

MARITIME SAFETY COMMITTEE
104th session
Agenda item 18

MSC 104/18/Add.2
1 November 2021
Original: ENGLISH

**REPORT OF THE MARITIME SAFETY COMMITTEE
ON ITS 104TH SESSION**

Attached are annexes 6 to 29 to the report of the Maritime Safety Committee on its 104th session (MSC 104/18). Annexes 1 to 5 and 30 to 42 are set out in document MSC 104/18/Add.1.

LIST OF ANNEXES

- ANNEX 6 DRAFT AMENDMENTS TO SOLAS CHAPTERS II-1, III, IV AND V, AND THE APPENDIX (CERTIFICATES)
- ANNEX 7 DRAFT AMENDMENTS TO THE 1988 SOLAS PROTOCOL
- ANNEX 8 DRAFT AMENDMENTS TO THE 1994 HSC CODE
- ANNEX 9 DRAFT AMENDMENTS TO THE 2000 HSC CODE
- ANNEX 10 DRAFT MSC RESOLUTION ON AMENDMENTS TO THE CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 1983 (1983 SPS CODE)
- ANNEX 11 DRAFT MSC RESOLUTION ON AMENDMENTS TO THE CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 2008 (2008 SPS CODE)
- ANNEX 12 DRAFT MSC RESOLUTION ON AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF MOBILE OFFSHORE DRILLING UNITS, 1979 (1979 MODU CODE)
- ANNEX 13 DRAFT MSC RESOLUTION ON AMENDMENTS TO CODE FOR THE CONSTRUCTION AND EQUIPMENT OF MOBILE OFFSHORE DRILLING UNITS, 1989 (1989 MODU CODE)
- ANNEX 14 DRAFT MSC RESOLUTION ON AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF MOBILE OFFSHORE DRILLING UNITS, 2009 (2009 MODU CODE)
- ANNEX 15 DRAFT MSC RESOLUTION ON SYSTEM PERFORMANCE STANDARD FOR THE PROMULGATION AND COORDINATION OF MARITIME SAFETY INFORMATION USING HIGH-FREQUENCY NARROW-BAND DIRECT-PRINTING
- ANNEX 16 DRAFT MSC RESOLUTION ON PERFORMANCE STANDARDS FOR THE RECEPTION OF MARITIME SAFETY INFORMATION AND SEARCH AND RESCUE RELATED INFORMATION BY MF (NAVTEX) AND HF
- ANNEX 17 DRAFT MSC RESOLUTION ON PROVISION OF RADIO SERVICES FOR THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
- ANNEX 18 DRAFT MSC RESOLUTION ON PERFORMANCE STANDARDS FOR SEARCH AND RESCUE RADAR TRANSPONDERS
- ANNEX 19 DRAFT MSC RESOLUTION ON PERFORMANCE STANDARDS FOR SHIPBORNE VHF RADIO INSTALLATIONS CAPABLE OF VOICE COMMUNICATION AND DIGITAL SELECTIVE CALLING
- ANNEX 20 DRAFT MSC RESOLUTION ON PERFORMANCE STANDARDS FOR SHIPBORNE MF AND MF/HF RADIO INSTALLATIONS CAPABLE OF VOICE COMMUNICATION, DIGITAL SELECTIVE CALLING AND RECEPTION OF MARITIME SAFETY INFORMATION AND SEARCH AND RESCUE RELATED INFORMATION

-
- ANNEX 21 DRAFT MSC RESOLUTION ON PERFORMANCE STANDARDS FOR INMARSAT-C SHIP EARTH STATIONS CAPABLE OF TRANSMITTING AND RECEIVING DIRECT-PRINTING COMMUNICATIONS
- ANNEX 22 DRAFT MSC RESOLUTION ON GUIDELINES FOR THE AVOIDANCE OF FALSE DISTRESS ALERTS
- ANNEX 23 DRAFT MSC RESOLUTION ON PERFORMANCE STANDARDS FOR SURVIVAL CRAFT PORTABLE TWO-WAY VHF RADIOTELEPHONE APPARATUS
- ANNEX 24 DRAFT MSC RESOLUTION ON AMENDMENTS TO THE PERFORMANCE STANDARDS FOR RADIOCOMMUNICATION EQUIPMENT (RESOLUTION MSC.80(70))
- ANNEX 25 DRAFT MSC RESOLUTION ON PERFORMANCE STANDARDS FOR A SHIPBORNE INTEGRATED COMMUNICATION SYSTEM (ICS) WHEN USED IN THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
- ANNEX 26 DRAFT MSC CIRCULAR ON PARTICIPATION OF NON-SOLAS SHIPS IN THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS) AND GUIDANCE ON THE DEVELOPMENT OF TRAINING MATERIALS FOR GMDSS OPERATORS ON NON-SOLAS SHIPS
- ANNEX 27 DRAFT MSC CIRCULAR ON GUIDANCE FOR THE RECEPTION OF MARITIME SAFETY INFORMATION AND SEARCH AND RESCUE RELATED INFORMATION AS REQUIRED IN THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
- ANNEX 28 RESOLUTION MSC.493(104) – AMENDMENTS TO THE PERFORMANCE STANDARDS FOR SHIPBORNE SIMPLIFIED VOYAGE DATA RECORDERS (S-VDRs) (RESOLUTION MSC.163(78), AS AMENDED)
- ANNEX 29 RESOLUTION MSC.494(104) – AMENDMENTS TO THE PERFORMANCE STANDARDS FOR SHIPBORNE VOYAGE DATA RECORDERS (VDRs) (RESOLUTION MSC.333(90))

