Review and modernization of the GMDSS

Submitted by IHB

SUMMARY

Executive Summary: This document provides details of the Report of the Correspondence Group containing an outline of the Detailed Review of the GMDSS, which are relevant to WWNWS-SC

Action to be taken: Paragraph 2.

Related documents: NCSR 2/9 Rev.1 dated 10 February 2015

1. See attached document.

2. The Sub-Committee is invited to note the information provided and take action as appropriate.

INTERNATIONAL MARITIME ORGANIZATION

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SUB-COMMITTEE ON NAVIGATION, COMMUNICATIONS AND SEARCH AND RESCUE
2nd session
Agenda item 9

NCSR 2/9/Rev.1
10 February 2015
ENGLISH ONLY

FIRST OUTLINE OF THE DETAILED REVIEW OF THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

Report of the Correspondence Group on the Review of the GMDSS

Submitted by the United States

SUMMARY

Executive summary:	This document contains an outline of the Detailed Review of the GMDSS
Strategic direction:	5.2
High-level action:	5.2.5
Planned output:	5.2.5.2
Action to be taken:	Paragraph 8
Related documents:	NCSR 1/28, NCSR 1/WP.7/Rev.1; EG 10/4 and NCSR 2/13

Introduction

1 The Sub-Committee, at its first session (NCSR 1), approved the outcome of the High-level Review of the GMDSS, considered the correspondence group's (CG) preliminary Outline of the Detailed Review, and provided the revised outline at NCSR 1/WP.7/Rev.1, annex 5. The Sub-Committee re-established the CG with the following terms of reference:

.1 develop proposals on issues identified in the outline of the detailed review of the GMDSS;

.2 draft preliminary text of chapter IV of SOLAS;

.3 submit an interim report to the Joint IMO/ITU Experts Group for its consideration; and

.4 taking into account the outcome of discussions in the Joint IMO/ITU Experts Group, submit a report to NCSR 2 by 19 December 2014.

2 In response to the Terms of Reference, the CG prepared document EG 10/4 as an interim report for the Joint IMO/ITU Experts Group. This document included a summary of the issues identified in the draft outline of the detailed review from NCSR 1/WP.7/Rev.1, annex 5, and invited the Experts Group to make recommendations on the issues. EG 10/4 also included a draft preliminary text of chapter IV of SOLAS, which the Experts Group discussed and developed proposed revisions.

3 The coordinator of the CG would like to thank the following Member States, Intergovernmental organizations, governmental and non-governmental organizations for their participation in the Correspondence Group: Argentina, Australia, Brazil, Bulgaria, China, Denmark, Finland, France, Germany, Greece, Iran (Islamic Republic of), Italy, Japan, the Republic of Korea, Liberia, the Marshall Islands, the Netherlands, Norway, Poland, Portugal, South Africa, Spain, Sweden, Turkey, Ukraine, the United Arab Emirates, the United Kingdom, the United States, the European Commission, BIMCO, CIRM, IEC, IMSO, IMRF, ISO, the Nautical Institute, ITU and WMO.

4 The report of the Experts Group is at NCSR 2/13, annex. Appendix 2 to the annex is a draft of revised SOLAS chapter IV. A column on the right side provides comments on the changes.

Chapter IV revision

5 Annex 1 of this document is a further draft revision of chapter IV which is based on the version in NCSR 2/13, appendix 2 of the annex with further proposals developed by the CG. The text in red letters was developed by the CG and the rest of the changes were developed earlier at the Experts Group meeting.

6 A summary of the discussions and recommendations of the Experts Group is given in NCSR 2/13, annex, paragraphs 10 to 52. Further comments and recommendations of the CG developed after the Experts Group meeting follow:

Definition of sea areas A3 and A4 (NCSR 2/13, annex, 13-18)

.1 The proposed definitions of Sea Areas A3 and A4 mean that Sea Area A3 refers to the area served by a particular GMDSS satellite service provider supported by the ship earth station carried on board. Since Sea Area A3 will be different for each service provider, it seems to be necessary that ship certificates will have to specify the service provider, *e.g.*

"Sea Areas A1, A2, A3(Inmarsat)", or

"Sea Areas A1, A2, A3(Inmarsat), A4".

Depending upon the coverage area of the service provider, "A3" could mean anything from regional to global coverage. It is understood that in accordance with resolution A.1001(25), the GMDSS satellite system's coverage area is defined when it is approved.

.2 Sea Area A4 would now refer to an area where the "HF option" applies to the ship. A ship not using a GMDSS satellite service provider would not have an A3 area and if equipped with the "HF option" for service beyond A1 and A2, would have a certificate that states "Sea Areas A1, A2, A4".

.3 The effect on ship certificates in regard to Sea Areas A3 and A4 must be taken into consideration, and will require definition of the details of the geographical area in which the ship is permitted to sail. The definition of the different areas of carriage requirements (Sea Areas) will have impact on port State control procedures. For those reasons, it should be decided if identification of the satellite provider is sufficient, or if a geographical presentation should be added the "Record of Equipment" list in the certificates and considered under chapter I, regulations 12, 13 and 14.

.4 The communications requirements for ships and life-saving appliances in chapter III, should also be taken into consideration if moved to chapter IV, in regard of the need also then to amend the "Record of Equipment" list in the certificates for these items.

Additional satellite systems (NCSR 2/13, annex, 19-20)

.5 The CG was asked to develop a list of issues on what kind of operational mechanisms might be encountered when a new satellite provider is introduced for use in the GMDSS. The Experts Group requested the CG to further elaborate on this issue taking also into account the distribution of distress alerts (shore-to-shore communications).

.6 With regard to interoperability between satellite systems, the CG had no further suggestions, noting that the terrestrial system would provide suitable interoperability.

.7 Concerning distribution of distress alerts, the CG considered the need for interoperability of radiocommunications between ships and between ships and shore stations and in particular the following issues:

.1 The need for interoperability between all operators to ensure the relay of distress alerts from shore to all ships at sea: It should be transparent for an MRCC to request their service provider to make a distress alert relay through all mobile satellite systems, in order for all ships at sea to be informed through their satellites systems and without any extra cost for Member States.

.2 The facilities and resources available to MRCCs and the nature of the communication link between the MRCC and CES: These are strictly a matter for the country concerned. As SOLAS ships will most likely carry different SES equipment as part of their GMDSS equipment, it would be an option to send a distress priority message in the shore-to-ship direction asking the ship to clear the recognized satellite mobile system voice terminal and contact the MRCC immediately (report to COMSAR/Circ.13 and resolution A.1001(25), paragraph 3.3.2).

.3 MSI should be duplicated as well on the different recognized mobile satellite systems in transparency for coastal States and without any extra cost.

Radio Life-Saving Appliances (NCSR 2/13, annex, 21-25)

.8 The CG was asked to consider man overboard devices in the context of protection of the integrity of the GMDSS. The Experts Group noted, in particular, that there was a need to clearly define what should be considered to be a MOB-device and consider the development of performance standards to provide guidance to manufacturers with the aim to protect the integrity of the GMDSS.

.9 According to SN.1/Circ.322, paragraph 3, MOB devices are "*locating aids for persons at risk in the water*". This could be a proposal for defining MOB devices.

.10 The CG notes that ITU-R WP 5B recently amended the draft revision of Recommendation ITU-R M.493-13 (Digital Selective Calling System in the Maritime Mobile Service) to include a new Class M man overboard device, and a new Class H VHF handheld transceiver.

Application of SOLAS chapter IV (NCSR 2/13, annex, 26-31)

.11 Noting that the Maritime Safety Committee is considering the application of all SOLAS chapters, and that no decision could be taken until the outcome of that discussion is known, the CG was not able to develop a proposal at this time.

Definitions (NCSR 2/13, annex, 32-33)

.12 Additional definitions and definition revisions are included in annex 1.

Equipment to receive and display Maritime Safety Information (MSI) (NCSR 2/13, annex, 34-38)

.13 The CG was asked to consider the alternative wording of regulation IV/7.1.5 on a radio facility for reception of MSI, especially by satellite, and recommend as appropriate.

.14 Regarding enhanced group call it was reported that there was no copyright obligation for "*enhanced group call*", unlike "SafetyNET" and "FleetNET" which are registered service marks. It should be considered if there is a need for a generic definition for enhanced group call (EGC) in regulation IV/2 or if it should be defined in an amended performance standard.

New requirements arising from revised functional requirements (NCSR 2/13, annex, 39)

.15 The CG concurs with proposed regulations IV/7.1.7 and IV/7.1.8.

VHF EPIRB (NCSR 2/13, annex, 40)

.16 The CG agrees with the deletion of the VHF EPIRB, noting that the 406.1 MHz EPIRB provides suitable alerting in Sea Area A1, and recommends that VHF using DSC be retained as a secondary means of alerting for sea area A1.

The role of MF/HF (NCSR 2/13, annex, 41-42)

.17 The CG has nothing to add to the discussion of the 10th IMO/ITU EG, i.e.:

.1 there is still a high demand for MF and HF;

.2 as such, there is a continuous need for a good functioning global HF network;

.3 in this context, it was noted from resolution A.801(19), annex 2, appendix 1, that there were basic principles for establishing HF coast stations such as 2 stations should be selected on opposite sides of an ocean area;

.4 noting that the information in the GMDSS Master Plan, as well as the information available in ITU might not be up to date, it was considered to be necessary to investigate the current status of HF Coastal radio stations (According to the GMDSS Masterplan, there are at present approximately 80 – 90 HF-DSC coast radio stations in service, predominantly on the southern hemisphere);

.5 the main issue for the future of a good functioning global HF network was how to keep up the minimum number of HF stations and who would bear the costs;

.6 noting that in case solar flares damage satellites, HF communications are considered to be the only backup for satellite communications; and

.7 the discussion on MF and HF should be kept separate, because the requirements and operational use are different even though MF and HF are typically included in the same transceiver.

