

International Maritime Organization

INTERNATIONAL TELECOMMUNICATION UNION (ITU) WORLD RADIOCOMMUNICATION CONFERENCE 2015 (WRC-15)

Draft IMO position on WRC-15 agenda items concerning matters relating to maritime services

Note: This document contains the draft IMO Position as endorsed by the 1st session of IMO's Sub-Committee on Navigation, Communications and Search and Rescue (NCSR 1) and updated by the Joint IMO/ITU Experts Group at its meeting from 6 to 10 October 2014. It is expected that this version of the draft IMO position will be finalized by NCSR 2 in March 2015, approved by the Maritime Safety Committee in June 2015 and after that be sent as an Information document to WRC-15.

General

Over 90% of world trade is transported by sea. This totals some 7.5 billion tonnes (32,000 billion tonne miles), of which about 33% is oil, 27% is bulk (ore, coal, grain and phosphates), the remaining 40% being general cargo. Operating these merchant ships generates an estimated annual income of \$380 billion in freight rates within the global economy, amounting to 5% of total world trade.

The industry employs over 1.2 million seafarers.

Agenda item 1.1

1.1 *To consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution 233 (WRC-12);*

Background

Consideration of the following frequency bands is of particular concern to the maritime community:

- 1 406 – 406.1 MHz in use for Cospas-Sarsat;
- 2 1 518-1 559 MHz in use for satellite terminals on board SOLAS ships;
- 3 1 559-1 610 MHz in use for RNSS;
- 4 1 626.5-1 660.5 MHz in use for satellite terminals on board SOLAS ships;

- 5 1 668-1 675 MHz in use as uplink paired with the downlink 1 518-1 525 MHz for satellite communications;
- 6 2 900-3 100 MHz in use for Maritime radionavigation (S-band radar); and
- 7 3 400-4 200 MHz partly in use for feeder links of Inmarsat.

The S-band radar is of particular importance for safety of navigation (safety of life service) and for use in adverse weather conditions, for instance heavy rain. Previous ITU-R studies on sharing with the band 2 900 to 3 100 MHz are no longer valid, because new generation equipment had not been taken into account.

IMO position

To exclude the frequency bands 406-406.1 MHz, 1 518-1 559 MHz, 1 559-1 610 MHz, 1 626.5-1 660.5 MHz, 1 668-1 675 MHz, 2900-3100 MHz and 3400-4200 MHz, or any other frequency bands that are used by maritime safety systems, as candidate bands under WRC-15, agenda item 1.1, due to the potential adverse impact to maritime safety and the efficient movement of international commerce.

If the band 2 700-2 900 MHz was decided to be a candidate band under WRC-15, agenda item 1.1., IMO requests ITU to address the impact on the band 2 900-3 100 MHz, including the consequential coexistence between different types of radars that may result from potential IMT use between 2 700-2 900 MHz.

To ensure that emissions from IMT operating in adjacent bands to the frequency bands mentioned above do not affect the operation of the existing maritime systems

Agenda item 1.8

1.8 *To review the provisions relating to earth stations located on board vessels (ESVs), based on studies conducted in accordance with Resolution 909 (WRC-12);*

Background

Currently, around 12,000 vessels use VSATs for broadband communication. This service is limited to distances off shore of 125 kilometres for the frequency band 14-14.5 GHz and 300 kilometres for the frequency band 5925-6425 MHz in accordance with Resolution 902 (WRC-03). The agenda item is to review the provisions related to ESVs. Ships have a particular need for broadband communications when entering and leaving ports. For example:

- 1 for the synchronization of databases;
- 2 to transmit port-entry and -exit documents electronically, as harmonized, among others, in IMO's Convention on Facilitation of International Maritime Traffic (FAL Convention) and in accordance with the maritime single window concept to enhance the efficiency of port operations; and
- 3 for communication of the crew with their families.

IMO position

IMO requests that modifications to Resolution 902 (WRC-2003) will permit ESVs to be operated by the mariner in an uncomplicated, straightforward manner and closer to the shore, in accordance with the outcome of studies to maintain compatibility with other services that may be affected.

Agenda item 1.12

1.12 *To consider an extension of the current worldwide allocation to the Earth exploration-satellite (active) service in the frequency band 9 300-9 900 MHz by up to 600 MHz within the frequency bands 8 700-9 300 MHz and/or 9 900-10 500 MHz, in accordance with Resolution 651 (WRC-12);*

Background

Over one million marine radars operate in the frequency band 9 200-9 500 MHz. The GMDSS Radar Search and Rescue Transponders (Radar SART) operates also in this frequency band which is included in provision No. 31.2 of article 31 of the Radio Regulations and appendix 15 to the Radio Regulations, listing the frequencies for distress and safety communications for the GMDSS and protection against harmful interference. The maritime radionavigation service in the band 9 300-9 800 MHz is protected by RR provision No. 5.476A.