ANNEX 6

DRAFT AMENDMENTS TO SOLAS CHAPTERS II-1, III, IV AND V, AND THE APPENDIX (CERTIFICATES)*

CHAPTER II-1 CONSTRUCTION – STRUCTURE, SUBDIVISION AND STABILITY, MACHINERY AND ELECTRICAL INSTALLATIONS

Part D Electrical installations

Regulation 42 – Emergency source of electrical power in passenger ships

1 Paragraph 2.2.2.3 is replaced by the following:

"3 the MF/HF radio installation required by regulations ~~IV/10.2.1, IV/10.2.2 and IV/11.1.1 and IV/11.1.2.~~"

Regulation 43 – Emergency source of electrical power in cargo ships

2 Paragraph 2.3.2.3 is replaced by the following:

"3 the MF/HF radio installation required by regulations ~~IV/10.2.1, IV/10.2.2 and IV/11.1.1 and IV/11.1.2.~~"

CHAPTER III LIFE-SAVING APPLIANCES AND ARRANGEMENTS

PART B REQUIREMENTS FOR SHIPS AND LIFE-SAVING APPLIANCES

Regulation 6 – Communications

3 Paragraphs 1, 2, 2.1, 2.1.1, 2.1.2 and 2.2 are replaced by the following:

"1 [Reserved*]

2 [Reserved*]

* The provisions related to two-way VHF radiotelephone apparatus and search and rescue locating devices have been relocated under chapter IV (refer to resolution MSC.[...]). Paragraphs 1 and 2 were intentionally left blank to avoid renumbering of existing regulations."

* Deletions are indicated in "strikeout" and "grey shading", and insertions are presented in "grey shading" only. Where practical, insertions of new regulations, paragraphs or tables, or deletion of existing ones, are not indicated by tracked changes.

CHAPTER IV RADIOCOMMUNICATIONS

4 The text of chapter IV is replaced by the following:

"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 waters 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.

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.

Regulation 2 – Terms and definitions

1 For the purpose of this chapter, the following terms shall have the meanings defined below:

~~.1~~ *AIS-SART* means an automatic identification system search and rescue transmitter capable of operating on frequencies dedicated for AIS (161.975 MHz (AIS1) and 162.025 MHz (AIS2)).

~~.12~~ *Bridge-to-bridge communications* means safety radiocommunications between ships from the position from which the ships are normally navigated.

~~.23~~ *Continuous radio 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.

~~.34~~ *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 Radiocommunication Sector (ITU-R).

~~.4~~ *Direct printing telegraphy* means automated telegraphy techniques which comply with the relevant recommendations of the International Radio Consultative Committee (CCIR).

- .5 *Emergency position-indicating radio beacon (EPIRB)* means a transmitter operating in the frequency band 406.0-406.1 MHz capable of transmitting a distress alert via satellite to a rescue coordination centre and transmitting signals for on-scene locating.
- .56 *General radiocommunications* means ~~communications operational and public correspondence traffic,~~ other than distress, urgency and safety communications ~~messages, conducted by radio.~~
- .7 *Global Maritime Distress and Safety System (GMDSS)* means a system that performs the functions set out in regulation 4.1.1.
- .168 ~~*Global maritime distress and safety system (GMDSS) identities* means maritime mobile services identity, the ship's call sign, recognized mobile satellite service identities and serial number identity which may be transmitted by the ship's equipment and used to identify the ship. information which may be transmitted to uniquely identify the ship or its associated rescue boats and survival craft. These identities are the ship's call sign, Maritime Mobile Service Identity (MMSI), EPIRB hexadecimal identity, recognized mobile satellite service identities and equipment serial numbers.~~
- ~~.6 *Inmarsat* means the Organization established by the Convention on the International Maritime Satellite Organization adopted on 3 September 1976.~~
- ~~.7 *International NAVTEX service* means the coordinated broadcast and automatic reception on 518 kHz of maritime safety information by means of narrow band direct printing telegraphy using the English language. *~~
- .89 *Locating* means the finding of ships, aircraft, ~~units~~ survival craft or persons in distress.
- .910 *Maritime safety information (MSI)*² means navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships.
- .11 *Radar SART* means a search and rescue transponder operating on radar frequencies in the frequency band 9.2-9.5 GHz.
- .1412 *Radio Regulations* means the Radio Regulations ~~annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention~~ complementing the Constitution and Convention of the International Telecommunication Union which is in force at any given time.
- .1713 *Recognized mobile satellite service* means any service which operates through a satellite system and is recognized by the Organization, for use in ~~the global maritime distress and safety system (GMDSS).~~
- .1014 *Polar orbiting Satellite service on 406 MHz* means a service ~~which is based on polar orbiting satellites which receive and relay distress alerts from satellite EPIRBs and which provides their position.~~ operating through a satellite system having global availability designed to detect EPIRBs transmitting in the frequency band 406.0-406.1 MHz.

- .1215 *Sea area A1* means an area within the radiotelephone coverage of at least one very high frequency (VHF) coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government.³
- .1316 *Sea area A2* means an area, excluding sea area A1, within the radiotelephone coverage of at least one medium frequency (MF) coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government.³
- .1417 *Sea area A3* means an area, excluding sea areas A1 and A2, within the coverage of an Inmarsat geostationary satellite a recognized mobile satellite service supported by the ship earth station carried on board, in which continuous alerting is available.
- .1518 *Sea area A4* means an area outside of sea areas A1, A2 and A3.

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.

* Refer to the NAVTEX Manual.

² Refer to *Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI)* (MSC.1/Circ.1310, as revised).

