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| **The 4th Meeting of the APT Conference Preparatory**  **Group for WRC-19 (APG19-4)** | **APG19-4/OUT-08** |
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Working Party 5

**PRELIMINARY VIEWs on WRC-19 agenda item 1.9.1**

**Agenda Item 1.9.1:**

*1.9 to consider, based on the results of ITU R studies:*

*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)****;*

Resolution **362 (WRC‑15)** – *Autonomous maritime radio devices operating in the frequency band 156-162.05 MHz*

1. **Background**

**1.1 Introduction**

Applications using autonomous maritime radio devices (AMRD) have developed in recent times. Due to the rapid technical progress and cost-effective production methods, more and more of these applications in the maritime environment are being created and used in operational situations, including automatic identification system (AIS) technology or digital selective calling (DSC) technology, or transmitting synthetic voice messages, or with a combination of those technologies. Their number is expected to increase. Some of these devices are not for the purpose of enhancing the safety of navigation or the purpose of communication between coast stations and ship stations, or between ship stations, or between associated on-board communication stations, or survival craft stations and emergency position-indicating radio beacon stations, but are consuming the spectrum and identities assigned for maritime mobile service.

In the maritime mobile service, as defined in RR No. **1.28**, autonomous maritime radio devices (AMRD) are not listed and are therefore not formally recognised as a station operating under the maritime mobile service. And the term AMRD is also not part of the Database of ITU Terms and Definitions. There are general requirements to categorize and regulate the usage of autonomous maritime radio devices.

The purpose of this agenda item is to address unregulated operation of AMRDs in order to enhance safety of navigation through established maritime communications. The studies contain several steps, including the definition of autonomous maritime radio devices (AMRD), the compilation of existing AMRDs, the description of technology, the categorizing and the evaluation. The target of the studies is to regulate the operation of these kinds of devices by addressing the issues of necessary spectrum allotment and the numbering systems, to ensure the integrity of GMDSS and AIS.

* 1. **Progress of ITU-R Studies**

ITU-R Working Party (WP) 5B has determined the working structure and the definition of AMRD. The categorization of AMRD is also under consideration in ITU, International Maritime Organization (IMO) and International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA).

ITU-R WP 5B meeting finalized the draft CPM report of Agenda Item 1.9.1, in which the definition of AMRD and four methods regarding the different types of AMRD and the technologies used were proposed and detailed in the section 5/1.9.1/4 of the CPM report for agenda item 1.9.1.

One method considers amendments to the footnote *f)* in RR Appendix **18** to allow Group A AMRD to operate on certain channels.

Three methods consider the harmonisation of the spectrum use for Group B AMRD. One method aims to use channel 2006 as listed in RR Appendix **18** for AIS technology. The second method aims to use channels 2078, 2019 and 2079 as listed in RR Appendix **18** for non-AIS technology. The third method aims to use the frequency band 161.4375 – 161.4875 MHz, which is not part of RR Appendix **18**, for non-AIS technology.

However, further discussions are still needed on the categorization and numbering schemes of AMRD. ITU is seeking information from IMO on the list of applications for Group A and Group B AMRD, and whether these applications are conditional.

The Working Party 5B meeting in November 2018 updated the working document towards a preliminary draft new Recommendation ITU-R M.[AMRD] and the working document towards a preliminary draft new Report ITU-R M.[AMRD]. Proposed revisions on related recommendations were also considered.

The progress of this Agenda Item was liaised with IMO, IALA, World Meteorological Organization (WMO) and International Maritime Radio Association (CIRM).

**1.3 List of relevant ITU-R Reports/Recommendations**

* Recommendation ITU-R M.493-14: *Digital selective-calling system for use in the maritime mobile service;*
* Recommendation ITU-R M.585-7: *Assignment and use of identities in the maritime mobile service; or the revised version*;
* Recommendation 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*;
* Preliminary draft new Recommendation ITU-R M.[AMRD]: *Autonomous maritime radio devices*;
* Preliminary draft new Report ITU-R M. [AMRD]: *Autonomous maritime radio devices*;
* Preliminary draft new Report ITU-R M. [NEW\_MARNUM]: *New numbering scheme for maritime identities.*

**2. Documents**

**2.1 Input Documents**

APG 19-4/INP-19 (Australia), APG 19-4/INP-26 (New Zealand), APG 19-4/INP-33 (Thailand), APG 19-4/INP-40 (Viet Nam), APG 19-4/INP-63 (Japan), APG 19-4/INP-79 & 80 (Korea), APG 19-4/INP-99 (China), APG 19-4/INP-122 (Indonesia).