Watch on VHF Channel 16 (NCSR 2/13, annex, 43)

.18 The CG agrees that the continuous listening watch on VHF Channel 16 should continue.

At-sea maintenance (SOLAS regulation IV/15) (NCSR 2/13, annex, 44)

.19 The CG agrees that at-sea maintenance could be retained as one of the options for maintenance.

Secondary alerting requirement for sea area A1 (NCSR 2/13, annex, 45)

.20 The CG notes that there is the possibility to fulfil this requirement through recognized mobile satellite services, in general, which would also allow for portable equipment.

Exemptions for ships constructed before 1 February 1997 (NCSR 2/13, annex, 46)

.21 The CG recommends that regulations IV/9.4, IV/10.4, and IV/11.2 be deleted. Considering that if a continuous listening watch on Channel 16 is to be maintained on all ships, these paragraphs have no practical effect. Moreover in consistency with the layout of the ship-to-ship distress alert functional requirement, a VHF DSC could be useful in all Sea Areas.

Regulation 5, Provision of radiocommunication services (NCSR 2/13, annex, 47-50)

.22 The CG was asked to take a look at how the issue of shore-to-shore communications should be addressed.

.23 There are few requirements concerning the shore side in the present GMDSS, despite the basic concept is that search and rescue authorities ashore will be rapidly first alerted to a distress incident so that they can assist in a co-ordinated SAR operation with the minimum delay. The CG considered so far the following provisions of radiocommunication services:

.1 Shore-to-shore communication: Considering the increase of satellite systems with other long-distance communications systems in general, such as MF/HF, Member States should consider a global network to deliver distress alerts to the appropriate search and rescue services. resolution A.1001(25), paragraph 4.4 relative to the routeing of maritime distress alerts focused on the only associated MRCCs of the satellite systems participating in the GMDSS. There is a need to secure the shore-to-shore communication up to the [Central Alerting Post (CAP)] [SAR Point of Contact (SPOC)] of any Member State (COMSAR/Circ.23) in order to fulfil UNCLOS article 98, paragraph 2 and SOLAS Chapter V.

.2 CRS and CES global distribution: Considering that Sea Area A3 is now dependent on Sea Area A4, HF would be the only option on a ship, and noting that in the case that solar flares damage satellites, HF communications would be the only backup for satellite communications, Member States should consider the global HF distribution. The CG considered GMDSS infrastructure and the way the GMDSS master plan could be efficiently secured. A group of experts could be formed to make a "GMDSS panel" to check the coverage of all GMDSS sea areas. The first task of this "GMDSS panel" would be focused on HF CRS distribution.

.3 CRS and CES minimum technical requirements: It is difficult to elaborate a detailed document on the equipment for CRS and CES, but a document giving basic specifications of equipment with reference to standards is achievable. This document should be open in order to take into account future system and modernization. Resolution A.801(19) could be amended accordingly or details for shore infrastructure (CRS and LES) could be developed on a separate resolution. The following points for instance could be included in the shore installation guidelines:

.1 functional requirements of CRS within GMDSS and out of the scope of GMDSS;

.2 equipment required depending on the system;

.3 aerials;

.4 operational system;

.5 functional rules;

.6 power supply; and

.7 securing devices (recording systems, confidentiality…).

.4 CRS and CES personnel competency: RR 2012 has limited to a strict minimum personnel competency of CRS and CES (article 48.1 § 1 Administrations shall ensure that the staff on duty in coast stations and in coast earth stations are adequately qualified to operate the stations efficiently). Thus it is obvious to consider the personnel competency in charge to operate GMDSS CRS or LES ashore. The following requirements are found in IAMSAR MANUAL 2013 Volume II:

.1 2.5.3 "RCC personnel should be familiar with the SOLAS GMDSS provisions and associated IMO documents";

.2 2.5.7 "DSC radio users need to understand the basic operation of the radio, how DSC acts as an automated watch, and the importance of registering the radio and keeping it on and tuned to the DSC channel"; and

.3 2.5.8 "If operating outside Inmarsat coverage (i.e., in the polar areas), they must have the MF/HF DSC capability".

Watches (NCSR 2/13, annex, 51)

.24 The CG agrees that the provisions in the Radio Regulations and in SOLAS regulation V/33 on the actions ships should take when learning that another ship was in distress are sufficient.

.25 A clarification of radio/listening watches and a requirement for listening watch for general communication, have been proposed amended and added as a proposal to regulation V/12 (annex 1).

Radio installations (NCSR 2/13, annex, 52)

.26 The CG agrees that the radio installation should be marked with the codes that apply to the equipment on that ship.

Additional issues for decision, while working toward a Modernization Plan

7 A summary of the discussions and recommendations of the Experts Group is given in NCSR 2/13, annex, paragraphs 54 to 80. Further comments and recommendations of the CG developed after the Experts Group meeting follow.

Long-term strategic plan (NCSR 2/13, annex, 54)

.1 The CG expects that certain revisions to instruments will have to be made as a result of GMDSS Modernization and a revision of Chapter IV. These will be reflected in the Modernization Plan, and that any further long-term strategic plan will not be needed. The CG recommends that this item be closed.

Type approval (NCSR 2/13, annex, 55)

.2 The CG agrees that equipment type approval will need to be maintained. The CG recommends that this item be closed.

False alerts (NCSR 2/13, annex, 56-57)

.3 The CG was asked to consider the matter of further reduction of false alerts. The CG noted resolution A.814 on Guidelines for the avoidance of false distress alerts, and that it should be applied to the design and operation of future equipment. Furthermore, the CG was provided with an example from the French West Indies, where the ratio of EPIRB false alerts to the number of EPRIBs is estimated to be 1.3%. Most of them are relatively quickly resolved because the alerts are well tracked, allowing easy identification of the source of emission by the MRCC. Registration is essential in the resolution of distress alerts, especially false alerts, since it solves the cause of the issue quickly. The CG recommends that this item be closed.

On-air test features (NCSR 2/13, annex, 58)

.4 The CG notes that some coast stations invite test calls and do not see a need for automated systems. In any case, coast stations can introduce automated test call responses if they want to, and there is no need for a mandatory requirement. The CG agrees that this item can be closed.

Access to information of ships in distress (NCSR 2/13, annex, 59)

.5 The CG notes that LRIT data is already available free of charge for SAR purposes. A greater effort could be made to improve MMSI data, but this is not directly related to GMDSS Modernization. The CG recommends that this item be closed.

Aviation frequencies to provide for two-way on-scene communications (NCSR 2/13, annex, 60-63)

.6 The CG agrees that further consideration of this matter is needed, and that contribution from the SAR community is needed on the anticipated benefits of equipping all ships with aviation frequencies. If most naval aircraft and SAR aircraft have radio equipment that operates on maritime frequencies, how would ships use aeronautical radios?

HF improvements (NCSR 2/13, annex, 64)

.7 According to the GMDSS Master Plan there are 84 HF DSC CRS and only 11 provide HF NBDP MSI broadcast service. In addition there are 36 HF facsimile CRS. Thus the problem of HF station is not their availability, but more their global distribution and the global networking with MRCCs and [CAPs] [SPOCs]. Aside from ensuring that satellite communications can be used in the GMDSS, the problem is beyond the reach of the Modernization Program, as long as HF is a viable option for some ships. The CG recommends that this item be closed.

VDES (NCSR 2/13, annex, 65)

.8 The CG was asked to further consider the role of VDES in the GMDSS.

.9 The CG notes that VDES is a technology that supplements AIS communications, and as such could be useful for data communication of MSI, and supplementary distress communications. (See also 7.11) The VHF data exchange VDE satellite component (VDE-SAT) is an effective means to extend the VDES to areas outside of coastal VHF coverage. Satellite communications are able to deliver information in a broadcast, multicast or unicast mode to a large number of ships, i.e. efficiently addressing many ships using only minimal radio spectrum resources. The VDE-SAT provides a communication channel that is complementary to the terrestrial components of the VDES system (i.e. coordinated with terrestrial VHF data exchange (VDE), application specific messages (ASM) and AIS functionalities and their supporting systems).

.10 Although VDES does not seem suited to distress alerting, shore-to-ship distress alert relays and MSI could be broadcasted with the help of VDES technology as well as ship-to-shore and ship-to-ship transmitting and receiving safety related information. VDES has also great potential to implement other GMDSS functional requirements which need to be further developed. Further study and discussion within the maritime community will provide further insight into the priorities, Quality of Service (QoS), security, integrity and other requirements of future VDES services.

.11 There is a large population of smaller size ships – which have no satellite communication equipment on board, but do have regular VHF/AIS reception equipment – that could benefit from the services mentioned above. This would be of particular benefit for vessel populations in areas with limited shore based infrastructure. Using low-cost satellite reception technology, VDE-SAT can address a large population of ships and offer services for non-SOLAS vessels.

AIS (NCSR 2/13, annex, 66)

.12 The CG notes that AIS provides a locating function and already forms part of the GMDSS in the AIS-SART. It is conceivable that its role in the GMDSS might expand in the future, and there is nothing in the present or proposed regulations that would prevent its further use in the GMDSS if agreed by the appropriate IMO and ITU bodies. The CG recommends that this item be closed.

Distress signals in the COLREGs (NCSR 2/13, annex, 67)

.13 The CG agrees that nothing additional needs to be done to include current distress signals in the COLREGS. (See resolution A.1004(25)/Rev.1) The CG recommends that this item be closed.