Previous ITU-R studies on sharing with the band 9 200 to 9 500 MHz are no longer valid, because new generation equipment had not been taken into account.

IMO position

Protection of the maritime radionavigation service, operating in the frequency band 9 200-9 500 MHz, is essential for "safety of navigation" and "safety of life" and in accordance with Nos.1.59 and 4.10 of the Radio Regulations. IMO requests that if the band 9 200-9 500 MHz is considered under agenda item 1.12, for Earth exploration satellite (active) service, due consideration is given to ensure that there is no potential of harmful impact on global shipping.

Agenda item 1.14

1.14 *To consider the feasibility of achieving a continuous reference time-scale, whether by the modification of coordinated universal time (UTC) or some other method, and take appropriate action, in accordance with Resolution 653 (WRC-12);*

Background

Time as measured by the rotation of the earth is running slightly slower than time measured by atomic clocks (as used in GNSS) and the correction for this is to add "leap seconds" when the difference approaches one second. This has occurred 25 times over the past 40 years, the most recent being in June 2012. The corrected time is known as Coordinated Universal Time (UTC) and the arrangements for inserting the leap second are given in Recommendation ITU-R TF.460-6.

Work in the ITU-R has considered the future elimination of leap seconds resulting in UTC gradually diverging from earth rotation time without limit but no agreement has so far been reached. The advantage of eliminating the leap second is that it would remove the cost and disruption involved in adjusting equipment. The disadvantage would be that the definition of UTC would change which might have regulatory consequences.

IMO makes extensive use of UTC in its requirements and will continue to do so in future.

Some manufacturers have reported difficulties in updating equipment when having to take into account the leap seconds.

Celestial navigation is a requirement of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended and is important to the maritime community, which requires time based on Earth rotation. Inertial navigation, which is currently used by naval ships and may be introduced on merchant ships, requires an accurate time reference.

IMO recognizes that there are advantages and disadvantages of the various methods to address this agenda item and recommends Administrations to consider the methods considering that the issue goes beyond maritime matters

IMO position

IMO requests that the importance of the maritime systems is acknowledged in deciding on this agenda item and attempt to minimize the impact on maritime services.

Agenda item 1.15

1.15 *To consider spectrum demands for on-board communication stations in the maritime mobile service in accordance with Resolution 358 (WRC-12);*

Background

IMO Member Governments have identified the need for the consideration of improvement and expansion of on-board communication stations in the maritime mobile service in the UHF bands.

UHF on-board communications is much used on board ships, including on board emergencies, fire-fighting, berthing, passenger control, etc. There are six frequencies based on 25 kHz channel spacing and an additional four frequencies based on 12.5 kHz channel spacing available, as listed in provision No.5.287 of the Radio Regulations, but these are not always available in all countries and are not sufficient in all cases. The technology is currently defined as analogue FM by Recommendation ITU-R M.1174-2, which is found to be very robust in operations in metal ships. A revision of this Recommendation, to introduce digital technologies could provide more voice channels in one frequency but the performance in the operational environment must be evaluated together with the compatibility with existing equipment based on analogue technology.

IMT is also permitted to use this frequency band under provision No.5.286AA of the Radio Regulations and may be a future source of interference.

IMO position

IMO supports measures which would make more efficient use of the frequency band available for on-board systems and would welcome an international solution for the identification of the channels in provision No.5.287 of the Radio Regulations.

Agenda item 1.16

1.16 *To consider regulatory provisions and spectrum allocations to enable possible new Automatic Identification System (AIS) technology applications and possible new applications to improve maritime radiocommunication in accordance with Resolution 360 (WRC-12);*

Background

AIS is widely used and accepted for shipping but in some parts of the world the capacity of the channels is reaching its limit, due to the introduction of new applications. The continued introduction of new applications and increasing number of AIS devices, as for example, for fishing and leisure use, will require new channels which have been made available by WRC-12 for experimentation.

The need for digital information exchange (VDE) in the maritime domain, where the VHF Mobile band plays a key role in ship-to-ship communication and coastal ship-shore communication, continues to increase.

A 2008 study in the area of Tokyo bay (Tokyo wan) showed that 27.4% of AIS slots were used. In 2012 the loads of 38% were reached. This 10% increase within four years shows that in Japan the limiting factor of 50% as noted in IALA Recommendation A-124 Appendix 18 "VDL Loading Management" could be reached quite soon.