³ Refer to *Provision of radio services for the Global Maritime Distress and Safety System (GMDSS)* (resolution A.801(19), as amended MSC.[...]).

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:

- .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; or
- .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 report to the Organization on, 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.⁴

⁴ Exemptions should be reported through the Organization's Global Integrated Shipping Information System (GISIS) with reference to *Issue of Exemption Certificates under the 1974 SOLAS Convention and Amendments thereto* (SLS.14/Circ.115, as amended).

Regulation 4 – Functional requirements⁵

- 1 Every ship, while at sea, shall be capable of:
 - .1 performing the GMDSS functions, which are as follows:
 - .1 ~~except as provided in regulations 8.1.1 and 10.1.4.3, of transmitting ship-to-shore distress alerts by at least two separate and independent means, each using a different radiocommunication service;~~
 - .2 ~~of receiving shore-to-ship distress alerts relays;~~
 - .3 ~~of transmitting and receiving ship-to-ship distress alerts;~~
 - .4 ~~of transmitting and receiving search and rescue coordinating communications;~~
 - .5 ~~of transmitting and receiving on-scene communications;~~
 - .6 ~~of transmitting and, as required by regulation V/19.2.3.2, receiving signals for locating^{*,6};~~
 - .7 ~~of transmitting and receiving^{**} maritime safety information receiving MSI;⁷~~
 - .8 transmitting and receiving **general urgency and safety radiocommunications** ~~to and from shore-based radio systems or networks subject to regulation 15.8; and~~
 - .9 ~~of transmitting and receiving bridge-to-bridge communications; and~~
 - .2 transmitting and receiving general radiocommunications.

⁵ It should be noted that ships performing GMDSS functions should use **Guidance Guidelines for the avoidance of false distress alerts** (resolution ~~A.814(19)~~ MSC.[...]).

^{*} Refer to ~~Carriage of radar operating in the frequency band 9,300–9,500 MHz (resolution A.614(15))~~

⁶ Refer also to regulations V/19.2.3.2 and V/19.2.4, as appropriate.

^{** 7} It should be noted that ships may have a need for reception of certain maritime safety information while in port.

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 **recognized mobile satellite communication** services in the **Global Maritime Distress and Safety System (GMDSS)** pursuant to the provisions of this chapter.⁸

⁸ Refer to *Criteria for the provision of mobile satellite communication systems in the Global Maritime Distress and Safety System (GMDSS)* (resolution A.1001(25)) and *Guidance to prospective GMDSS satellite service providers* (MSC.1/Circ.1414).

Part B Undertakings by Contracting Governments⁹

⁹ 1 Each Contracting Government is not required to provide all radiocommunication services.
2 Provision No Article 48.1 of the Radio Regulations applies to the operation of coast stations and coast earth stations.

Regulation 5 – Provision of radiocommunication services

1 Each Contracting Government undertakes to make available, as it deems practical and necessary, either individually or in cooperation with other Contracting Governments, appropriate shore-based facilities for ~~space and terrestrial radiocommunication services~~ the mobile satellite service and maritime mobile service having due regard to the recommendations of the Organization.¹⁰ These services are:

- .1 ~~a radiocommunication recognized mobile satellite services utilizing geostationary satellites in the maritime mobile satellite service;~~
- .2 ~~a radiocommunication service utilizing polar orbiting satellites in the mobile satellite service on 406 MHz;~~
- .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 kHz¹¹ 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 mobile satellite service and maritime mobile service, ~~mobile satellite service and maritime mobile satellite service~~, established for sea areas which it has designated off its coasts.¹² Each Contracting Government also undertakes to provide the Organization with timely and adequate notice prior to the planned withdrawal of any of these services or any particular shore-based facilities.

¹⁰ Refer to *Provision of radio services for the Global Maritime Distress and Safety System (GMDSS)* (resolution ~~A.801(19)~~, as amended MSC.[...]).

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

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. Information communicated by Contracting Governments is made available through GISIS.~~

Regulation 5-1 – ~~Global maritime distress and safety system~~ GMDSS 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 coordination centres on a 24-hour basis. Where appropriate, international organizations maintaining a registry of these identities, such as the ITU Maritime Mobile Access and Retrieval System ~~database~~ (MARS), shall be notified by the Contracting Government of these ~~identity~~ 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 ~~located in a such a way so located~~ that no harmful interference of mechanical, electrical or other origin affects its proper use, and ~~so as to ensure that~~ electromagnetic compatibility is ensured and ~~avoidance of harmful interaction avoided~~ with other equipment and systems;
- .2 be so located as to ensure the greatest possible degree of safety and operational availability;
- .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~~ GMDSS identities, as applicable, for ~~the use by of~~ the radio installation operator.

3 Control of the VHF radiotelephone channels, required for navigational safety, shall be immediately available on the navigation bridge convenient to the conning position and, where necessary, facilities should be available to permit radiocommunications from the wings of the navigation 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, ~~which shall:~~

- .1 ~~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;
- .2 ~~The panel shall~~ clearly and visually indicate whenever any button or buttons have been pressed; ~~and~~
- .3 ~~Means shall~~ be provided with means to prevent inadvertent activation of the button or buttons referred to in paragraphs 4.1 and 4.2.

5 In passenger ships, if an ~~If the satellite~~ EPIRB is used as the secondary means of distress alerting and is not remotely activated from the distress panel, it shall be acceptable to have an additional EPIRB installed in the wheelhouse near the conning position.