Mayday relay (NCSR 2/13, annex, 68)

.14 The CG believes that the Radio Regulations and SOLAS regulation V/33 include the appropriate provisions for relaying distress signals to shore. The CG recommends that this item be closed.

Text messages, digital data, and/or distress chat via satellite (NCSR 2/13, annex, 69)

.15 The CG was asked to study the matter of the use of text messages, digital data and/or chat platforms via satellite, noting that satellite systems use proprietary protocols.

.16 Proprietary protocols may prevent interoperability of these protocols across multiple satellite systems. However, these technologies may be useful as supplementary communications in the polar regions, picture and data communication of MSI, and supplementary distress communications.

Satellite communications contributing to e-navigation (NCSR 2/13, annex, 70)

.17 The e-navigation gap analysis raised the question of whether satellite communications could further contribute to e-navigation. The Experts Group noted that the answer is "yes", and that e-navigation communications come under the "other communications" category in the GMDSS. The Experts Group concluded that it could do nothing more with the question at this time. The CG recommends that this item be closed.

FAL Forms and Maritime Service Portfolios relate to the GMDSS (NCSR 2/13, annex, 71)

.18 The e-navigation gap analysis also raised the question of how FAL Forms and Maritime Service Portfolios relate to the GMDSS. The Experts Group noted that with more satellite communication options arising within the GMDSS and in addition to the GMDSS, it should continue to become easier and more economical to transmit this information to and from shore. The CG recommends that this item be closed.

Ship reporting systems (NCSR 2/13, annex, 72)

.19 A third issue raised in the e-navigation gap analysis was whether ship reporting functions (AIS, LRIT, etc.) can or should be changed to better support SAR. The Experts Group viewed this as an issue for other parts of SOLAS and the SAR Convention, and there was nothing in the GMDSS Modernization project that would limit such changes. The CG recommends that this item be closed.

Integration of communication and navigation systems (NCSR 2/13, annex, 73)

.20 The Experts Group considered the issue of further integration of communication and navigation systems. It was noted that IEC is undertaking a project on integrated communications based on resolution A.811(19). It should be noted that integration of communication and navigation systems is also an e-navigation issue. The Experts Group recommended that no further work would be needed by the CG in view of the ongoing work. The CG recommends that this item be closed.

Improvement of machine readability, storing, sharing, distribution, and presentation of MSI (NCSR 2/13, annex, 74-77)

.21 The Experts Group noted the ongoing work in this area especially at IHO, and concluded that no further work on the item would be needed from the CG. The CG recommends that this item be closed.

Transition to a new numbering scheme (partly) replacing MMSI numbers (NCSR2/13, annex, 78)

.22 The Experts Group noted that the ITU was reviewing the current numbering scheme, but that there seemed to be no urgent need to transition to a new scheme. The CG recommends that this item be closed.

Equipment improvements (NCSR 2/13, annex, 79)

.23 The Experts Group left equipment improvement issues for future discussion, including but not limited to:

.1 What equipment improvements can be made?

.1 Automatically limit PTT time to [2] [5] minutes to prevent stuck key problem

.2 Introduce digital technologies, but don't interfere with VHF 16 and 70

.2 What steps can or should be taken to improve the human/machine interface or other aspects of the human element?

.1 Ergonomic design;

.2 Standardized distress alarm buttons;

.3 Simplification/common look/standardized interface/standardized operational procedures for all equipment. Standards for usability assessment;

.4 Integrated maritime mobile service with one user interface;

.5 Standardized audio and visual indications and symbology;

.6 Ability to play back voice messages;

.7 Automatic connection to the switched telephone network;

.8 Automatically detect free/open working channels;

.9 Easier identification of addresses – link with AIS?;

.10 Problems with simplex use of channels;

.11 Pilot/mariner communication;

12 Improved and on-board training needed/clear plain language operational guidance; and

.13 Maintenance of equipment and qualification of personnel

IMO, ITU, and IEC instruments requiring revision or replacement (NCSR 2/13, annex, 80)

.24 The Experts Group asked the CG to develop a list of IMO, ITU and IEC instruments requiring revision or replacement.

.25 The CG developed the preliminary list at annex 2.

Action requested of the Sub-Committee

8 The Sub-committee is invited to consider the progress made on the issues identified in paragraphs 5, 6, and 7 and give them further consideration.

***

ANNEX 1

REVIEW AND MODERNIZATION OF THE GMDSS

PRELIMINARY DRAFT OF REVISED SOLAS CHAPTER IV (INCLUDING PART OF CHAPTER III)

SOLAS
CHAPTER III
Life-saving Appliances and Arrangements

TEXT	Comment
* * * * * **PART B** Requirements For Ships and Life-Saving Appliances Section I - Passenger Ships and Cargo Ships Regulation 6 Communications	
~~1 Paragraph 2 applies to all passenger ships and to all cargo ships of 300 tons gross tonnage and upwards.~~ ~~2 Radio life-saving appliances~~ ~~2.1 Two-way VHF radiotelephone apparatus~~	
~~2.1.1 At least three two-way VHF radiotelephone apparatus shall be provided on every passenger ship and on every cargo ship of 500 gross tonnage and upwards. At least two two-way VHF radio-telephone apparatus shall be provided on every cargo ship of 300 tons gross tonnage and upwards but less than 500 gross tonnage. Such apparatus shall conform to performance standards not inferior to those adopted by the Organization. If a fixed two-way VHF radiotelephone apparatus is fitted in a survival craft it shall conform to performance standards not inferior to those adopted by Organization~~	Move to regulation IV/7.1.9

TEXT	Comment
~~2.1.2 Two-way VHF radiotelephone apparatus provided on board ships prior to 1 February 1992 and not complying fully with the performance standards adopted by the Organization may be accepted by the Administration until 1 February 1999 provided the Administration is satisfied that they are compatible with approved two-way VHF radiotelephone apparatus.~~	Obsolete provision
~~.2 Search and rescue locating devices~~ ~~At least one search and rescue locating device shall be carried on each side of every passenger ship and of every cargo ship of 500 tons gross tonnage and upwards. At least one search and rescue locating device shall be carried on every cargo ship of 300 tons gross tonnage and upwards but less than 500 tons gross tonnage. Such search and rescue locating devices shall conform to performance standards not inferior to those adopted by the Organization. The search and rescue locating devices shall be stowed in such locations that they can be rapidly placed in any survival craft other than the liferaft or liferafts required by regulation 31.1.4. Alternatively one search and rescue locating device shall be stowed in each survival craft other than those required by regulation 31.1.4. On ships carrying at least two search and rescue locating devices and equipped with free-fall lifeboats one of the search and rescue locating devices shall be stowed in a free-fall lifeboat and the other located in the immediate vicinity of the navigating bridge so that it can be utilized on board and ready for transfer to any of the other survival craft.~~ ~~*~~ * * * *	Move to regulation IV/7.1.10

SOLAS
CHAPTER IV
Radiocommunications

TEXT	Comment
PART A General **Regulation 1** *Application* 1 Unless expressly provided otherwise, this chapter applies to all ships to which the present regulations apply and to cargo ships of 300 gross tonnage and upwards. 2 This chapter does not apply to ships to which the present regulations would otherwise apply while such ships are being navigated within the Great Lakes of North America and their connecting and tributary water as far east as the lower exit of the St. Lambert Lock at Montreal in the Province of Quebec, Canada.[1]	
3 No provision in this chapter shall prevent the use by any ship, survival craft or person in distress, of any means at their disposal to attract attention, make known their position and obtain help.	
Regulation 2 *Terms and definitions* 1 For the purpose of this chapter, the following terms shall have the meanings defined below: .1 *Bridge-to-bridge communications* means safety communications between ships from the position from which the ships are normally navigated.	

[1] Such ships are subject to special requirements relative to radio for safety purposes, as contained in the relevant agreement between Canada and the United States of America.

TEXT	Comment
.2 *Continuous watch* means that the radio and listening watch concerned shall not be interrupted other than for brief intervals when the ship's receiving capability is impaired or blocked by its own communications or when the facilities are under periodical maintenance or checks.	
.3 *Digital selective calling (DSC)* means a technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations, and complying with the relevant recommendations of the International ~~Radio Consultative Committee (CCIR)~~ Telecommunication Union (ITU-R) . [2]	Update to reference
.4 *Direct-printing telegraphy* means automated telegraphy techniques which comply with the relevant recommendations of the International ~~Radio Consultative Committee (CCIR)~~ Telecommunication Union (ITU-R). [2]	Update to reference
[.4bis *Enhanced Group Call (EGC)* means a system capable of sending co-ordinated broadcast MSI[, including distress relays,] in text format to a shipboard EGC receiver from the satellite service provider supporting the ship earth station carried on board.]	Alternative ECG definitions. The second one provides for the possibility of a terrestrial ECG solution perhaps using DSC or NAVDAT.
[.4bis *Enhanced Group Call (EGC)* means a system for broadcasting messages via a radiocommunication system from shore-based information providers to selected group of ship stations within a defined geographical area, or belonging to a defined group.]	
.5 *General communications* means operational communications, other than distress conducted by radio.	New definition from High Level Review NCSR 1/17 Note: MSC/Circ.1038 requires revision explaining RR 33 in detail as information to the mariners

[2] ~~The name of the Committee was changed to "ITU Radiocommunication Sector" (ITU-R) due to Article 1 of the International Telecommunication Constitution, Geneva 1992.~~

