Draft CEPT Brief on Agenda Item 1.10

Agenda item 1.10: *to examine the frequency allocation requirements with regard to operation of safety systems for ships and ports and associated regulatory provisions, in accordance with Resolution 357 [COM6/10] (WRC- 07).*

Issue

As stated in Resolution 357 [COM6/10] (WRC-07), this agenda item covers the following issue:

Consideration of regulatory provisions and spectrum allocations for use by enhanced maritime safety systems for ships and ports.

Preliminary CEPT position

1. CEPT supports the use of the frequency 156.775 MHz and 156.825 MHz (corresponding to channels 75 and 76 of Appendix 18) for improvement of the satellite detection of AIS (Automatic Identification System).

2. Unless studies listed in item 4 below proves the necessity to change the Radio Regulations, and in particular article 5, no further changes are expected to be necessary in order to ensure introduction for new technologies for safety and security of ships and ports

3. CEPT is of the opinion that any studies on the issue could be conducted when the information about lack of the available spectrum would be provided and spectrum requirements would be proven.

4. CEPT is supporting studies within ITU-R with regard to:
 - the regulatory status of the Appendix 18 channels used by AIS (AIS 1 & 2);

- the possible harmonization of technology for cargo identification and tracking through ITU Recommendations;

- the broadcasting of security levels for ports and coastal waters in the band around 500 kHz;

- the harmonized introduction of new technologies by the Maritime mobile service (in the VHF band) through possible regulatory measures (Resolution 342 Rev. WRC-2000);

- the potential for wider international recognition of the current single-frequency channels usage that is derived from some of two-frequency channels, in RR Appendix 18;

- the concept of Maritime Mesh Networks.

5. CEPT will monitor carefully the future evolution of the concept of e-navigation.

6. CEPT supports the studies performed into ITU-R (Report ITU-R M [SAT-AIS], Revision of ITU-R M.1371).

7. CEPT is the opinion that the HF data is fully covered by the Agenda item 1.9 of WRC-12 and there is no need for further developments under the Agenda item 1.10.

Background

There is a global requirement for application of radiocommunications to enhance ships and ports security. Among the concerns are: management and identification of cargo; coordination of sensors and monitors; rapid detection of dangerous, unauthorized, or compromised shipments; and, enhanced interaction with both local and national public protection resources.

The International Maritime Organization (IMO) recognized this need by its adoption of the Code on International Ship and Port Facility Security (ISPS), implemented as treaty by amendment to the Safety of Life at Sea (SOLAS) Convention.

Also IMO's Maritime Safety Committee (MSC 81) approved new provisions in Chapter V (Safety of Navigation) of SOLAS for Long Range Identification and Tracking (LRIT) following the adoption of the ISPS Code which also introduced a requirement for Ship Security Alert System (SSAS) and carriage requirements. LRIT information can be used for both security and safety (including SAR activities) and protection of the marine environment.

Frequencies, procedures and techniques used by the GMDSS will not be affected by any further developments of AI 1.10.

Related ITU-R studies are, as stated also in the ITU-R WP5B Working document towards draft CPM text on AI 1.10, as following:

1/1.10/2.1   AIS

1/1.10/2.1.1   Regulatory status of AIS 1 and 2

TBD

1/1.10/2.1.2   Satellite-AIS: Additional AIS channel or channels may be required to enhance and accommodate global ship-tracking capabilities.

1/1.10/2.2   HF-data: Advanced maritime HF data systems may be used to deliver security alerts and safety information. It is considered that this part is fully covered by the Agenda item 1.9 of WRC-12.

1/1.10/2.3   Cargo identification and tracking: Matters to be considered are management and identification of cargo; expedited transfer of pre-screened shipments; coordination of sensors and monitors; rapid detection of dangerous, unauthorized, or compromised shipments; and, enhanced interaction with both local and national public protection resources.

There is a need for improved identification, tracking, and surveillance of international shipping and its cargo. Some administrations as well as the International Standards Organization (ISO) are studying the spectrum and standardization requirements for electronic seals used on freight containers to provide a more secure international transportation system, which include use of such technologies as a frequency hopping spread spectrum (FHSS), passive frequency sensors and narrow band, active frequency devices (International Organization for Standardization Technical Committee 104 - Freight Containers (ISO TC 104) letter to ITU-R dated 21 May 2003).

1/1.10/2.4 Broadcasts of safety and security information to and from ships and ports

TBD

1/1.10/2.5 Monitoring the evolution of the concept of e-navigation and consequent consideration of related radio regulatory issues

TBD (wait for COMSAR 14)

1/1.10/2.6 VHF Data (Resolution 342 (Rev.WRC-2000))

A matter to be considered is the need for VHF spectrum to support IMO and IALA's vision for an e-Navigation VHF data service.