~~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.~~

6 In passenger ships, a distress alarm panel shall be installed at the conning position, which:

- .1 ~~The distress alarm panel~~ shall provide visual and aural indication of any distress alert or alerts received on board; ~~and~~
- .2 shall ~~also~~ indicate through which radiocommunication service the distress alerts have been received; ~~and~~
- .3 may be combined with the distress panel.

Regulation 7 – Radio equipment: General

1 Every ship shall be provided with:

- .1 a VHF radio installation capable of transmitting and receiving, for distress, urgency and safety communications purposes:
 - ~~.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; and
 - ~~.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 ~~sub-paragraph 1.1; *~~
- .3 ~~a search and rescue locating device capable of operating either in the 9 GHz band or on frequencies dedicated for AIS~~ a radar SART or an AIS-SART, 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 paragraphs 2.1 or 3.1;
- ~~.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;
- ~~.5~~ a radio facility for reception of maritime safety information by a recognized mobile satellite service enhanced group calling system if the ship is engaged in voyages in sea area A1, or A2 or A3 but in which an international NAVTEX service is not provided. However, ships engaged exclusively in 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. **
- .4 receiver(s) capable of receiving MSI and search and rescue related information throughout the entire voyage in which the ship is engaged;¹³
- ~~.65~~ subject to the provisions of regulation 8.3, a satellite emergency position-indicating radio beacon (satellite an EPIRB)¹⁴ which shall be:
- ~~6.1~~ capable of transmitting a distress alert through the polar orbiting satellite service operating in the 406 MHz band;
- ~~6.2.1~~ installed in an easily accessible position;
- ~~6.3.2~~ ready to be manually released and capable of being carried by one person into a survival craft;
- ~~6.4.3~~ capable of floating free if the ship sinks and of being automatically activated when afloat; and
- ~~6.5.4~~ capable of being activated manually; and
- .6 a radio installation capable of transmitting and receiving general radiocommunications operating on working frequencies in the band between 156 MHz and 174 MHz. This requirement may be fulfilled by the addition of this capability in the equipment required by paragraph 1.1.
- 2 Every cargo ship of 300 gross tonnage and upwards but less than 500 gross tonnage shall be provided with at least:
- .1 one radar SART or AIS-SART; and
- .2 two two-way VHF radiotelephone apparatuses.
- 3 Every passenger ship and every cargo ship of 500 gross tonnage and upwards shall be provided with at least:
- .1 one radar SART or AIS-SART on each side of the ship; and
- .2 three two-way VHF radiotelephone apparatuses.

4 The two-way VHF radiotelephone apparatuses required by paragraphs 2.2 and 3.2 may be portable or fitted in survival craft. The portable apparatus may be stored on the bridge.

5 The radar SARTs or AIS-SARTs required by paragraphs 2.1 or 3.1 shall be stowed in such locations that they can be rapidly placed in any survival craft other than a liferaft required by regulation III/31.1.4. Alternatively, one radar SART or AIS-SART shall be stowed in each survival craft other than a liferaft required by regulation III/31.1.4. On ships carrying at least two radar SARTs or AIS-SARTs and equipped with free-fall lifeboats, one of the radar SARTs or AIS-SARTs shall be stowed in a free-fall lifeboat and the other shall be 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, other than a liferaft required by regulation III/31.1.4.

26 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. These means may be portable.

* ~~Certain ships may be exempted from this requirement (see regulation IV/9.4)~~

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

13 ~~Refer to Guidance for reception of maritime safety information and search and rescue related information as required in the Global Maritime Distress and Safety System (GMDSS) (MSC.1/Circ.[...]).~~

14 ~~Refer to Search and rescue homing capability (resolution A.616(15))~~

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~~

~~.21 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~~

~~.32 if the ship is engaged on voyages within coverage of MF coast stations equipped with DSC, on MF using DSC; or~~

~~.43 on high frequency (HF) using DSC; or~~

~~.54 through a recognized mobile satellite service ship earth station.; this requirement may be fulfilled by:~~

~~.5.1 a ship earth station* ; 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 requirement in paragraph 1.1 may be fulfilled by installing:

- .1 the EPIRB required by regulation 7.1.5 close to the position from which the ship is normally navigated, but in a location whereby it can still float free of the ship in an emergency; or
- .2 the EPIRB required by regulation 7.1.5 elsewhere on the ship, provided that this EPIRB has a means of remote activation which is installed near the position from which the ship is normally navigated; or
- .3 a second EPIRB near 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 radiocommunications using radiotelephony.~~

~~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:~~

- ~~.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;~~
- ~~.2 installed in an easily accessible position;~~
- ~~.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.~~

~~* This requirement can be met by recognized mobile satellite service ship earth stations capable of two way communications, such as Fleet 77 (resolutions A.808(19) and MSC.130(75)) or Inmarsat-C (resolution A.807(19), as amended) ship earth stations. Unless otherwise specified, this footnote applies to all requirements for a recognized mobile satellite service ship earth station prescribed by this chapter.~~

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 transmitting and receiving, for distress, urgency and safety communications purposes, on the frequencies:
 - ~~.1~~ 2 187.5 kHz using DSC; and
 - ~~.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 ~~sub-paragraph 1.1~~; and
- .3 a secondary 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 a recognized mobile satellite service ~~by a~~ ship earth station.

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.

3 The requirement in paragraph 1.3.1 may be fulfilled by installing:

- .1 the EPIRB required by regulation 7.1.5 close to the position from which the ship is normally navigated, but in a location whereby it can still float free of the ship in an emergency; or
- .2 the EPIRB required by regulation 7.1.5 elsewhere on the ship, provided that this EPIRB has a means of remote activation which is installed near the position from which the ship is normally navigated; or
- .3 a second EPIRB near the position from which the ship is normally navigated.