TEXT		Comment
6	~~*Inmarsat* [3] means the Organization established by the Convention on the International Maritime Satellite Organization adopted on 3 September 1976.~~	Not needed as there is no reference to "Inmarsat".
.7	*International NAVTEX service* means the co-ordinated broadcast and automatic reception on 518 kHz of maritime safety information by means of narrow-band direct-printing telegraphy using the English language. [4]	
.8	*Locating* means the finding of ships, aircraft, ~~units~~ survival craft or persons in distress.	Update to terminology
.9	*Maritime safety information (MSI)*[5] means navigational and meteorological warnings, meteorological forecasts and other urgent safety related messages broadcast to ships.	Acronym added by High Level Review NCSR 1/17
.10	~~*Polar orbiting* *satellite service* *on 406 MHz*~~ means a service which is based on ~~polar orbiting satellites~~ a satellite system designed to detect distress beacons transmitting in the frequency band from 406.0 to 406.1 MHz. ~~operating in the 406 MHz band which receive and relay distress alerts from satellite EPIRBs and which provides their position.~~	The Cospas-Sarsat system now uses satellites in other orbits than polar.
.11	*Radio Regulations* means the Radio Regulations ~~annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention~~ complementing the Constitution and the Convention of the International Telecommunication Union which is in force at any time.	Update to ITU definition.
11*bis*	*Recognized mobile-satellite service* means the communication service provided by a satellite system recognized by the Organization. [6]	New definition
.11*ter*	*Other communications* means any telecommunication other than distress, urgency, safety, general or security related communications.	New definition

[3] ~~The name of the Organization was changed to "International Mobile-Satellite Organization" (Inmarsat) by virtue of amendments to its Convention and Operating agreement adopted by 10th (extraordinary) Assembly (5-9 December 1994).~~

[4] Refer to the NAVTEX Manual approved by the Organization.

[5] Refer to the Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI)

[6] Refer to resolution A.1001(25) concerning criteria for the provision of mobile satellite communication systems in the global maritime distress and safety system (GMDSS).

TEXT	Comment
.12 *Sea area A1* means an area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government. [7]	
.13 *Sea area A2* means an area, excluding sea area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government. [7]	
.14 *Sea area A3* means an area, excluding sea areas A1 and A2, within the coverage of ~~an Inmarsat geostationary satellite~~ a recognized mobile-satellite communication service supported by the ship earth station carried on board in which continuous alerting is available.	Revised definition
15 *Sea area A4* means an area outside of sea areas A1, A2 and A3.	Revised definition
15*bis* *Security related communications* means communications associated with the update of security levels, security incidents or threat thereof and security-related information prior to the entry of a ship into a port.	New definition from High Level Review NCSR 1/17
.16 *Global Maritime Distress and Safety System (GMDSS) identities* means maritime mobile services identity (MMSI), the ship's call sign, ~~Inmarsat~~ mobile-satellite service identities and serial number identity which may be transmitted by the ship's equipment and used to identify the ship.	
2 All other terms and abbreviations which are used in this chapter and which are defined in the Radio Regulations and in the International Convention on Maritime Search and Rescue (SAR), 1979, as may be amended, shall have the meanings as defined in those Regulations and the SAR Convention.	
Regulation 3 *Exemptions* 1 The Contracting Governments consider it highly desirable not to deviate from the requirements of this chapter; nevertheless the Administration may grant partial or conditional exemptions to individual ships from the requirements of regulations 7 to 11 provided:	

[7] Refer to resolution A.801(19) concerning the provision of radio services for the global maritime distress and safety system, (GMDSS).

TEXT	Comment
.1 such ships comply with the functional requirements of regulation 4; and .2 the Administration has taken into account the effect such exemptions may have upon the general efficiency of the service for the safety of all ships.	
2 An exemption may be granted under paragraph 1 only: .1 if the conditions affecting safety are such as to render the full application of regulations 7 to 11 unreasonable or unnecessary; .2 in exceptional circumstances, for a single voyage outside the sea area or sea areas for which the ship is equipped. 3 Each Administration shall submit to the Organization, as soon as possible after the first of January in each year, a report showing all exemptions granted under paragraphs 1 and 2 during the previous calendar year and giving the reasons for granting such exemptions.	

TEXT	Comment
Regulation 4 *Functional requirements* 1 Every ship, while at sea, shall be capable of: .1 performing the global maritime distress and safety system (GMDSS) functions as follows: [8] .1 transmitting ship-to-shore distress alerts by at least two separate and independent means, each using a different radiocommunication service; .2 receiving shore-to-ship distress alert relays; .3 transmitting and receiving ship-to-ship distress alerts; .4 transmitting and receiving search and rescue coordinating communications; .5 transmitting and receiving on-scene communications; .6 transmitting and receiving signals for locating; .7 transmitting and receiving safety related information; .8 receiving maritime safety information (MSI); .9 transmitting and receiving general communications; and .10 transmitting and receiving bridge-to-bridge communications. .2 transmitting and receiving security-related communications, in accordance with the requirements of the International Ship and Port Facility Security Code; and .3 transmitting and receiving other communications to and from shore-based systems or networks.	New text from High Level Review NCSR 1/17
Regulation 4-1 *GMDSS satellite providers* The Maritime Safety Committee shall determine the criteria, procedures and arrangements for the evaluation, recognition, review and oversight of the provision of mobile satellite communication services in the global maritime distress and safety system (GMDSS) pursuant to the provisions of this chapter.	

[8] It should be noted that ships performing GMDSS functions should use the Guidance for avoidance of false distress alerts adopted by the Organization by resolution A.814(19).

TEXT	Comment
PART B Undertakings by Contracting Governments [9] **Regulation 5** *Provision of radiocommunication services* 1 Each Contracting Government undertakes to make available, as it deems practical and necessary either individually or in co-operation with other Contracting Governments, appropriate shore-based facilities for space and terrestrial radiocommunication services having due regard to the recommendations of the Organization. [10] These services are:	
.1 a ~~radiocommunication~~ mobile-satellite service utilizing ~~geostationary satellites in the Maritime Mobile-Satellite Service~~ a recognized satellite system;	Aligning terminology
.2 a radiocommunication service utilizing ~~polar orbiting~~ satellites in the mobile-satellite service operating on 406 MHz;	Aligning terminology
.3 the maritime mobile service in the bands between 156 MHz and 174 MHz;	
.4 the maritime mobile service in the bands between 4,000 kHz and 27,500 kHz; and	
.5 the maritime mobile service in the bands between 415 kHz and 535 kHz [11] and between 1,605 kHz and 4,000 kHz.	
2 Each Contracting Government undertakes to provide the Organization with pertinent information concerning the shore-based facilities in the maritime mobile service, mobile-satellite service and Maritime Mobile-Satellite Service, established for sea areas which it has designated off its coasts. [12]	

9 1. Each Contracting Government is not required to provide all radiocommunication services.
2. The requirements should be specified for shore-based facilities to cover the various sea areas.

10 Refer to resolution A.801(19) concerning provision of radio services for the global maritime distress and safety system (GMDSS).

11 Refer to resolution A.617(15) concerning implementation of the NAVTEX system as a component of the World-Wide Navigational Warning Service.

12 The Master Plan of shore-based facilities for the GMDSS based on information provided by Contracting Governments is circulated to all concerned by means of GMDSS circulars.

TEXT	Comment
Regulation 5-1 *Global maritime distress and safety system identities* 1 This regulation applies to all ships on all voyages. 2 Each Contracting Government undertakes to ensure that suitable arrangements are made for registering global maritime distress and safety system (GMDSS) identities and for making information on these identities available to rescue co-ordination centres on a 24-hour basis. Where appropriate, international organizations maintaining a registry of these identities shall be notified by the Contracting Government of these assignments.	
PART C Ship requirements **Regulation 6** *Radio installations* 1 Every ship shall be provided with radio installations capable of complying with the functional requirements prescribed by regulation 4 throughout its intended voyage and, unless exempted under regulation 3, complying with the requirements of regulation 7 and, as appropriate for the sea area or areas through which it will pass during its intended voyage, the requirements of either regulation 8, 9, 10 or 11. 2 Every radio installation shall: .1 be so located that no harmful interference of mechanical, electrical or other origin affects its proper use, and so as to ensure electromagnetic compatibility and avoidance of harmful interaction with other equipment and systems; .2 be so located as to ensure the greatest possible degree of safety and operational availability;	

TEXT	Comment
.3 be protected against harmful effects of water, extremes of temperature and other adverse environmental conditions;	
.4 be provided with reliable, permanently arranged electrical lighting independent of the main and emergency sources of electrical power for the adequate illumination of the radio controls for operating the radio installation; and	
.5 be clearly marked ~~with the call sign, the ship station identity and other codes~~ for the operator with the codes as applicable for the use of the radio installation, such as ship´s name, call sign, the maritime mobile service identity (MMSI), mobile-satellite system identities, and serial number identity.	Update to include codes in addition to call signs.
3 Control of the VHF radiotelephone channels, required for navigational safety, shall be immediately available on the navigating bridge convenient to the conning position and, where necessary, facilities should be available to permit radiocommunications from the wings of the navigating bridge. Portable VHF equipment may be used to meet the latter provision.	
4 In passenger ships, a distress panel shall be installed at the conning position. This panel shall contain either one single button which, when pressed, initiates a distress alert using all radiocommunication installations required on board for that purpose or one button for each individual installation. If the required radiocommunication installations are installed at the conning position next to the distress panel, this equipment does not have to be connected to the distress panel. The panel shall clearly and visually indicate whenever any button or buttons have been pressed. Means shall be provided to prevent inadvertent activation of the button or buttons. If the satellite EPIRB is used as the secondary means of distress alerting [and is not remotely activated], it shall be acceptable to have an additional EPIRB installed in the wheelhouse near the conning position.	This addition is suggested so that a replacement radio not compatible with an older distress panel, would not cause replacement of the distress panel or other radio equipment. Has remote activation ever been implemented for EPIRBs?
~~5 In passenger ships, information on the ship's position shall be continuously and automatically provided to all relevant radiocommunication equipment to be included in the initial distress alert when the button or buttons on the distress panel is pressed.~~	This requirement is now included in Regulation 18.