**2.2 Information Documents**

APG 19-4/INF-04 (ICAO), APG19-4/INP-9 (Rev.1), APG 19-4/INF-22 (CITEL), APG 19-4/INF-23 (CEPT), APG 19-4/INF-24 (RCC).

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Australia** - **Document APG19-4/INP-19**

Australia supports consideration of possible spectrum needs and the development of appropriate technical and operational characteristics of autonomous maritime radio devices (AMRDs) operating in the frequency band 156-162.05 MHz; while noting sharing and compatibility studies in the band should ensure that no undue constraints are placed on the GMDSS and AIS in accordance with Resolution **362 (WRC-15)**.

Australia supports a definition of AMRDs to be developed in an ITU-R Recommendation.

Australia supports Methods A and B1 in the Draft CPM Report.

Australia supports the APT Preliminary View from the APG19-3 meeting.

**3.1.2 New Zealand** - **Document APG19-4/INP-26**

New Zealand is of the view that the term “autonomous maritime radio device” (AMRD) and its intended applications should be properly defined before the studies in relation to regulatory actions within the frequency band 156-162.05 MHz could be considered.

New Zealand is also of the view that AMRDs for the purpose of safety of navigation and safety of life should use frequencies in accordance with RR Appendix **18**. New Zealand supports the use of frequencies 156.525 MHz (Ch. 70), 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2) for AMRDs Group A (in line with Method A); whereas the frequency 160.900 MHz (Ch. 2006) may be used for AMRDs Group B (in line with Method B1).

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**3.1.3 Thailand** - **Document APG19-4/INP-33**

For AMRD Group A, Thailand supports modification of the Radio Regulations to allow AMRD Group A to operate on frequency 156.525 MHz (channel 70), 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2).

For AMRD Group B, Thailand supports modification of the Radio Regulations to allow AMRD Group B using AIS-technology to operate on frequency 160.900 MHz (channel 2006). Thailand is also of the view that any identification of additional spectrum for AMRD Group B should not cause harmful interference or any impact on the existing services within the frequency band and the adjacent bands.

**3.1.4 Viet Nam** - **Document APG19-4/INP-40**

Viet Nam Administration supports studies being undertaken by ITU-R on this issue and is of the view that:

* AMRDs operation should be harmonized, regulated;
* The integrity of AIS and the GMDSS must be protected;
* Search and rescue aircraft system operating in maritime frequencies must be protected;
* The AMRD Group A could operate on frequency channels 156.525 MHz (channel 70), 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2) of RR Appendix 18, so Method A is supported.
* Frequencies of RR Appendix 18 could also accommodate the AMRD Group B, so Method B1 and B2 is supported, Method B3 is opposed;

**3.1.5 Japan** - **Document APG19-4/INP-63**

Japan supports ITU-R studies for the introduction of AMRD. Any radiation from AMRD shall not affect existing services operating in the band concerned, in the Out-of-band and spurious domain including harmonics frequencies.

Japan supports Method A for AMRD Group A.

Japan supports only Method B1 for AMRD Group B.

**3.1.6 Korean** - **Document APG19-4/INP-80**

Korea supports the ITU-R studies on the spectrum needs, technical and operational characteristics, categorization, identifications of AMRDs and its applications, as well as the studies in relation to regulatory actions in the frequency band 156-162.05 MHz while ensuring the protection of the GMDSS and AIS frequencies, in accordance with Resolution **362 (WRC-15)**.