IMO position

Modifications should not be required to existing AIS equipment on board existing vessels. New applications using AIS technology should be allowed to evolve, supported by communication primarily on the new frequencies identified by WRC-12, while protecting the integrity of the original operational purpose of AIS on the existing AIS frequencies. This will also address the concerns expressed previously on congestion by moving various applications to alternative channels in the existing VHF mobile band.

IMO supports the VDES concept, without committing the Organization regarding future requirements on the use of the VHF frequency band.

Agenda item 2

2 To examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution 28 (Rev. WRC-03), and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in Annex 1 to Resolution 27 (Rev. WRC-12);

Background

There are a number of Recommendations incorporated by reference in the Radio Regulations. IMO has reviewed all these Recommendations.

IMO position

IMO has studied the Recommendations of relevance and commented on each as given in annex 1. Incorporation by reference is of importance to IMO because of the close relationship between many of the ITU-R Recommendations related to GMDSS equipment and its operation, to IMO performance standards. IMO requests early indication of any changes proposed by ITU to the mechanism of incorporation by reference and to the list of incorporated Recommendations.

Agenda item 4

4 In accordance with Resolution 95 (Rev. WRC-07), to review the Resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

Background

There are a number of Resolutions and Recommendations in the Radio Regulations. IMO has reviewed all these Resolutions and Recommendations.

IMO position

IMO has studied the Resolutions and Recommendations of relevance and commented on each as given in annex 2.

Agenda item 9

9 *To consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with article 7 of the Convention:*

9.1 *on the activities of the Radiocommunication Sector since WRC-12;*

9.2 *on any difficulties or inconsistencies encountered in the application of the Radio Regulations; and*

9.3 *on action in response to Resolution 80 (Rev.WRC-07);*

Agenda item 9.1, issue 9.1.1

Background

Under agenda item 9.1, issue 9.1.1 ITU-R is invited to study, in accordance with Resolution 205 (Rev.WRC-12), the Protection of the systems operating in the mobile-satellite service in the band 406-406.1 MHz.

The Cospas-Sarsat satellite 406 MHz EPIRB is a mandatory distress alerting device on board SOLAS ships which is frequently carried as the second means of alerting. For ships not subject to the SOLAS Convention it is also often the primary means of distress alerting outside A1 sea area.

There is evidence that the required transmitted output power of the Cospas-Sarsat 406 MHz EPIRB (together with the other devices ELTs and PLBs) is greater than the system design minimum value, apparently, because of other emissions from outside and inside the frequency band.

Besides UWB and cable TV systems, there are developing plans for Power Line Transmission Systems, operating in a frequency band up to 470 MHz, which can have the potential of producing in-band interference to the Cospas-Sarsat system.

The proposed frequency bands for use for Public Protection and Disaster Relief (PPDR), under agenda item 1.3, include a band 380-470 MHz which also has the potential of producing in-band interference to the Cospas-Sarsat system.

There is also a possible development for IMT systems to operate in the band 410-430 MHz which may cause an increased amount of out of band emission to the band 406-406.1 MHz.

Draft IMO position

It is essential to preserve the MSS frequency band 406-406.1 MHz free from any emissions that would degrade the operation of the 406 MHz satellite transponders and receivers, with the risk that satellite Emergency Position Indicating Radio Beacon (EPIRB) signals would go undetected.

Agenda item 9.1, issue 9.1.6

Background

Under agenda item 9.1, issue 9.1.6 ITU-R is invited to study, in accordance with Resolution 957 (WRC-12), toward review of the definitions of fixed service, fixed station and mobile station.

Under this agenda item ITU-R is invited to conduct the necessary studies to review the definitions of fixed service, fixed station and mobile station contained in article 1 of the Radio Regulations for possible modification. Furthermore, ITU-R is invited to study the potential impact on regulatory procedures in the Radio Regulations (coordination, notification and recording) and the impact on current frequency assignments of other services resulting from possible changes to the definitions contained in Article 1.

IMO position

Ensure that measures taken at WRC-15 under this agenda item do not have an adverse impact on the maritime services and maritime applications.

Agenda item 10

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

Resolution **808 (WRC-12)** containing the Preliminary agenda for WRC-18 lists, as item 2.1 for inclusion in the agenda for WRC-18, to consider regulatory actions, including spectrum allocations, to support GMDSS modernization and implementation of e-navigation in accordance with Resolution **359 (WRC-12)**.