~~3.4~~ The ship shall, in addition, be capable of transmitting and receiving general radiocommunications ~~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 recognized mobile satellite service ship earth station.

~~4~~ ~~The Administration may exempt ships constructed before 1 February 1997, which are engaged exclusively on voyages within sea area A2, from the requirements of regulations 7.1.1 and 7.1.2 provided such ships maintain, when practicable, a continuous listening watch on VHF channel 16. This watch shall be kept at the position from which the ship is normally navigated~~

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 recognized mobile satellite service ship earth station capable of:
 - ~~.1.1~~ transmitting and receiving distress, urgency and safety communications ~~using direct printing telegraphy;~~
 - ~~.1.2~~ initiating and receiving distress priority calls; and
 - ~~.1.3~~ maintaining watch for shore-to-ship distress alerts ~~relays~~, including those directed to specifically defined geographical areas;
 - ~~.1.4~~ ~~transmitting and receiving general radiocommunications, using either radiotelephony or direct printing telegraphy; and~~
- .2 an MF radio installation capable of transmitting and receiving, for distress, urgency and safety communications 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 ~~sub-paragraph .2.1 1.2;~~ and
- .4 a secondary 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 any recognized mobile satellite service ~~by~~ on an additional ship earth station.

~~2~~ 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 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 sub-paragraph .1; and~~

~~.3 means of initiating the transmission of ship-to-shore distress alerts by a radiocommunication 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 a recognized mobile satellite service by a ship earth station; and~~

~~.4 in addition, ships shall be capable of transmitting and receiving general radiocommunications using radiotelephony or direct printing telegraphy by an MF/HF radio installation operating on working frequencies in the bands between 1 605 kHz and 4 000 kHz and between 4 000 kHz and 27 500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by sub-paragraph .1.~~

32 It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs 1.1, 1.2, and 1.4, ~~2.1 and 2.3~~ from the position from which the ship is normally navigated.

3 The requirement in paragraph 1.4.1 may be fulfilled by installing:

.1 the EPIRB required by regulation 7.1.5 close to the position from which the ship is normally navigated, but in a location whereby it can still float free of the ship in an emergency; or

.2 the EPIRB required by regulation 7.1.5 elsewhere on the ship, provided that this EPIRB has a means of remote activation which is installed near the position from which the ship is normally navigated; or

.3 a second EPIRB near the position from which the ship is normally navigated.

~~4 The Administration may exempt ships constructed before 1 February 1997, and engaged exclusively on voyages within sea areas A2 and A3, from the requirements of regulations 7.1.1.1 and 7.1.2 provided such ships maintain, when practicable, a continuous listening watch on VHF channel 16. This watch shall be kept at the position from which the ship is normally navigated.~~

4 The ship shall, in addition, be capable of transmitting and receiving general radiocommunications by either:

.1 a recognized mobile satellite service ship earth station; or

.2 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.

5 The requirements in paragraphs 4.1 and 4.2 may be fulfilled by the addition of this capability in the equipment required by paragraph 1.1 or 1.2, respectively.

Regulation 11 – Radio equipment: Sea areas A1, A2, A3 and A4

1 In addition to meeting the requirements of regulation 7, every ship engaged on voyages within sea area A4 shall be provided with: ~~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 always be provided. In addition, ships engaged on voyages in all sea areas shall comply with the requirements of regulation 10.3.~~

- .1 an MF/HF radio installation capable of transmitting and receiving, for distress, urgency and safety communications purposes, on all distress, urgency and safety frequencies in the bands between 1 605 kHz and 4 000 kHz and between 4 000 kHz and 27 500 kHz:
 - .1 using DSC; and
 - .2 using radiotelephony;
- .2 equipment capable of maintaining DSC watch on 2 187.5 kHz, 8 414.5 kHz and on at least one of the DSC frequencies 4 207.5 kHz, 6 312 kHz, 12 577 kHz or 16 804.5 kHz; it shall be possible at any time to select any of these DSC frequencies for distress, urgency and safety communications purposes. This equipment may be separate from, or combined with, the equipment required by paragraph 1.1; and
- .3 a secondary means of initiating the transmission of ship-to-shore distress alerts by a radiocommunication service other than HF operating through the satellite service on 406 MHz.

2 The ship shall, in addition, be capable of transmitting and receiving general radiocommunications by a radio installation operating on working frequencies in the bands between 1 605 kHz and 4 000 kHz and 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.

3 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.

4 The requirement in paragraph 1.3 may be fulfilled by installing:

- .1 the EPIRB required by regulation 7.1.5 close to the position from which the ship is normally navigated, but in a location whereby it can still float free of the ship in an emergency; or
- .2 the EPIRB required by regulation 7.1.5 elsewhere on the ship, provided that this EPIRB has a means of remote activation which is installed near the position from which the ship is normally navigated; or
- .3 a second EPIRB near the position from which the ship is normally navigated.

~~2 The Administration may exempt ships constructed before 1 February 1997, and engaged exclusively on voyages within sea areas A2, A3 and A4, from the requirements of regulations 7.1.1.1 and 7.1.2 provided such ships maintain, when practicable, a continuous listening watch on VHF channel 16. This watch shall be kept at the position from which the ship is normally navigated.~~

Regulation 12 – Watches

1 Every ship, while at sea, shall maintain a continuous radio watch for distress, urgency and safety communications purposes:

- .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 9.1.1.2 or 10.1.23, 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 11.1.2, is fitted with an MF/HF radio installation. This watch may be kept by means of a scanning receiver; and
- .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 recognized mobile satellite service ship earth station.