Korea is also of the view that:

* the detailed list and applications of AMRDs should be clearly indicated in a new Recommendation ITU-R M.[AMRD] considering the overload of AIS VHF data link and the importance of DSC distress alerting;
* Group A AMRDs which enhance the safety of navigation should be regulated for the use of frequencies and identities of the maritime mobile service;
* Group B AMRDs which do not enhance the safety of navigation, regulation of the use of frequencies, and technical and operational characteristics, should benefit both the user of devices as well as coexistence with maritime safety devices and applications. Identification of additional spectrum within the frequency band 156-162.05 MHz should be considered without any constraints or harmful interference to the existing services;

Search and rescue aircraft system operating in maritime frequencies must be protected.

**3.1.7 China** - **Document APG19-4/INP-99**

China supports the ITU-R studies on the spectrum needs, technical and operational characteristics, categorization, identifications of AMRDs and its applications, as well as the studies in relations to regulatory actions within the frequency band 156-162.05 MHz while ensuring the protection of the GMDSS and AIS, in accordance with Resolution **362 (WRC-15).**

China supports the method A and B1 proposed in the draft CPM text.

China is also of the views that:

* autonomous maritime radio devices should be properly defined and categorized, and a related ITU-R Recommendation should be developed;
* AMRDs Group A should be regulated for the use of frequencies and identities of the maritime mobile service;
* regulatory actions and technical standards in relation to AMRD should take into account the application status and management needs of AMRD for different administrations;
* Regarding AMRDs Group B, regulation of the use of frequencies, and technical and operational characteristics, should benefit both the user of devices as well as coexistence with maritime safety devices and applications. Identification of additional spectrum within the frequency band 156-162.05 MHz and the numbering issue should be considered;
* any identification of additional spectrum for AMRDs Group B should not cause harmful interference or any impact on the existing services within the frequency band and the adjacent bands. In this regard mitigation technique of interference such as limitation of output power of AMRDs (to 1 watt as an example) should be considered;
* any regulatory action of AMRD Group B within the frequency band 156-162.05 MHz, should also consider the limited numbering resources of MMSI and also consider the implementation transition period when the operation of autonomous maritime radio devices bring in to use;

Search and rescue aircraft system operating in maritime frequencies must be protected.

**3.1.8 Indonesia** - **Document APG19-4/INP-122**

Indonesia support implementation of AMRD group A on certain channels in Appendix 18. Indonesia also of the view that any regulatory action of AMRD should consider the implementation transition period when the operation of autonomous maritime radio devices bring in to use.

**3.2 Summary of issues raised during the meeting**

Noting that modifications to the draft CPM report is possible at the upcoming CPM 19-2 meeting and APT Members have different views on the methods to satisfy the WRC-19 agenda item 1.9.1, the APT preliminary views may need further updates at the next APG meeting.

**4. APT Preliminary View(s)**

APT Members support the ITU-R studies on the spectrum needs, technical and operational characteristics, categorization, identifications of AMRDs and its applications, as well as the studies in relations to regulatory actions within the frequency band 156-162.05 MHz while ensuring the protection of the GMDSS and AIS, in accordance with Resolution **362 (WRC-15).**

APT Members support amendments to the footnote *f)* in RR Appendix **18** to allow Group A AMRD to operate on certain channels, and support the using of channel 2006 as listed in RR Appendix **18** for Group B AMRD using AIS technology.

APT Members are also of the views that:

* autonomous maritime radio devices should be properly defined and categorized, and a related ITU-R Recommendation should be developed considering the overload of AIS VHF data link and the importance of DSC distress alerting;
* Group A AMRD should be regulated for the use of frequencies and identities of the maritime mobile service;
* Regarding Group B AMRD, regulation of the use of frequencies, and technical and operational characteristics, should benefit both the user of devices as well as coexistence with maritime safety devices and applications. Identification of spectrum in Appendix 18 of the Radio Regulations and the numbering issue should be considered;
* any identification of spectrum for Group B AMRD should not cause harmful interference on the existing services within the frequency band and the adjacent bands, including harmonics. In this regard mitigation technique of interference such as limitation of output power of AMRD (to 1 watt as an example) should be considered;
* any regulatory action of Group B AMRD should consider the limited numbering resources of MMSI and also the implementation transition period when the operation of autonomous maritime radio devices bring in to use;
* Sharing and compatibility studies between AMRD in the mobile service and other existing services, including land mobile service, would be required to ensure compatibility with incumbent services if AMRD were to use frequencies not listed in RR Appendix **18**.

