the Iridium satellite system operating in the nearby band 1618.25-1626.5 MHz.
- This interference persists despite RR No. 5.372 stating that harmful interference shall not be caused to stations of the radio astronomy service using the band 1610.6-1613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services.
- The Leeheim satellite monitoring station in Germany has started measuring the out-of-band emission levels of the 2nd generation satellites. The measurements show that the 2nd generation satellites operate with a reduced bandwidth of 1621-1626.5 MHz, and although their unwanted emission levels may have been reduced compared to the 1st generation satellites, the interference threshold level is still exceeded throughout the entire RAS frequency band
- There is no evidence that the 2nd generation Iridium constellation will be able to protect the RAS frequency band. Iridium has held a number of presentations based on simulations of an operational method, that can only be applied once the entire constellation is renewed, which will solve the interference issue with RAS. These simulations are neither complete, nor were the details ever discussed and shared with the RAS community.

Agenda Item 1.9.1

regulatory actions within the frequency band 156-162.05 MHz for autonomous maritime radio devices to protect the GMDSS and automatic identifications system (AIS), in accordance with Resolution **362** (**WRC 15**);

Responsible Group	WP 5B
Latest CPM Text	5B/411 Annex 3
Contributing Groups	**WP 4C, WP 5A, WP 5C,** (WP 1B), (WP 3M)

Resolution 362 (Rev.WRC 15)

Autonomous maritime radio devices operating in the frequency band 156-162.05 MHz

resolves to invites the 2019 World Radiocommunication Conference

to consider the results of ITU R studies and take appropriate actions

invite ITU-R

1 to conduct the necessary studies in time for WRC-19 to determine the spectrum needs and technical and operational characteristics of autonomous maritime radio devices operating in the frequency band 156-162.05 MHz;

2 to conduct the necessary studies to categorize the various autonomous maritime radio devices;

3 to conduct sharing and compatibility studies, based on the results of invites ITU-R 1 and 2, to ensure that no undue constraints are placed on the GMDSS and AIS;

4 to conduct studies, taking into account the results of invites ITU-R 1 to 3, and existing maritime technology, to determine potential regulatory actions and appropriate frequencies for autonomous maritime radio devices within the frequency band 156-162.05 MHz,

Summary

The aim of this agenda item is to prevent unregulated operation of AMRDs in order to ensure the integrity of both the global maritime distress & safety system and the automatic identification system that is used for collision avoidance and hence enhance safety of maritime navigation

Existing relevant Recommendations and Reports

Recommendations

ITU-R M.493-14: Digital selective-calling system for use in the maritime mobile service

ITU-R M.585-7: Assignment and use of identities in the maritime mobile service

ITU-R M.1371-5: Technical characteristics for an automatic identification system using time-division multiple access in the VHF maritime mobile band; or the revised version;

Reports

Preliminary draft new Report ITU-R M.[AMRD]: Autonomous maritime radio devices; (Doc 5B/305 Annex 22)

Preliminary draft new Report ITU-R M.[NEW_MARNUM]: New numbering scheme for maritime identities (Doc 5B/411 Annex 23)

Currently Proposed Methods to Solve the Agenda Item

Method A1-a

For operation of AIS-technology the frequency [160.900 MHz (Ch. 2006)] (new AMRD AIS) is proposed. [For this reason it is proposed to amend RR Appendix 18 footnote r) as appropriate.]. [Such use should be in accordance with the latest version of Recommendation ITU-R M.xxx]

Method A1-b

Modify the Radio Regulations to allow Group A AMRDs to use maritime mobile service frequency bands, and to allow Group B AMRDs to use frequency band 161.4375-161.4875 MHz. [Such use should be in accordance with the latest version of Recommendation ITU-R M.xxx.]

Method A2

For operation of analogue voice telephony two [25 kHz channels with the frequencies [160.575] MHz (AMRD 1) and [160.600] MHz (AMRD 2)] are proposed. For this reason an additional footnote 5.226A in RR. Article 5 should be implemented as appropriate.