2 Every ship, while at sea, shall maintain a radio watch for broadcasts of maritime safety information MSI and search and rescue related 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^{*}, 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, on:

- .1 VHF channel 16; and
- .2 other appropriate frequencies for urgency and safety communications for the area in which the ship is navigating.

^{*} Refer to Maintenance of a continuous listening watch on VHF channel 16 by SOLAS ships whilst at sea after 1 February 1999 and installation of VHF DSC facilities on non-SOLAS ships (resolution MSC.131(75)).

Regulation 13 – Sources of energy

1 There shall be available at all times, while the ship is at sea, a supply of electrical energy shall be available at all times 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.

2 A reserve source or sources of energy shall be provided on every ship, to supply radio installations, for the purpose of conducting distress, urgency 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

or 10.1.2, the MF/HF radio installation required by regulation 10.2.1 or 11.1.1, or the 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 one hour 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 six hours 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.¹⁵

The reserve source or sources of energy need not supply independent HF and MF radio installations at the same time.

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.

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 hours; and
- .2 the capacity of the battery or batteries shall be checked, using an appropriate method,¹⁶ 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 source of 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 in 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.

¹⁵ 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.

¹⁶ 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.

Regulation 14 – Performance standards

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.¹⁷

¹⁷ Refer to the following resolutions adopted by the Organization:

General requirements

- .1 *General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids* (resolution A.694(17));
- .2 *Performance standards for the presentation of navigation-related information on shipborne navigational displays* (resolution MSC.191(79), as amended);
- .3 *Performance standards for bridge alert management* (resolution MSC.302(87));

VHF equipment

- .4 *Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling* (resolution MSC.[...]); ~~and resolution MSC.68(68), annex 1 (valid for equipment installed on or after 1 January 2000);~~
- .5 *Performance standards for survival craft portable two-way VHF radiotelephone apparatus* (resolution MSC.[...]);
- .6 *Recommendation on Performance standards for on-scene (aeronautical) portable two-way VHF radiotelephone apparatus* (annex 1 to resolution MSC.80(70), as amended ~~annex 1~~);

MF and HF equipment

- .7 *System performance standard for the promulgation and coordination of maritime safety information using high-frequency narrow-band direct-printing* (resolution MSC [...]);
- .8 *Performance standards for shipborne MF and MF/HF radio installations capable of voice communication, digital selective calling and reception of maritime safety information and search and rescue related information* (resolution MSC.[...]);
- .9 *Performance standards for the reception of maritime safety information and search and rescue related information by MF (NAVTEX) and HF* (resolution MSC.[...]);
- .1 ~~*Performance standards for narrow band direct printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships* (resolution A.525(13), as revised);~~

- ~~5~~ ~~Performance standards for shipborne MF radio installations capable of voice communication and digital selective calling (resolution A.804(19), as amended) and resolution MSC.68(68), annex 2 (valid for equipment installed on or after 1 January 2000);~~
- ~~6~~ ~~Performance standards for shipborne MF/HF radio installations capable of voice communication, narrow-band direct printing and digital selective calling (resolution A.806(19), as amended) and resolution MSC.68(68), annex 3 (valid for equipment installed on or after 1 January 2000);~~
- ~~14~~ ~~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) (resolution MSC.148(77));~~

Ship earth stations and enhanced group call (EGC) equipment

- ~~10~~ ~~Performance standards for Inmarsat-C ship earth stations capable of transmitting and receiving direct-printing communications (resolution MSC.[...]) and resolution MSC.68(68), annex 3 (valid for equipment installed on or after 1 January 2000) and Type approval of ship earth stations (resolution A.570(14));~~
- ~~11~~ ~~Revised performance standards for enhanced group call (EGC) equipment (resolution MSC.306(87), as amended);~~
- ~~12~~ ~~Performance standards for a ship earth station for use in the GMDSS (resolution MSC.434(98));~~
- ~~3~~ ~~Performance standards for ship earth stations capable of two-way communications (resolution A.808(19), as revised) and Type approval of ship earth stations (resolution A.570(14)) and Performance standards for Inmarsat ship earth stations capable of two-way communications (MSC.130(75));~~

Integrated radiocommunication systems

- ~~13~~ ~~Performance standards for a shipborne integrated radiocommunication system (IRCS) (ICS) when used in the Global Maritime Distress and Safety System (GMDSS) (resolution MSC.[...]);~~

Emergency position-indicating radio beacons

- ~~14~~ ~~Recommendation on performance standards for float-free release and activation arrangements for emergency radio equipment (resolution A.662(16));~~
- ~~15~~ ~~Performance standards for float-free emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz (resolution MSC.471(101));~~
- ~~7~~ ~~Performance standards for float free satellite emergency position indicating radio beacons (EPIRBs) operating on 406 MHz (resolution A.810(19), as amended) and Adoption of amendments to performance standards for float free satellite emergency position indicating radio beacons (EPIRBs) operating on 406 MHz (resolution A.810(19)) (MSC.120(74)) and Type approval of satellite emergency position indicating radio beacons (EPIRBs) operating in the COSPAS SARSAT system (resolution A.696(17));~~

Search and rescue transmitters and transponders

- ~~16~~ ~~Performance standards for survival craft radar transponders for use in search and rescue radar transponders operations (resolution MSC.[...]); and~~
- ~~17~~ ~~Performance standards for survival craft AIS search and rescue transmitters (AIS-SART) for use in search and rescue operations (resolution MSC.246(83)).~~
- ~~9~~ ~~Performance standards for float free VHF emergency position indicating radio beacons (resolution A.805(19)).~~

Regulation 15 – Maintenance requirements

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 onboard 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.¹⁸

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.*~~

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 radiocommunications required by regulation 4.1.82 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, urgency and safety functions.