IMO has begun the development of e-Navigation, and has commenced discussions on the next generation of GMDSS, it is clear that the new digital communication systems will be integral to the maritime community in the coming years. IALAs vision and strategy for maritime systems propose a significant shift from analogue to digital communications in the VHF maritime band, as well as advanced AIS technologies, which IALA believes will greatly contribute toward the modernization of the GMDSS. Careful consideration must be given to the spectrum needs to satisfy maritime requirements and the use of available digital technology.

IALA's vision of e-Navigation would require spectrum resources for application of the VHF data service as described in Recommendation ITU-R M.1842. IALA suggests a minimum capacity equivalent to four 25 kHz VHF maritime channels will be necessary to support a VHF data service for e-Navigation.

TBD

1/1.10/2.7 Port operations, for ship/port security and maritime safety systems (Resolves 1 of Resolution 357 (WRC-07))

Matter to be considered is the global implementation of number single frequencies channels that are derived from two frequency channels. This would be for port operation use.

RR Appendix **18** continues to be used extensively around the globe, for both; voice and data services. Voice transmissions continue to play a role in respect to port operations and distress at sea. In addition, data systems increasingly offer similar and complementary services along side the traditional voice systems. There is an anticipated expanding need for data services at both a regional, and ultimately, global level.

Some administrations are identifying a shortage, due to congestion, of globally recognized single frequency channels, that would be suitable for port operations. Footnote m), to Appendix **18**, has not actually allowed for more single-frequency channels to be used for port operations, where visiting shipping is international.

Within Appendix **18**, there are essentially 26 single-frequency and 33 two-frequency, channels making a total of 59 (single and two-frequency channels). Of the 26 single-frequency channels there are only 8 single-frequency channels available for general assignment for port operations and ship movement.

1/1.10/2.8 Maritime Mesh Networks

The e-Navigation concept aims to facilitate safe and secure berth to berth navigation of vessels by using hydrographical, meteorological and navigational information and facilitating communications, including data exchange, among ship to ship, ship to shore, shore to ship, shore to shore and other users. All these functions can only be achieved with improved bandwidth access since the contents

are expected to be large data files. The maritime mesh network technology, which can be developed by using existing spectrum efficient radio systems, can be used in many shipping lanes opportunistically to provide a means to disseminate this information. Coverage extension is achieved by forming a wireless mesh network amongst neighbouring ships, marine beacons and buoys. The mesh wireless network will be connected to the terrestrial networks via land stations, which are placed at regular intervals along the shoreline. Each ship will carry a mesh radio that has the capability of frequency agility where frequencies can be switched to suite country specific frequency regulations.

List of relevant documents

- Revision to Recommendation **ITU-R M.1842** (Doc. 5B/117 rev)

- PD Report **ITU-R M.[SAT-AIS]** (Doc. 5B/296 Annex 6)

- WD towards a PDN Report **ITU-R M.[CARGO-AIS]** (Doc. 5B/175 Annex 14)

- Workplan/Milestones (Doc. 5B/296 Annex 24)

- Draft CPM text (Doc. 5B/417 Annex 8)

- Progress report (Doc. 5/152 Section 4)

Actions to be taken
Monitor the progress inside of CITEL, APT, Arab Group, ATU and COMSAR, Joint IMO-ITU Experts Group and WP5B.

Relevant information from outside CEPT

European Union

SFCG (2 September 2009)

SFCG supports the protection of existing space science service allocations. No allocations of spectrum to support enhance maritime safety systems should be made in space science service bands unless acceptable sharing criteria are developed.

ESA (05 October 2009)

Same as SFCG position

Regional telecommunication organizations

APT (APG2011-2, Hangzhou 22-26 June 2009)

APT preliminary view:

a.   The APT supports studies being conducted by ITU-R in order to identify the possible future requirements for the enhancement of safety for the transportation of goods

b.	The confusion between terms "Safety" and "Security" in this agenda item should be clarified in order to remove any unintended interpretation of these two terms.

c.	Any modification under this agenda item should not affect the frequencies used by the GMDSS

APT Members are encouraged to review the common views on 1.10 and provide more input papers by the next meeting. In particular views on Satellite AIS; HF data; cargo identification and tracking; broadcasting of safety information; evolution of e-navigation and VHF data are sought.
ATU (date of proposal)

Arab Group (Geneva, ITU meeting on WRC-12 preparation in collaboration with ATU 14-16 September 2009)

Study the real requirements of the spectrum for the safety systems for ships and ports in the bands less than 1 GHz.