Due to the complexity of the work related to the review of the GMDSS, IMO plans to complete the modernization plan for the GMDSS in 2018. The first stage on further work to be undertaken on the implementation of e-navigation is expected to take place in the period 2016 to 2019. Taking into account the above, it is not expected to be possible defining detailed regulatory actions in a time available before WRC-18.

Not directly related to the GMDSS modernization, IMO has received an application to introduce a new satellite service provider into the GMDSS. If a new satellite service provider is recognised for use in the GMDSS, consequential regulatory actions may need to be considered by the ITU.

At the time a new satellite service provider is recognised for use in the GMDSS, IMO supports inclusion of an agenda item to consider consequential regulatory actions in this regard in the agenda of a future conference.

Action to be taken:

To encourage Administrations to submit proposals to NCSR 2 regarding the inclusion of future conference agenda items in the draft IMO position.

Draft IMO position

IMO suggest inclusion of an agenda item to consider regulatory actions, including spectrum allocations, to support GMDSS modernization and implementation of e-navigation in the agenda of a later conference. IMO further supports the continuation of activities under Resolution 359 (WRC-12) in order to inform the conference about the progress on these work items in IMO.

ANNEX 1

RECOMMENDATION ITU-R M.476-5

Direct-printing telegraph equipment in the maritime mobile service*

(Question ITU-R 5/8)

(1970-1974-1978-1982-1986-1995)

No longer needed by IMO. Probably no longer needed by the maritime community.

RECOMMENDATION ITU-R M.489-2

Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz

(1974-1978-1995)

Needed by IMO to support the carriage requirements of SOLAS IV and needed by the maritime community in general. Will likely be needed into the foreseeable future.

RECOMMENDATION ITU-R M.492-6

Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service

(Question ITU-R 5/8)

(1974-1978-1982-1986-1990-1992-1995)

Currently needed by IMO to support the NBDP carriage requirement in SOLAS chapter IV, although the system is little used.

* This Recommendation is retained in order to provide information concerning existing equipment, but will probably be deleted at a later date. New equipment should conform to Recommendation ITU-R M.625 which provides for the exchange of identification signals, for the use of 9-digit maritime mobile service identification signals and for compatibility with existing equipment built in accordance with this Recommendation.

Note by the Secretariat: The references made to the Radio Regulations (RR) in this Recommendation refer to the RR as revised by the World Radiocommunication Conference 1995. These elements of the RR will come into force on 1 June 1998. Where applicable, the equivalent references in the current RR are also provided in square brackets.

RECOMMENDATION ITU-R M.541-9

**Operational procedures for the use of digital selective-calling equipment
in the maritime mobile service**

(Question ITU-R 9/8)

(1978-1982-1986-1990-1992-1994-1995-1996-1997)

Needed by IMO. Likely to be needed into the foreseeable future.

RECOMMENDATION ITU-R M.585-6

Assignment and use of identities in the maritime mobile service

(1982-1986-1990-2003-2007-2009-2012)

Required by the maritime community and useful to IMO.

RECOMMENDATION ITU-R M.625-3

**Direct-printing telegraph equipment employing automatic identification
in the maritime mobile service****

(Question ITU-R 5/8)

(1986-1990-1992-1995)

*Currently needed by IMO to support the NBDP carriage requirement in SOLAS chapter IV,
although the system is little used.*

RECOMMENDATION ITU-R M.633-4

**Transmission characteristics of a satellite emergency position-indicating
radio beacon (satellite EPIRB) system operating through
a satellite system in the 406 MHz band**

(1986-1990-2000-2004-2010)

Used by IMO to support the Performance standards for EPIRBs.

** Newly developed equipment should conform to the present Recommendation which provides for compatibility with existing equipment built in accordance with Recommendation ITU-R M.476.

RECOMMENDATION ITU-R M.690-1

Technical characteristics of emergency position-indicating radio beacons (EPIRBs) operating on the carrier frequencies of 121.5 MHz and 243 MHz

(Question ITU-R 31/8)

(1990-1995)

Required by IMO to define the homing signal characteristics for the satellite EPIRB required by SOLAS chapter IV. Likely to be used by the maritime community for some time to come for EPIRBs and man overboard devices.

RECOMMENDATION ITU-R M.1084-4

Interim solutions for improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service

(Question ITU-R 96/8)

(1994-1995-1997-1998-2001)

Used by IMO for the description of VHF channels.

RECOMMENDATION ITU-R M.1171

Radiotelephony procedures in the maritime mobile service

(1995)

Required by IMO and the maritime community as long as coast stations offer a public correspondence service. The number of such coast stations is however declining.