9 ~~Satellite~~ EPIRBs shall be:

.1 annually tested, either on board the ship¹⁹ or at an approved testing station, 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 on passenger ships, within three months before the expiry date of the Passenger Ship Safety Certificate; and

.2 on cargo ships, within three months before the expiry date, or within three months before or after the anniversary date, of the Cargo Ship Safety Radio Certificate; and

~~The test may be conducted on board the ship or at an approved testing station; and~~

.2 subject to maintenance at intervals not exceeding five years, to be performed at an approved shore-based maintenance facility.²⁰

¹⁸ Refer to ~~Recommendation on general~~ General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids (resolution A.694(17)), General requirements for electromagnetic compatibility (EMC) for all electrical and electronic ship's equipment (resolution A.813(19)), and Clarifications of certain requirements in IMO performance standards for GMDSS equipment (MSC/Circ.862).

* Refer to Radio maintenance guidelines for the global maritime distress and safety system related to sea areas A3 and A4 (resolution A.702(17)).

¹⁹ Refer to Guidelines on annual testing of emergency position-indicating radio beacons (EPIRBs) (MSC.1/Circ.1040/Rev.2) and Guidelines for the avoidance of false distress alerts (resolution MSC.[...]).

²⁰ Refer to Guidelines for shore-based maintenance of emergency position-indicating radio beacons (EPIRBs) (MSC.1/Circ.1039/Rev.1)

Regulation 16 – Radio personnel

1 Every ship shall carry personnel qualified for distress, urgency and safety radiocommunications purposes to the satisfaction of the Administration.²¹ The personnel shall be holders of the appropriate certificates specified in the Radio Regulations; as appropriate, any one of the personnel whom shall be designated as having 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 radiocommunications duties during distress incidents.

²¹ Refer to the STCW Code, chapter IV, section B-IV/2.

Regulation 17 – Radio records

A record shall be kept on board, to the satisfaction of the Administration and as required by the Radio Regulations, of all incidents connected with the radiocommunication services which appear to be of importance to safety of life at sea.

Regulation 18 – Position-updating

1 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,²² 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 under way, so that it is always ready for transmission by the equipment.

2 In case of malfunction of the internal or external navigation receiver, the ship's position and the time at which the position was determined shall be manually updated at intervals not exceeding four hours, while the ship is under way, so that it is always ready for transmission by the equipment.

²² Requirements for automatic update of the ship's position are given in resolutions MSC.[...] and MSC.[...].

CHAPTER V SAFETY OF NAVIGATION

Regulation 5 – Meteorological services and warnings

5 The footnote under paragraph 2.2, after the word "services", is replaced by the following:

"
* Refer to regulations IV/7.1.4 and IV/7.1.5."

Regulation 19-1 – Long-range identification and tracking of ships

6 Paragraphs 4.1 and 4.2 are replaced by the following:

"4.1 Ships¹ shall be fitted with a system to automatically transmit the information specified in paragraph 5 as follows:

- .1 ships constructed on or after 31 December 2008;
- .2 ships constructed before 31 December 2008 and certified for operations:
 - .1 in sea areas A1 and A2, as defined in regulations IV/2.1.4215 and IV/2.1.4316; or
 - .2 in sea areas A1, A2 and A3, as defined in regulations IV/2.1.4215, IV/2.1.4316 and IV/2.1.4417,not later than the first survey² of the radio installation after 31 December 2008;
- .3 ships constructed before 31 December 2008 and certified for operations in sea areas A1, A2, A3 and A4, as defined in regulations IV/2.1.4215, IV/2.1.4316, IV/2.1.4417 and IV/2.1.4518, not later than the first survey² of the radio installation after 1 July 2009. However, these ships shall comply with the provisions of sub-paragraph .2 above ~~whilst~~ while they operate within sea areas A1, A2 and A3.

4.2 Ships, irrespective of the date of construction, fitted with an automatic identification system (AIS), as defined in regulation 19.2.4, and operated exclusively within sea area A1, as defined in regulation IV/2.1.4215, shall not be required to comply with the provisions of this regulation.

¹ Refer to *Guidance on the survey and certification of compliance of ships with the requirement to transmit LRIT information* (MSC.1/Circ.1307).

² Refer to *Unified interpretation of the term "first survey" referred to in SOLAS regulation* (MSC.1/Circ.1290)."

APPENDIX

CERTIFICATES

Forms of certificates

Passenger Ship Safety Certificate
Cargo Ship Safety Radio Certificate
Nuclear Passenger Ship Safety Certificate
Nuclear Cargo Ship Safety Certificate

7 In the Passenger Ship Safety Certificate, the Cargo Ship Safety Radio Certificate, the Nuclear Passenger Ship Safety Certificate and the Nuclear Cargo Ship Safety Certificate, a footnote is included under the section "Particulars of Ship", after the existing sentence "Sea areas in which ship is certified to operate (regulation IV/2)", as follows:

"
* For a ship certified to operate in sea area A3, indicate the recognized mobile satellite service in brackets."

Records of equipment

Record of Equipment for Passenger Ship Safety (Form P)
Record of Equipment for Cargo Ship Safety (Form E)
Record of Equipment for Cargo Ship Safety Radio (Form R)
Record of Equipment for Cargo Ship Safety (Form C)

8 In part 2 of the Record of Equipment for Passenger Ship Safety (Form P), items 13, 13.1, 13.1.1, 13.1.2 and 13.2 are deleted.