Search and rescue aircraft system operating in maritime frequencies must be protected.

**5. Other View(s) from APT Members**

Some APT Members oppose to use channels 2078, 2019 and 2079 as listed in RR Appendix **18** and the frequency band 161.4375 – 161.4875 MHz, which is not part of RR Appendix **18**, for Group B AMRD using non-AIS technology.

Some APT Members support to use channels 2078, 2019 and 2079 as listed in RR Appendix 18 for Group B AMRD using non-AIS technology.

Some APT Members are of the view that regulatory actions and technical standards in relation to AMRD should take into account the application status and management needs of AMRD for different administrations.

**6. Issues for Consideration at Next APG Meeting**

APT Members are encouraged to contribute their views, including the preferred methods, to the next APG meeting, taking into account the study results of ITU-R WP5B and CPM 19-2 to develop the draft PACP on WRC-19 agenda item 1.9.1.

**7. Views from Other Organisations**

**7.1 Regional Groups**

**7.1.1 CEPT - APG19-4/INF-23**

CEPT is of the view that the operation of autonomous maritime radio devices needs to be harmonized and regulated.

CEPT is of the view that the operation of autonomous maritime radio devices shall not reduce the integrity of AIS and of GMDSS.

CEPT supports the identification of spectrum for autonomous maritime radio devices within the frequency band 156-162.05 MHz.

CEPT is of the view that the AMRD of Group B shall operate in the bands of RR Appendix 18. In connection with this, CEPT does not support Method B3 to satisfy Agenda item 1.9.1 of WRC-19.

CEPT is of the view that the power of the AMRD transmitters of Group B shall be limited to a value that ensures their compatibility with radio systems operating in accordance with the existing frequency distribution.

**7.1.2 CITEL - APG19-4/INF-22**

DIAP for Group A based on the single CPM Method; Proposals for Group B are based on Method B1 with 160.900 MHz identified.

**7.1.3 RCC - APG19-4/INF-24**

The RCC Administrations consider it reasonable to identify categories (types), technical and operational characteristics of autonomous maritime radio devices in order to develop regulatory actions in the frequency band 156−162.05 MHz for the autonomous maritime radio devices to protect GMDSS and AIS. At the same time, results of studies on the compatibility between autonomous maritime radio devices and existing radio systems having allocations in the concerned frequency bands shall be taken into account.

The RCC Administrations do not oppose using frequency bands of RR Appendix 18 for Group A autonomous maritime radio devices intended for maritime safety (frequency bands: 156.5125-156.5375 (channel 70 for DSC), 161.9625-161.9875 MHz (AIS 1 channel), 162.0125-162.0375 MHz (AIS 2 channel)). Such use should comply with the latest version of Recommendation ITU-R M.[AMRD] (Method A).

The RCC Administrations do not oppose using frequency bands of RR Appendix 18 for Group B autonomous maritime radio devices not intended for maritime safety (frequency band 160.8875-160.9125 (channel 2006)). Such use should comply with the latest version of Recommendation ITU-R M.[AMRD] (Method B1).

The RCC Administrations do not oppose using frequency bands of RR Appendix 18 for Group B autonomous maritime radio devices not intended for maritime safety (frequency bands 161.5125-161.5375 MHz (channel 2078), 161.5375-161.5625 MHz (Channel 2078), 161.5625-161.5875 MHz (Channel 2079) for technologies other than AIS). Such use should comply with the latest version of Recommendation ITU-R M.[AMRD] (Method B2).

**7.1.4 ATU – APG19-4/INP-9 (Rev.1)**

**No contribution covering this Agenda item.**

**7.1.5 ASMG – APG19-4/INP-9 (Rev.1)**

**No contribution covering this Agenda item**

**7.2 International Organisations**

**7.2.1 ICAO** - **APG19-4/INF-04**

To ensure that any change to the regulatory provisions and spectrum allocations resulting from this agenda item do not adversely impact aviation systems, including the capability of search and rescue aircraft to effectively communicate with vessels during disaster relief operations.

**7.2.2 WMO**

**No contribution covering this Agenda item**

**7.2.3 IARU**

**No contribution covering this Agenda items**

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