TEXT	Comment
5 In passenger ships, a distress alarm panel shall be installed at the conning position. The distress alarm panel shall provide visual and aural indication of any distress alert or alerts received on board and shall also indicate through which radiocommunication service the distress alerts have been received.	
Regulation 7 *Radio equipment: General* 1 Every ship shall be provided with: .1 a VHF radio installation capable of transmitting and receiving: .1.1 DSC on the frequency 156.525 MHz (channel 70). It shall be possible to initiate the transmission of distress alerts on channel 70 from the position from which the ship is normally navigated; [13] and .1.2 radiotelephony on the frequencies 156.300 MHz (channel 6), 156.650 MHz (channel 13) and 156.800 MHz (channel 16); .2 a radio installation capable of maintaining a continuous DSC watch on VHF channel 70 which may be separate from, or combined with, that required by subparagraph .1.1; [14] .3 a search and rescue locating device capable of operating either in the 9 GHz band or on frequencies dedicated for AIS, which: .3.1 shall be so stowed that it can be easily utilized; and .3.2 may be one of those required by ~~regulation III/6.2.2 for a survival craft~~ subparagraph .10;	Consequential change arising from moving SOLAS III requirements to SOLAS IV.

[13] Certain ships may be exempted from this requirement (see regulation 9.4).

[14] Certain ships may be exempted from this requirement (see regulation 9.4).

TEXT	Comment
.4 a receiver capable of receiving International NAVTEX service broadcasts if the ship is engaged on voyages in any area in which an International NAVTEX service is provided. However, ships engaged exclusively on voyages in areas where other terrestrial communications for receiving MSI is provided and fitted with equipment capable of receiving such service, may be exempt from this requirement.	Addition of arrangements for alternative methods to NAVTEX for receiving MSI. NAVDAT is a possible part of GMDSS modernization. A future NAVDAT service could become a complement to the NAVTEX service with a similar core status. It may be appropriate to keep the item open to ensure further discussions at a later stage in the GMDSS modernization process.
.5 a radio facility for reception of maritime safety information by the Inmarsat enhanced group calling system [15], if the ship is engaged on voyages in any area of Inmarsat coverage but in which an international NAVTEX service is not provided. However, ships engaged exclusively on voyages in areas where an HF direct-printing telegraphy maritime safety information service is provided and fitted with equipment capable of receiving such service, may be exempt from this requirement. [16]	
[.5 a radio facility for reception of MSI ~~maritime safety information~~ by the ~~Inmarsat~~ ~~enhanced~~ geographical enhanced group calling system, if the ship is engaged on voyages in any area of ~~Inmarsat~~ recognized satellite service coverage supported by the ship earth station installed on board but in which an international NAVTEX service is not provided. However, ships engaged exclusively on voyages in areas where an HF direct-printing telegraphy MSI ~~maritime safety information~~ or other means of receiving MSI is provided and fitted with equipment capable of receiving such service, may be exempt from this requirement. [17]]	Alternative words considered by JEG 10.

15 ~~Refer to resolution A.701(17) concerning carriage of Inmarsat enhanced group call SafetyNET receivers under the GMDSS.~~

16 Refer to the Recommendation on promulgation of maritime safety information adopted by the Organization by resolution A.705(17).

17 Refer to the Recommendation on promulgation of maritime safety information adopted by the Organization by resolution A.705(17).

TEXT	Comment
.6 ~~subject to the provisions of regulation 8.3~~, a satellite emergency position-indicating radio beacon (satellite EPIRB) [18] which shall be:	Regulation 8.3 (VHF EPIRB) has been deleted.
.6.1 capable of transmitting a distress alert through the ~~polar orbiting~~ satellite service operating ~~in the~~ on 406 MHz ~~band~~;	Alignment of terminology.
.6.2 installed in an easily accessible position;	
.6.3 ready to be manually released and capable of being carried by one person into a survival craft;	
.6.4 capable of floating free if the ship sinks and of being automatically activated when afloat; and	
.6.5 capable of being activated manually.	
.7 a radio installation capable of transmitting and receiving security-related communications. This requirement may be fulfilled by the addition of this capability in the equipment required by regulations 8, 9, 10 or 11 or with that provided for subparagraph .8.	This is a new requirement resulting from regulation 4.
.8 a radio installation capable of transmitting and receiving other communications to and from shore based systems or networks. This requirement may be fulfilled by the addition of this capability in the equipment required by regulations 8, 9, 10 or 11 or with that provided for subparagraph .7	This is a new requirement resulting from regulation 4. NOTE This can be goal based or performance standards can be developed.
.9 at least two two-way VHF radio-telephone apparatus on every cargo ship of 300 tons gross tonnage and upwards but less than 500 gross tonnage. At least three two-way VHF radiotelephone apparatus on every passenger ship and on every cargo ship of 500 gross tonnage and upwards. ~~At least two two-way VHF radio-telephone apparatus shall be provided on every cargo ship of 300 tons gross tonnage and upwards but less than 500 gross tonnage.~~ The two-way VHF radiotelephone apparatus may be portable or fitted in a survival craft.	Moved from regulation III/6.2.1.1
.10 at least one search and rescue locating device on every cargo ship of 300 tons gross tonnage and upwards but less than 500 tons gross tonnage. At least one search and rescue locating device on each side of every passenger ship and of every cargo ship of 500 tons gross tonnage and upwards. ~~At least one~~	Moved from regulation III/6.2.2

[18] Refer to resolution A.616(15) concerning search and rescue homing capability.

TEXT	Comment
~~search and rescue locating device shall be carried on every cargo ship of 300 tons gross tonnage and upwards but less than 500 tons gross tonnage.~~ The search and rescue locating devices shall be stowed in such locations that they can be rapidly placed in any survival craft other than the liferaft or liferafts required by regulation III/31.1.4. Alternatively one search and rescue locating device shall be stowed in each survival craft other than those required by regulation III/31.1.4. On ships carrying at least two search and rescue locating devices and equipped with free-fall lifeboats one of the search and rescue locating devices shall be stowed in a free-fall lifeboat and the other located in the immediate vicinity of the navigating bridge so that it can be utilized on board and ready for transfer to any of the other survival craft.	NOTE Regulation III/26.2.5 (provision of search and rescue locating devices for ro-ro passenger ships) remains in Chapter III. Consider if should it be moved to chapter IV also, to achieve better consistency.
2 Every passenger ship shall be provided with means for two-way on-scene radiocommunications for search and rescue purposes using the aeronautical frequencies 121.5 MHz and 123.1 MHz from the position from which the ship is normally navigated.	
Regulation 8 *Radio equipment: Sea area A1* 1 In addition to meeting the requirements of regulation 7, every ship engaged on voyages exclusively in sea area A1 shall be provided with a radio installation capable of initiating the transmission of ship-to-shore distress alerts from the position from which the ship is normally navigated, operating either: [.1 on VHF using DSC]; ~~this requirement may be fulfilled by the EPIRB prescribed by paragraph 3, either by installing the EPIRB close to, or by remote activation from, the position from which the ship is normally navigated;~~ or	Paragraph 3 has been deleted. This requirement needs to be investigated to decide whether VHF DSC not using the VHF DSC EPIRB is a suitable secondary means of alerting.

TEXT	Comment
.2 through the ~~polar orbiting~~ satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated; or	
[.2 through the satellite service on 406 MHz; by installing a satellite EPIRB close to the position from which the ship is normally navigated; or]	Alternative wording for consideration.
.3 if the ship is engaged on voyages within coverage of MF coast stations equipped with DSC, on MF using DSC; or	
.4 on HF using DSC; or	
.5 through ~~the Inmarsat geostationary~~ a recognized mobile-satellite service; ~~this requirement may be fulfilled by:~~	This is intended to makes the requirement generic. The options in 5.1 and 5.2 are no longer required because the Inmarsat EPIRB service has been withdrawn. The option of using an EPIRB has already been given in .2.
~~.5.1 an Inmarsat ship earth station;[19] or~~	
~~.5.2 the satellite EPIRB, required by regulation 7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated.~~	
2 The VHF radio installation, required by regulation 7.1.1, shall also be capable of transmitting and receiving general ~~radio~~communications ~~using radiotelephony~~.	This is intended to makes the requirement generic.
~~3 Ships engaged on voyages exclusively in sea area A1 may carry, in lieu of the satellite EPIRB required by regulation 7.1.6, an EPIRB which shall be:~~	The VHF EPIRB option has never been implemented. COMSAR 15 dealt with this matter:
~~.1 capable of transmitting a distress alert using DSC on VHF channel 70 and providing for locating by means of a radar transponder operating in the 9 GHz band;~~	1. ICAO/IMO JWG Report COMSAR 15/6 advised... Since there were
~~.2 installed in an easily accessible position;~~	

19 ~~This requirement can be met by Inmarsat ship earth stations capable of two-way communications such as Inmarsat-A, Inmarsat-B (resolution A.808(19)) or Inmarsat-C (resolution A.807(19)) ship earth stations. Unless otherwise specified, this footnote applies to all requirements for an Inmarsat ship earth station prescribed by this chapter.~~