Method A3

For usage for other technology not channelized spectrum of [25 kHz in the bands 160.5375 MHz–160.5625 MHz is proposed. For this reason an additional footnote 5.226B in RR. Article 5 should be implemented as appropriate.

Agenda Item 1.9.2

modifications of the Radio Regulations, including new spectrum allocations to the maritime mobile-satellite service (Earth to space and space-to-Earth), preferably within the frequency bands 156.0125-157.4375 MHz and 160.6125-162.0375 MHz of Appendix 18, to enable a new VHF data exchange system (VDES) satellite component, while ensuring that this component will not degrade the current terrestrial VDES components, applications specific messages (ASM) and AIS operations and not impose any additional constraints on existing services in these and adjacent frequency bands as stated in recognizing d) and e) of Resolution **360** (**Rev.WRC 15**)

Responsible Group	WP 5B
Latest CPM Text	5B/411 Annex 5
Contributing Groups	**WP 4C, WP 5A, WP 5C,** (WP 1A), (WP 3M)

Resolution 360 (Rev.WRC 15)

Consideration of regulatory provisions and spectrum allocations to the maritime mobile-satellite service to enable the satellite component of the VHF Data Exchange System and enhanced maritime radiocommunication

resolves to invites the 2019 World Radiocommunication Conference

to consider, based on the results of ITU R studies, modifications of the Radio Regulations, including new spectrum allocations to the maritime mobile-satellite service (MMSS) (Earth-to-space and space-to-Earth), preferably within the frequency bands 156.0125-157.4375 MHz and 160.6125 162.0375 MHz of Appendix 18, to enable a new VDES satellite component, while ensuring that this component will not degrade the current terrestrial VDES components, ASM and AIS operations and not impose any additional constraints on existing services in these and adjacent frequency bands as stated in recognizing d) and e),

invite ITU-R

to conduct, as a matter of urgency, and in time for WRC 19, sharing and compatibility studies between VDES satellite components and incumbent services in the same and adjacent frequency bands specified in recognizing d) and e) to determine potential regulatory actions, including spectrum allocations to the MMSS (Earth-to-space and space-to-Earth) for VDES applications,

Summary

This agenda item considers the need to modify the Radio Regulations, including new spectrum allocations to the maritime mobile-satellite service preferably within the frequency bands 156.0125 - 157.4375 MHz and 160.6125 162.0375 MHz of RR Appendix 18, to enable a new VHF data exchange system (VDES) satellite component, while ensuring the protection of current terrestrial VDES components nor impose any additional constraints on existing services in these and adjacent frequency bands.

Existing relevant Recommendations and Reports

Recommendations

ITU-R F.758-6: System parameters and considerations in the development of criteria for sharing or compatibility between digital fixed wireless systems in the fixed service and systems in other services and other sources of interference

ITU-R M.1808-0: Technical and operational characteristics of conventional and trunked land mobile systems operating in the mobile service allocations below 869 MHz to be used in sharing studies

ITU-R M.2092-0: Technical characteristics for a VHF data exchange system in the VHF maritime mobile band

Reports

ITU-R M.[VDES-SAT]: (5B/411 Annex 27)

Currently Proposed Methods to Solve the Agenda Item

Method A1-a

For operation of AIS-technology the frequency [160.900 MHz (Ch. 2006)] (new AMRD AIS) is proposed. [For this reason it is proposed to amend RR Appendix 18 footnote r) as appropriate.]. [Such use should be in accordance with the latest version of Recommendation ITU-R M.xxx]

Method A1-b

Modify the Radio Regulations to allow Group A AMRDs to use maritime mobile service frequency bands, and to allow Group B AMRDs to use frequency band 161.4375-161.4875 MHz. [Such use should be in accordance with the latest version of Recommendation ITU-R M.xxx.]

Method A2

For operation of analogue voice telephony two [25 kHz channels with the frequencies [160.575] MHz (AMRD 1) and [160.600] MHz (AMRD 2)] are proposed. For this reason an additional footnote 5.226A in RR. Article 5 should be implemented as appropriate.