RECOMMENDATION ITU-R M.1172

Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service

(1995)

No longer required by IMO which uses the Standard Marine Communication Phrases but required by the maritime community.

RECOMMENDATION ITU-R M.1173

Technical characteristics of single-sideband transmitters used in the maritime mobile service for radiotelephony in the bands between 1 606.5 kHz (1 605 kHz Region 2) and 4 000 kHz and between 4 000 kHz and 27 500 kHz

(1995)

Required by IMO and the maritime community and likely to be required into the foreseeable future.

RECOMMENDATION ITU-R M.1174-2

Technical characteristics of equipment used for onboard vessel communications in the bands between 450 and 470 MHz

(1995-1998)

Required by the maritime community and useful to IMO. This recommendation is related to agenda item 1.15 for which IMO has developed a position.

RECOMMENDATION ITU-R M.1638

Characteristics of and protection criteria for sharing studies for radiolocation, aeronautical radionavigation and meteorological radars operating in the frequency bands between 5 250 and 5 850 MHz

(2003)

Not required by IMO but may be required by the maritime community where radars in this band are used.

ANNEX 2

RESOLUTION 13 (REV.WRC-97)

Formation of call signs and allocation of new international series

Retain.

RESOLUTION 18 (REV.WRC-12)

Relating to the procedure for identifying and announcing the position of ships and aircraft of States not parties to an armed conflict

Retain.

RESOLUTION 205 (REV.WRC-12)

Protection of the band 406-406.1 MHz allocated to the mobile-satellite service

Subject to agenda item 9.1.1.

RESOLUTION 207 (REV.WRC-03)

Measures to address unauthorized use of and interference to frequencies in the bands allocated to the maritime mobile service and to the aeronautical mobile (R) service

Retain.

RESOLUTION 222 (REV.WRC-12)

Use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite service, and procedures to ensure long-term spectrum access for the aeronautical mobile-satellite (R) service

Retain.

RESOLUTION 331 (REV.WRC-12)

Operation of the Global Maritime Distress and Safety System

Retain.

RESOLUTION 339 (REV.WRC-07)

Coordination of NAVTEX services

Retain.

RESOLUTION 343 (REV. WRC-12)

**Maritime certification for personnel of ship stations and ship earth stations
for which a radio installation is not compulsory**

Retain to ensure common operations between Convention and non-Convention ships.

RESOLUTION 344 (REV.WRC-12)

**Management of the maritime mobile service identity
numbering resource**

Retain.

RESOLUTION 349 (REV. WRC-12)

**Operational procedures for cancelling false distress alerts in the
Global Maritime Distress and Safety System**

Retain.

RESOLUTION 352 (WRC-03)

**Use of the carrier frequencies 12 290 kHz and 16 420 kHz for
safety-related calling to and from rescue coordination centres**

Retain.

RESOLUTION 354 (WRC-07)

Distress and safety radiotelephony procedures for 2 182 kHz

Retain.

RESOLUTION 356 (WRC-07)

ITU maritime service information registration

Retain.

RESOLUTION 358 (WRC-12)

Consideration of improvement and expansion of onboard communication stations in the maritime mobile service in the UHF bands

Subject of agenda item 1.15.

RESOLUTION 359 (WRC-12)

Consideration of regulatory provisions for modernization of the Global Maritime Distress and Safety System and studies related to e-navigation

Subject of agenda item 10.

RESOLUTION 360 (WRC-12)

Consideration of regulatory provisions and spectrum allocations for enhanced automatic identification system technology applications and for enhanced maritime radiocommunication

Subject of agenda item 1.16.

RESOLUTION 758 (WRC-12)

Allocation to the fixed-satellite service and the maritime-mobile satellite service in the 7/8 GHz range

Subject of agenda item 1.9.2.

RESOLUTION 909 (WRC-12)

**Provisions relating to earth stations located on board vessels which operate
in fixed-satellite service networks in the uplink
bands 5 925-6 425 MHz and 14-14.5 GHz**

Subject of agenda item 1.8.

RESOLUTION 612 (REV. WRC-12)

**Use of the radiolocation service between 3 and 50 MHz to
support high-frequency oceanographic radar operations**

Retain.

RECOMMENDATION 7 (REV. WRC-97)

**Adoption of standard forms for ship station and ship earth station licences
and aircraft station and aircraft earth station licences**

Retain.

RECOMMENDATION 37 (WRC-03)

**Operational procedures for earth stations
on board vessels (ESVs) use**

Subject of agenda Item 1.8.

RECOMMENDATION 316 (REV. MOB-87)

**Use of ship earth stations within harbours and other waters
under national jurisdiction**

Retain.