TEXT	Comment
~~.3 ready to be manually released and capable of being carried by one person into a survival craft;~~ ~~.4 capable of floating free if the ship sinks and being automatically activated when afloat; and~~ ~~.5 capable of being activated manually.~~	no indications that this device would be manufactured in the future, it was decided to delete reference to it in the IAMSAR Manual. 2. Turkey's paper COMSAR 15/3/11 proposed that SOLAS text on EPIRB using DSC on VHF channel 70, SOLAS IV/8/3, be deleted. The Technical WG supported the concept but the Sub-Committee did not fully agree. COMSAR 15/16 report ended saying that "amendments were expected to be considered in due course."
Regulation 9 *Radio equipment: Sea areas A1 and A2* 1 In addition to meeting the requirements of regulation 7, every ship engaged on voyages beyond sea area A1, but remaining within sea area A2, shall be provided with: .1 an MF radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz and transmitting and receiving, for distress and safety purposes, on the frequencies: .1.1 2,187.5 kHz using DSC; and .1.2 2,182 kHz using radiotelephony; ~~.2 a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz which may be separate from, or combined with, that required by subparagraph .1.1; and~~	All new radio equipment today is considered as combined. Instead the performance standards should be amended or revised. Existing ships to be

TEXT	Comment
.3 means of initiating the transmission of ship-to-shore distress alerts by a radio service other than MF operating either: .3.1 through the ~~polar orbiting~~ satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated; or .3.2 on HF using DSC; or .3.3 through ~~the Inmarsat geostationary~~ a recognized mobile-satellite service ~~by a ship earth station.~~	taken into account. Same for 10.1.3. (See alternative suggested at 8.1.2) This change is to permit the use of portable equipment.
2 It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs 1.1 and 1.3 from the position from which the ship is normally navigated.	

TEXT	Comment
3 The ship shall, in addition, be capable of transmitting and receiving general ~~radio~~communications ~~using radiotelephony or direct-printing telegraphy~~ by either: .1 a radio installation operating on working frequencies in the bands between 1,605 kHz and 4,000 kHz or between 4,000 kHz and 27,500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by paragraph 1.1; or .2 a~~n Inmarsat~~ ship earth station operating in a recognized mobile-satellite service.	This change is intended to make the requirement more generic. Proposed to delete due to explanation in 5.17 of NCSR 2/9
Regulation 10 *Radio equipment: Sea areas A1, A2 and A3* 1 In addition to meeting the requirements of regulation 7, every ship engaged on voyages beyond sea areas A1 and A2, but remaining within sea area A3, shall, ~~if it does not comply with the requirements of paragraph 2,~~ be provided with: .1 a~~n Inmarsat~~ ship earth station operating in a recognized mobile-satellite service capable of: .1.1 transmitting and receiving distress and safety communications using direct-printing telegraphy; .1.2 initiating and receiving distress priority calls; .1.3 maintaining watch for shore-to-ship distress alerts, including those directed to specifically defined geographical areas; .1.4 transmitting and receiving general ~~radio~~communications ~~using either radiotelephony or direct-printing telegraphy~~; and	Paragraph 2 and 3 (the MF/HF option) has been removed from regulation 10 and moved to regulation 11. Sea area A3 equipment is then limited to satellite equipment only.

TEXT	Comment
.2 an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies: .2.1 2,187.5 kHz using DSC; and .2.2 2,182 kHz using radiotelephony; and .3 a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz which may be separate from or combined with that required by subparagraph .2.1; and .4 means of initiating the transmission of ship-to-shore distress alerts by a radio service operating either: .4.1 through the ~~polar-orbiting~~ satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated; or .4.2 on HF using DSC; or .4.3 through ~~the Inmarsat geostationary satellite service by~~ an additional ship earth station operating in a recognized mobile-satellite service;	(See alternative suggested at 9.1.1 and 9.1.2) (See alternative suggested at 8.1.2) Proposed to delete due to explaination in 5.17 of NCSR 2/9
Regulation 11 *Radio equipment: Sea areas A1, A2, A3 and A4* ~~1 In addition to meeting the requirements of regulation 7, ships engaged on voyages in all sea areas shall be provided with the radio installations and equipment required by regulation 10.2, except that the equipment required by regulation 10.2.3.2 shall not be accepted as an alternative to that required by regulation 10.2.3.1, which shall~~	

TEXT	Comment
~~always be provided. In addition, ships engaged on voyages in all sea areas shall comply with the requirements of regulation 10.3.~~	Regulation 11.1 has been replaced by the words of previous regulation 10.2.
1 In addition to meeting the requirements of regulation 7, every ship engaged on voyages beyond sea areas A1 and A2 and A3, but remaining within sea area A4, shall ~~if it does not comply with the requirements of paragraph 1,~~ be provided with:	
.1 an MF/HF radio installation capable of transmitting and receiving, for distress and safety purposes, on all distress and safety frequencies in the bands between 1,605 kHz and 4,000 kHz and between 4,000 kHz and 27,500 kHz:	
.1.1 using DSC;	
.1.2 using radiotelephony; and	
.1.3 using direct-printing telegraphy; and	
.2 equipment capable of maintaining DSC watch on 2,187.5 kHz, 8,414.5 kHz and on at least one of the distress and safety DSC frequencies 4,207.5 KHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz; at any time, it shall be possible to select any of these DSC distress and safety frequencies. This equipment may be separate from, or combined with, the equipment required by subparagraph .1; and	
.3 means of initiating the transmission of ship-to-shore distress alerts by a radio communication service other than HF operating either:	
.3.1 through the ~~polar orbiting~~ satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated; ~~or~~	
~~.3.2 through the Inmarsat geostationary satellite service by a ship earth station~~; and	(See alternative suggested at 8.1.2)

TEXT	Comment
.4 in addition, ships shall be capable of transmitting and receiving general ~~radio~~communications by an MF/HF radio installation operating on working frequencies in the bands between 1605 kHz and 4000 kHz and between 4000 kHz and 27 500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by subparagraph .1 3 It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs 1.1 and 1.3, ~~1.4, 2.1 and 2.3~~ from the position from which the ship is normally navigated.	This exclusion is an existing requirement from the original 11.1 Proposed to delete due to explanation in 5.17 of NCSR 2/9
Regulation 12 *Watches* 1 Every ship, while at sea, shall maintain a continuous watch: .1 on VHF DSC channel 70, if the ship, in accordance with the requirements of regulation 7.1.2, is fitted with a VHF radio installation; .2 on the distress and safety DSC frequency 2,187.5 kHz, if the ship, in accordance with the requirements of regulation 9.1.2 or 10.1.3, is fitted with an MF radio installation; .3 on the distress and safety DSC frequencies 2,187.5 kHz and 8,414.5 kHz and also on at least one of the distress and safety DSC frequencies 4,207.5 kHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz, appropriate to the time of day and the geographical position of the ship, if the ship, in accordance with the requirements of regulation ~~10.2.2 or~~ 11.1, is fitted with an MF/HF radio installation. This watch may be kept by means of a scanning receiver; .4 for satellite shore-to-ship distress ~~alerts~~ relays, if the ship, in accordance with the requirements of regulation 10.1.1, is fitted with a~~n Inmarsat~~ ship earth station.	Update in terminology.

TEXT	Comment
2 Every ship, while at sea, shall maintain a radio watch for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the ship is navigating. 3 ~~Until 1 February 1999 or until such other date as may be determined by the Maritime Safety Committee,~~ [20] Every ship while at sea shall maintain, when practicable, a continuous listening watch ~~on VHF channel 16. This watch~~ which shall be kept at the position from which the ship is normally navigated; .1 on VHF channel 16, and; [.2 on the appropriate frequency or frequencies for general communication for the area in which the ship is navigating.]	The Maritime Safety Committee decided (resolution MSC.131(75) that all GMDSS ships, while at sea, shall continue to maintain, when practicable, continuous listening watch on VHF channel 16. e.g. VTS, Maritime Assistance Service, coastal surveillance, ship reporting, port approaches etc. The issue is in fact not covered elsewhere, neither in the STCW watchkeeping or in the RR
Regulation 13 *Sources of energy* 1 There shall be available at all times, while the ship is at sea, a supply of electrical energy sufficient to operate the radio installations and to charge any batteries used as part of a reserve source or sources of energy for the radio installations.	

20 ~~The maritime Safety Committee decided (resolution MSC.131(75) and all GMDSS ships, while at sea, shall continue to maintain, when practicable, continuous listening watch on VHF channel 16~~.

TEXT	Comment
2 A reserve source or sources of energy shall be provided on every ship, to supply radio installations, for the purpose of conducting distress and safety radio communications, in the event of failure of the ship's main and emergency sources of electrical power. The reserve source or sources of energy shall be capable of simultaneously operating the VHF radio installation required by regulation 7.1.1 and, as appropriate for the sea area or sea areas for which the ship is equipped, either the MF radio installation required by regulation 9.1.1, the MF/HF radio installation required by regulation ~~10.2.1 or~~ 11.1, or the ~~Inmarsat~~ ship earth station required by regulation 10.1.1 and any of the additional loads mentioned in paragraphs 4, 5 and 8 for a period of at least: .1 1 h on ships provided with an emergency source of electrical power, if such source of power complies fully with all relevant provisions of regulation II-1/42 or 43, including the supply of such power to the radio installations; and .2 6 h on ships not provided with an emergency source of electrical power complying fully with all relevant provisions of regulation II-1/42 or 43, including the supply of such power to the radio installations [21]. 3 The reserve source or sources of energy shall be independent of the propelling power of the ship and the ship's electrical system. 4 Where, in addition to the VHF radio installation, two or more of the other radio installations, referred to in paragraph 2, can be connected to the reserve source or sources of energy, they shall be capable of simultaneously supplying, for the period specified, as appropriate, in paragraph 2.1 or 2.2, the VHF radio installation and: .1 all other radio installations which can be connected to the reserve source or sources of energy at the same time; or .2 whichever of the other radio installations will consume the most power, if only one of the other radio installations can be connected to the reserve source or sources of energy at the same time as the VHF radio installation.	