Method A3

For usage for other technology not channelized spectrum of [25 kHz in the bands 160.5375 MHz–160.5625 MHz is proposed. For this reason an additional footnote 5.226B in RR. Article 5 should be implemented as appropriate.

Agenda Item 1.10

to consider spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System (GADSS), in accordance with Resolution **426 (WRC-15)**;

Responsible Group	WP 5B
Latest CPM Text	5B/411 Annex 7
Contributing Groups	**WP 4A, WP 4B, WP 4C, WP 5A, WP 5C, WP 5D, WP 6A, WP 7B, WP 7C, WP 7D,** (WP 3M)

Resolution 426 (WRC 15)

Studies on spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress & Safety System

resolves to invites the 2019 World Radiocommunication Conference

1 to take appropriate actions, taking into account the results of ITU-R studies;

2 to analyse the necessity for further studies, and consider whether this matter should be brought to the attention of a future competent conference,

invite 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

Summary

Following on from the late agenda item at WRC-15 to address global flight tracking this agenda item seeks to ensure that the radio regulatory provisions are in position to enable the implementation of ICAO's global aeronautical distress & safety system concept of operations which is based on using existing aeronautical systems in a more efficient manner to address deficiencies identified as a result of AF 447 & MH 370 .

Existing relevant Recommendations and Reports

Recommendations

None

Reports

None

Currently Proposed Methods to Solve the Agenda Item

Method A

Invites ITU-R 1 b) of Resolution 426 (WRC-15) calls for the analysis of the existing allocations to the relevant aeronautical services in order to determine whether any additional spectrum is required.
Regarding this question, no additional spectrum is needed to support GADSS, and as a result no changes to Article 5 of the Radio Regulations (RR) are proposed.

Invites ITU-R 2 of Resolution 426 (WRC-15) calls for studies of the existing regulatory provisions to determine whether it might be necessary to apply additional regulatory measures.
Regarding this question, in order to facilitate its introduction, modification of RR to include GADSS as a distress and safety communications system, included in Chapter VII-Distress and safety communications OR in a new Chapter specific to GADSS [and Chapter VIII –Aeronautical services] is proposed.

ICAO View

- Need to address the deficiencies identified as a result of the AF 447 & MH 470 incidents
- Response addresses a 3 stage process
  - **Aircraft tracking**. Aircraft operators are responsible for tracking their aircraft at an interval of 15 minutes or less throughout their entire area of operations. Applicable by Nov 2018
  - **Autonomous distress tracking**. Aircraft are required to autonomously transmit position information at least once every minute when in distress condition. Applicable to new aircraft from January 2021
  - **Post Flight Localization and Recovery is two fold**:
    - Accurate location for timely Search and Rescue
    - Flight recorder data recovery system (deployable Emergency Locator Transmitter beacons), improved Underwater Locator Beacons, Data Streaming
- Support the method currently proposed for no modification to Article 5 table of Allocations but the addition of provisions in Chapters VII & VIII to recognise the global aeronautical distress and safety system

Agenda Item 9

to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:

Agenda Item 9.1

on the activities of the Radiocommunication Sector since WRC 15;

Issue 9.1.4

Sub-orbital vehicles ;

Responsible Group	WP 5B
Latest CPM Text	5B/411 Annex 8
Contributing Groups	WP 4A, WP 4C, WP 7B

Resolution 763 (WRC 15)

Studies on spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress & Safety System

resolves to invites the 2019 World Radiocommunication Conference

1 to take appropriate actions, taking into account the results of ITU-R studies;

2 to analyse the necessity for further studies, and consider whether this matter should be brought to the attention of a future competent conference,

invite 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

Summary

This agenda item seeks to understand how so-called sub-orbital vehicles fit within the current Radio Regulations and whether any changes to those regulations are required in order to facilitate the .

Existing relevant Recommendations and Reports

Recommendations

None

Reports

None