Protect the existing systems in the nominated bands for these services, and not to affect the GMDSS.

CITEL (Geneva, ITU meeting on WRC-12 preparation in collaboration with ATU 14-16 September 2009)

Issues
- Consider additional allocations to support ship and port security and maritime safety systems:
  – Below 1 GHz for the Maritime Mobile Service
  – Between 156 and 162.025 MHz for the maritime mobile-satellite service (e.g. 3rd AIS frequency for satellite reception);
- Consider upgrading secondary allocations for AIS satellite reception to primary status
- Consider compatibility of proposed allocations with existing communication systems, notably in the fixed and land mobile service;
- Identify suitable allocations for the transmission of AIS data from satellites to earth stations.
- Consider the identification and security of cargo containers entering and leaving international ports and ships (noting WRC-11 AI 1.22)
- Consider provisions for security communications in Article **33**, and additional provisions in the RR for safety and security communications, including e-navigation

PRELIMINARY VIEWS:

Brazil/Canada/USA:
• Support allocation of spectrum required for the operation of safety systems if studies determine the need and if existing services can be protected without undue constraints
• Support ongoing ITU-R studies recognizing the following points:
– Additional Satellite AIS channels may be required to enhance and accommodate global ship-tracking capabilities;
– HF data systems may be used to deliver security alerts and safety information to, and to receive similar information and long-range identification and tracking (LRIT) information from, ships in global regions
– Cargo identification and tracking: points to be considered are management and identification of cargo; coordination of sensors and monitors; rapid detection of dangerous, unauthorized, or compromised shipments and enhanced interaction with both local and national public protection

resources. Additional studies might be required to assess the current and future RFID technology for cargo container systems.
– Broadcasts of safety and security information to and from ships and ports.

– Monitoring the evolution of the concept of e-navigation and consequent consideration of related radio regulatory issues.

RCC (Geneva, ITU meeting on WRC-12 preparation in collaboration with ATU 14-16 September 2009)

- Additional spectrum requirements for the MMS and the MMSS should be grounded taking into account IMO requirements.

- The protection of the existing services allocating in the affected frequency bands should be ensured.

- When there are no reasonable additional requirements for MMS and MMSS, RCC does not support the additional allocation of spectrum resource to these services.

International organizations

ICAO (9 September 2009)

*No impact on aeronautical services has been identified from WRC-12, Agenda Item **1.10** which are therefore not addressed in the position.*

IMO
Draft IMO position (outcome of the fifth meeting of the Joint IMO/ITU Experts Group on Maritime radiocommunications matters: 23-25 June 2009, London)

1. The A.I. 1.10 should not affect the frequencies used by the GMDSS.

2. IMO possible future requirements for the enhancement of security for the transportation of goods.

3. IMO supports the future use of band 415 kHz – 526.5 kHz for safety and security related systems, recognizing that this band is allocated on a world-wide basis for the use by the maritime community.

4. IMO supports a review of Appendix 18.

5. IMO encourages studies of satellite detection of AIS under the framework of ITU-R. IMO does not make any commitement at this stage, awaiting the outcome of studies.

NATO (February, 19, 2010)
Preliminary NATO Military Position

NATO sees this issue as a complex issue which will require a significant number of coordinated actions to be taken in order to facilitate this agenda item. NATO therefore encourages administrations to support actions in keeping with those proposed below.

1. NATO supports the use of the frequency 156.775 and 156.825 MHz (corresponding to channels 75 and 76 of Appendix 18) for improvement of the satellite detection of AIS (Automatic Identification System).

2. NATO supports studies within ITU-R with regard to:
- the regulatory status of the Appendix 18 channels used by AIS (AIS 1 & 2);
- the possible harmonization of technology for cargo identification and tracking through ITU Recommendations;
- the broadcasting of security levels for ports and coastal waters in the band around 500 kHz;
- the harmonized introduction of new technologies by the Maritime mobile service (in the VHF band) through possible regulatory measures (Resolution **342 (Rev. WRC-2000)**);
- the potential for wider international recognition of the current single-frequency channels usage that is derived from some of two-frequency channels, in RR Appendix 18;
- the concept of Maritime Mesh Networks.

3. NATO supports studies of the 500 kHz band for the future evolution of the concept of e-navigation for MMSI, security related broadcasts and data communication systems.

Military Importance: Low.

Regional organizations

[Eurocontrol (date of proposal)]

[Other relevant information]