[21] For guidance the following formula is recommended for determining the electrical load to be supplied by the reserve source of energy for each radio installation required for distress conditions: 1/2 of the current consumption necessary for transmission + the current consumption necessary for reception + the current consumption of any additional loads.

TEXT	Comment
5 The reserve source or sources of energy may be used to supply the electrical lighting required by regulation 6.2.4. 6 Where a reserve source of energy consists of a rechargeable accumulator battery or batteries: .1 a means of automatically charging such batteries shall be provided which shall be capable of recharging them to minimum capacity requirements within 10 h; and .2 the capacity of the battery or batteries shall be checked, using an appropriate method,[22] at intervals not exceeding 12 months, when the ship is not at sea. 7 The siting and installation of accumulator batteries which provide a reserve energy shall be such as to ensure: .1 the highest degree of service; .2 a reasonable lifetime; .3 reasonable safety; .4 that battery temperatures remain within the manufacturer's specifications whether under charge or idle; and .5 that when fully charged, the batteries will provide at least the minimum required hours of operation under all weather conditions. 8 If an uninterrupted input of information from the ship's navigational or other equipment to a radio installation required by this chapter, including the navigation receiver referred to regulation 18, is needed to ensure its proper performance, means shall be provided to ensure the continuous supply of such information in the event of failure of the ship's main or emergency source of electrical power.	

[22] One method of checking the capacity of an accumulator battery is to fully discharge and recharge the battery, using normal operating current and period (e.g. 10 h). Assessment of the charge condition can be made at any time, but it should be done without significant discharge of the battery when the ship is at sea.

TEXT	Comment
Regulation 14 *Performance standards* 1 All equipment to which this chapter applies shall be of a type approved by the Administration. Such equipment shall conform to appropriate performance standards not inferior to those adopted by the Organization.[23] **Regulation 15** *Maintenance requirements*	

[23] Refer to the following resolutions adopted by the Assembly of the Organization:

.1 Resolution ~~A.523(13)~~ MSC.148(77): *Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships* (NAVTEX) (valid for equipment installed on or after 1 July 2005).

.2 Resolution A.694(17): *General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids*.

.3 Resolution A.808(19): *Performance standards for ship earth stations capable of two-way communications* and resolution A.570(14): *Type approval of ship earth stations.*

.4 Resolution A.803(19): *Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling* as amended, and resolution MSC.68(68), annex 1 (valid for equipment installed on or after 1 January 2000).

.5 Resolution A.804(19): *Performance standards for shipborne MF radio installations capable of voice communication and digital selective calling as amended*, and resolution MSC.68(68), annex 2 (valid for equipment installed on or after 1 January 2000).

.6 Resolution A.806(19): *Performance standards for shipborne MF/HF radio installations capable of voice communication, narrow-band direct-printing and digital selective calling as amended*, and resolution MSC.68(68), annex 3 (valid for equipment installed on or after 1 January 2000).

.7 Resolution A.810(19): *Performance standards for float-free satellite emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz* (see also Assembly resolution A.696(17): *Type approval of satellite emergency position-indicating radio beacons (EPIRBs) operating in the Cospas-Sarsat system).*

.8 Resolution A.802(19): *Performance standards for survival craft radar transponders for use in search and rescue operations.*

.9 Resolution MSC.246(83): *Performance standards for survival craft AIS search and rescue transmitters (AIS-SART) for use in search and rescue operations.*

~~.9 Resolution A.612(15): *Performance standards for float-free VHF emergency position-indicating radio beacons*.~~

.10 Resolution A.807(19): *Performance standards for Inmarsat-C ship earth stations capable of transmitting and receiving direct-printing communications* as amended, and resolution MSC.68(68), annex 4 (valid for equipment installed on or after 1 January 2000) and resolution A.570(14): *Type approval of ship earth stations*.

.11 Resolution ~~A.664(16)~~ MSC.306(87): *Performance standards for enhanced group call (EGC) equipment*.

~~.12 Resolution A.821(19): *Performance standards for float-free satellite emergency position-indicating radio beacons operating through the geostationary INMARSAT satellite system on 1.6 GHz*~~.

.13 Resolution A.662(16): *Performance standards for float-free release and activation arrangements for emergency radio equipment*.

.14 Resolution A.699(17): *System performance standard for the promulgation and co-ordination of maritime safety information using high-frequency narrow-band direct-printing*.

.15 Resolution A.700(17): *Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (MSI) by HF*.

.16 Resolution A.811(19): *Performance standards for a shipborne integrated radiocommunication system (IRCS) when used in the GMDSS*.

.17 Resolution MSC.80(70), annex 1: *Performance standards for on-scene (aeronautical) two-way portable VHF radiotelephone apparatus*.

TEXT	Comment
1 Equipment shall be so designed that the main units can be replaced readily, without elaborate recalibration or readjustment.	
2 Where applicable, equipment shall be so constructed and installed that it is readily accessible for inspection and on-board maintenance purposes. 3 Adequate information shall be provided to enable the equipment to be properly operated and maintained, taking into account the recommendations of the Organization. [24] 4 Adequate tools and spares shall be provided to enable the equipment to be maintained. 5 The Administration shall ensure that radio equipment required by this chapter is maintained to provide the availability of the functional requirements specified in regulation 4 and to meet the recommended performance standards of such equipment. 6 On ships engaged on voyages in sea areas A1 ~~and~~ or A2, the availability shall be ensured by using such methods as duplication of equipment, shore-based maintenance or at-sea electronic maintenance capability, or a combination of these, as may be approved by the Administration. 7 On ships engaged on voyages in sea areas A3 ~~and~~ or A4, the availability shall be ensured by using a combination of at least two methods such as duplication of equipment, shore-based maintenance or at-sea electronic maintenance capability, as may be approved by the Administration, taking into account the recommendations of the Organization [25].	Correction Correction
8 While all reasonable steps shall be taken to maintain the equipment in efficient working order to ensure compliance with all the functional requirements specified in regulation 4, malfunction of the equipment for providing the ~~general radio~~ other communications required by regulation 4.~~8~~3 shall not be considered as making a ship unseaworthy or as a reason for delaying the ship in ports where repair facilities are not readily available, provided the ship is capable of performing all distress and safety functions.	Consequential change resulting from new regulation 4.

[24] Refer to the Recommendation on general requirements for shipborne radio equipment forming part of the global maritime distress and safety system and for electronic navigational aids, adopted by the Organization by resolution A.694(17), and to resolution A.813(19) on general requirements for electromagnetic compatibility (EMC) for all electrical and electronic ship's equipment and to MSC/Circ.862: Clarifications of certain requirements in IMO performance standards for GMDSS equipment.

[25] Refer to resolution A.702(17) concerning radio maintenance guidelines for the global maritime distress and safety system related to sea areas A3 and A4.

TEXT	Comment
9 Satellite EPIRBs shall be: .1 annually tested for all aspects of operational efficiency, with special emphasis on checking the emission on operational frequencies, coding and registration, at intervals as specified below: .1.1 on passenger ships, within 3 months before the expiry date of the Passenger Ship Safety Certificate; and .1.2 on cargo ships, within 3 months before the expiry date, or 3 months before or after the anniversary date, of the Cargo Ship Safety Radio Certificate. The test may be conducted on board the ship[26] or at an approved testing station; and .2 subject to maintenance at intervals not exceeding [five years] [the manufacturer's battery expiration date], to be performed at an approved shore-based maintenance facility.	Consider relating shore-based maintenance to battery expiration – sometimes longer than five years.
Regulation16 *Radio personnel* 1 Every ship shall carry personnel qualified for distress and safety radiocommunication purposes to the satisfaction of the Administration [27]. The personnel shall be holders of certificates specified in the Radio Regulations as appropriate, any one of whom shall be designated to have primary responsibility for radiocommunications during distress incidents. 2 In passenger ships, at least one person qualified in accordance with paragraph 1 shall be assigned to perform only radiocommunication duties during distress incidents.	

[26] Guidelines on the annual testing of 406 MHz satellite EPIRBs are given in MSC/Circ.882. Guidance for avoidance of false distress alerts are given in resolution A.814(19).

[27] Refer to STCW Code, chapter IV, section B-IV/2.

TEXT	Comment
Regulation 17 *Radio records* A record shall be kept, to the satisfaction of the Administration and as required by the Radio Regulations, of all incidents connected with the radiocommunication service which appear to be of importance to safety of life at sea.	
Regulation 18 *Position-updating* All two-way communication equipment carried on board a ship to which this chapter applies which is capable of automatically including the ship's position in the distress alert shall be automatically provided with this information from an internal or external navigation receiver[28], ~~if either is installed. If such a receiver is not installed, the ship's position and the time at which the position was determined shall be manually updated at intervals not exceeding 4 h, while the ship is underway, so that it is always ready for transmission by the equipment.~~	It is requirement of SOLAS V/19.2.1.6 for the ship to carry the navigation receiver so this text is no longer required.

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28 Requirements for automatic update of the ship's position are given in resolution MSC.68(68)

ANNEX 2

PRELIMINARY LIST OF IMO INSTRUMENTS TO BE REVIEWED FOR GMDSS MODERNIZATION

2014		
GMDSS.1/Circ.16	GMDSS Master Plan	
COMSAR.1/Circ.51/Rev.5	List of NAVAREA coordinators	
2013	Title	Notes
MSC.1/Circ.1460	Guidance on the validity of radiocommunications equipment installed and used on ships	
MSC.1/Circ.1287/Rev.1	Promulgation of maritime safety information	
COMSAR.1/Circ.53/Rev.2	List of land earth stations (LES) operation coordinators in the Inmarsat system	
2012		
Res. MSC.347(91)	Recommendation for the protection of the AIS VHF data link	
MSC.1/Circ.1414	Guidance to prospective GMDSS satellite service providers	
MSC/Circ.1040/Rev.1	Guidelines on annual testing of 406 MHz satellite EPIRBs	
COMSAR.1/Circ.50/Rev.3	Distress priority communications for RCC from shore-to-ship via Inmarsat	
2011		
MSC.1/Circ.1403	Revised NAVTEX manual	
2010		
Res. MSC.306(87)	Revised performance standards for Enhanced Group Call (EGC) equipment	
MSC.1/Circ.1389	Guidance on procedures for updating shipborne navigation and communication equipment	
MSC.1/Circ.1364	Revised International SafetyNet Manual	
2009		
Res.A.1021(26)	Code on alerts and indicators	
COMSAR.1/Circ.45	Guidance on distress alerts	
2007		
Res. A.1001(25)	Criteria for the provision of mobile satellite communication systems in the global maritime distress and safety system (GMDSS)	

Res. MSC.246(83)	Adoption of performance standards for survival craft AIS search and rescue transmitters (AIS-SART) for use in search and rescue operations	
COMSAR.1/Circ.41	Analysis of MSI promulgated via the EGC SafetyNet system and recommendations on improving its quality	
2005		
Res.MSC.199(80)	Adoption of amendments to provision of radio services for the Global Martime Distress and Safety System (GMDSS)	
COMSAR.1/Circ.36	Broadcast of warnings for tsunamis and other natural disasters	
COMSAR/Circ.37	Guidance on minimum communication needs of Maritime Rescue Co-ordination Centres (MRCCs)	
2004		
COMSAR/Circ.32	Harmonization of GMDSS requirements for radio installations on board SOLAS ships	
COMSAR/Circ.34	Clarification in the use of NAVTEX B3B4 characters = 00 and NAVTEX service areas	
COMSAR/Circ.35	Recommendations on medium frequency/high frequency (MF/HF) digital selective calling (DSC) test calls to coast stations	
2003		
Res. A.954(23)	Proper use of VHF channels at sea	
Res. MSC.149(77)	Adoption of the revised performance standards for survival craft portable two-way VHF radiotelephone apparatus	
Res. MSC.148(77)	Adoption of the revised performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)	

2002		
Res. MSC.131(75)	Maintenance of a continuous listening watch on VHF channel 16 by SOLAS ships whilst at sea and installation of VHF DSC facilities on non-SOLAS ships	Revoke (Note that the resolution encourages use of VHF DSC. A new resolution may be needed to contain the elements that are still relevant and of importance)
Res. MSC.130(75)	Performance standards for Inmarsat ship earth stations capable of two-way communications	
MSC/Circ.1038	Guidelines for general radiocommunications	Requires revision
MSC/Circ.1039	Guidelines for shore-based maintenance of satellite EPIRBs	
COMSAR/Circ.29	Guidance on the voluntary use of the standardized questionnaires and formats for reporting false alert in collecting data on false alerts	
2001		
COMSAR.1/Circ.28	International NAVTEX service	
COMSAR.1/Circ.25	Procedure for responding to DSC distress alerts by ships	
1999		
Res A.887(21)	Establishment, updating and retrieval of the information contained in the registration databases for the GMDSS	
1998		
Res. MSC.80(70), Annex 1	Recommendation on performance standards for on-scene (aeronautical) portable two-way VHF radiotelephone apparatus	
Res. MSC.80(70), Annex 2	Recommendation on performance standards for on-scene (aeronautical) two-way VHF radiotelephone apparatus for fixed installations	
MSC/Circ.862	Clarifications of certain requirements in IMO performance standards for GMDSS equipment	
MSC/Circ.883	Maritime safety and Inmarsat ship earth station barring procedures	
COMSAR/Circ.13	Shore-to-ship communications during a distress	
COMSAR/Circ.15	Joint IMO/IHO/WMO manual on MSI	

COMSAR/Circ.17	Recommendation on use of GMDSS equipment for non-safety communications	
1997		
MSC/Circ.803	Participation of non-SOLAS ships in the GMDSS	Should be reviewed (reference to 2182 kHz alarm signal which has been removed in COLREG by Res. A.1004(25)/Rev.1).
1995		
Res. A.814(19)	Guidelines for the avoidance of false distress alerts	
Res. A.813(19)	General requirements for the electromagnetic compatibility (EMC) for all electrical and electronic ship's equipment	
Res. A.811(19)	Performance standards for a shipborne integrated radiocommunication system (IRCS) when used in the GMDSS	(Note current IEC project on IRCS)
Res. A.802(19) as amended by MSC.247(83) Res. A.801(19) as amended by MSC.199(80)	Performance standards for survival craft radar transponders for use in search and rescue operations Provision of radio services for the global maritime distress and safety system, (GMDSS)	
Res. A.804(19) as amended by MSC.68(68) annex 2	Performance standards for shipborne MF radio installations capable of voice communication and digital selective calling	
Res. A.803(19) as amended by MSC.68(68) annex 1	Performance standards for shipborne VHF radio installations capable of voice communications and digital selective calling	
Res. A.805(19)	Performance standards for float-free VHF emergency position-indicating radio beacons	Revoke
Res. A.806(19) as amended by MSC.68(68) annex 3	Performance standards for shipborne MF/HF radio installations capable of voice communications and digital selective calling	
Res. A.807(19) as amended by MSC.68(68) annex 4	Performance standards for Inmarsat-C ship earth station capable of transmitting and receiving direct-printing communications	
Res. A.809(19)	Performance standards for survival craft two-way VHF radiotelephone apparatus	

Res. A.808(19)	Performance standards for ship earth stations capable of two-way communications	
Res. A.810(19) as amended by MSC.56(66) and MSC.120(74)	Performance standards for float-free satellite emergency position-indicating beacons operating on 406 MHz	
1994		
COM/Circ.117	Clarifications of the application of certain provisions of Chapter IV of the SOLAS Convention	
1993		
Res. A.763(18) as amended by Res. A.810 (19) as amended by MSC.56(66), 120(74)	Performance standards for float-free satellite emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz	No change - Does not apply to EPRIBs installed on or after 23 November 1996
Res. A.762(18) as amended by Res. A.809 (19) as revised by MSC.149(77)	Performance standards for survival craft two-way VHF radiotelephone apparatus	No change - Does not apply to VHF radiotelephone apparatus installed on or after 23 November 1996
COM/Circ.110 + Corr.1	Clarifications of SOLAS regulations IV/6.1, IV/6.2.2 and IV/10.1.1.3	
1991		
Res. A.702(17)	Radio maintenance guidelines for the global maritime distress and safety system (GMDSS) related to sea areas A3 and A4	(References to Sea Areas and Inmarsat)
Res. A.703(17)	Training of radio personnel in the GMDSS	
Res. A.700(17)	Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (MSI) by HF	
Res. A.699(17)	System performance standard for the promulgation and co-ordination of maritime safety information using high-frequency narrow-band direct-printing	
Res. A.698(17) as amended by Res. A.808(19) and MSC.149(77)	Performance standards for ship earth stations capable of two-way communications	No change - Does not apply to stations installed on or after 23 November 1996

Res. A.696(17)	Type approval of satellite emergency position-indicating radio beacons (EPIRBs) operating in the COSPAS-SARSAT system	
Res. A.694(17)	General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids	
COM/Circ.105 + Corr.1	Clarification of certain provisions of the 1998 SOLAS amendments for the GMDSS	
1989		
Res. A.663(16) as amended by Res. A.807(19) and MSC.68(68)	Performance standards for INMARSAT Standard-C ship earth stations capable of transmitting and receiving direct-printing communications	No change - Does not apply to stations installed on or after 23 November 1996
Res. A.662(16)	Performance standards for float-free release and activation arrangements for emergency radio equipment	
1987		
Res. A.617(15)	Implementation of the NAVTEX system as a component of the world-wide navigational warning service	
Res. A.616(15)	Search and rescue homing capability	
Res. A.614(15)	Carriage of radar operating in the frequency band 9,300-9,500 Mhz	
Res. A.613(15) as amended by Res. A.806(19) and MSC.68(68)	Performance standards for shipborne MF/HF radio installations capable of voice communication, narrow-band direct-printing and digital selective calling	No change - Does not apply to equipment installed on or after 23 November 1996
Res. A.612(15) as amended by Res. A.805(19)	Performance standards for float-free VHF emergency position-indicating radio beacons	Revoke
Res. A.610(15) as amended by Res. A.804(19) and MSC.68(68)	Performance standards for shipborne MF radio installations capable of voice communication and digital selective calling	No change - Does not apply to equipment installed on or after 23 November 1996
Res. A.609(15) as amended by Res. A.803(19) and MSC.68(68)	Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling	No change - Does not apply to equipment installed on or after 23 November 1996

1985		
Res. A.570(14)	Type approval of ship earth stations	
1983		
Res. A.530(13)	Use of radar transponders for search and rescue purposes	
Res. A.525(13)	Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships	No change - Does not apply to equipment installed on or after 1 July 2005
1975		
Res.A.343(IX)	Recommendation on methods of measuring noise levels at listening posts	