9 In part 2 of the Record of Equipment for Cargo Ship Safety (Form E) and of the Record of Equipment for Cargo Ship Safety (Form C), items 11, 11.1, 11.1.1, 11.1.2 and 11.2 are deleted.

10 In part 3 of the Record of Equipment for Passenger Ship Safety (Form P) and of the Record of Equipment for Cargo Ship Safety (Form C), and in part 2 of the Record of Equipment for Cargo Ship Safety Radio (Form R), item 1.3.4 is deleted and items 2, 3, 3.1, 3.2, 3.3, 4, 4.1, 5, 6, 6.1 and 6.2 are replaced by the following:

"2 Secondary means of ~~alerting~~ initiating the transmission of ship-to-shore distress alerts

3 Facilities for reception of ~~maritime safety information~~ MSI and search and rescue related information

~~3.1 NAVTEX receiver~~

~~3.2 EGC receiver~~

~~3.3 HF direct printing radiotelegraph receiver~~

4 ~~Satellite~~ EPIRB

~~4.1 COSPAS SARSAT~~

5 Two-way VHF ~~EPIRB~~ radiotelephone apparatus

5.1 Portable two-way VHF radiotelephone apparatus

5.2 Two-way VHF radiotelephone apparatus fitted in survival craft

6 ~~Ship's~~ Search and rescue locating devices

6.1 Radar search and rescue transponders (radar SART) stowed for rapid placement in survival craft

6.2 Radar search and rescue transponders (radar SART) stowed in survival craft

6.23 AIS search and rescue transmitters (AIS-SART) stowed for rapid placement in survival craft

6.4 AIS search and rescue transmitters (AIS-SART) stowed in survival craft "

ANNEX 7

DRAFT AMENDMENTS TO THE 1988 SOLAS PROTOCOL

ANNEX

**MODIFICATIONS AND ADDITIONS TO THE ANNEX TO THE INTERNATIONAL
CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974**

APPENDIX

**MODIFICATIONS AND ADDITIONS TO THE APPENDIX TO THE ANNEX TO THE
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974**

**Passenger Ship Safety Certificate
Cargo Ship Safety Certificate**

In the Passenger Ship Safety Certificate and the Cargo Ship Safety Certificate, a footnote is included under the section "Particulars of Ship", after the existing sentence "Sea areas in which ship is certified to operate (regulation IV/2)", as follows:

"
* _____
For a ship certified to operate in sea area A3, indicate the recognized mobile satellite service in brackets."

ANNEX 8

DRAFT AMENDMENTS TO THE 1994 HSC CODE*

CHAPTER 8 LIFE-SAVING APPLIANCES AND ARRANGEMENTS

- 1 Paragraphs 8.2.1, 8.2.1.1 and 8.2.1.2, are replaced by the following:

"8.2.1 [Reserved*]"

* The provisions related to two-way VHF radiotelephone apparatus and search and rescue locating devices were relocated under chapter 14 of the 2000 HSC Code (resolution MSC.97(73), as amended up to and including resolution MSC.[...]). Paragraph 8.2.1 was intentionally left blank to avoid renumbering of existing paragraphs."

CHAPTER 14 RADIOCOMMUNICATIONS

- 2 The text of chapter 14 is replaced by the following:

"Craft should be provided with radiocommunications facilities as specified in chapter 14 of the 2000 HSC Code (resolution MSC.97(73)), as amended up to and including resolution MSC.439(99)[...], that are fitted and operated in accordance with the provisions of that chapter."

ANNEX 1 FORM OF SAFETY CERTIFICATE FOR HIGH-SPEED CRAFT

Record of Equipment for High-Speed Craft Safety Certificate

- 3 In part 2 (Details of life-saving appliances), items 11, 11.1 and 11.2 are deleted.
- 4 In part 3 (Details of radio facilities), item 1.3.4 is deleted and items 2, 3, 3.1, 3.2, 3.3, 4, 4.1, 4.2, 5 and 6 are replaced by the following:

"2 Secondary means of ~~alerting~~ initiating the transmission of ship-to-shore distress alerts

3 Facilities for reception of ~~maritime safety information~~ MSI and search and rescue related information

3.1 ~~NAVTEX receiver~~

3.2 ~~EGC receiver~~

3.3 ~~HF direct-printing radiotelegraph receiver~~

4 ~~Satellite~~ EPIRB

4.1 ~~COSPAS SARSAT~~

4.2 ~~Inmarsat~~

* Deletions are indicated in "strikeout" and "grey shading", and insertions are presented in "grey shading" only. Where practical, insertions of new regulations, paragraphs or tables, or deletion of existing ones, are not indicated by tracked changes.

- 5 Two-way VHF-EPIRB radiotelephone apparatus
- 6 Ship's radar transponder Radar SART or AIS-SART"

ANNEX 9

DRAFT AMENDMENTS TO THE 2000 HSC CODE*

CHAPTER 8 LIFE-SAVING APPLIANCES AND ARRANGEMENTS

1 Paragraphs 8.2.1, 8.2.1.1 and 8.2.1.2, are replaced by the following:

"8.2.1 [Reserved*]"

* Refer to chapter 14 for provisions related to two-way VHF radiotelephone apparatus and search and rescue locating devices. Paragraph 8.2.1 was intentionally left blank to avoid renumbering of existing paragraphs."

CHAPTER 14 RADIOCOMMUNICATIONS

2 The text of chapter 14 (Radiocommunications) is replaced by the following:

"14.1 Application

14.1.1 Unless expressly provided otherwise, this chapter applies to all craft specified in 1.3.1 and 1.3.2.

14.1.2 This chapter does not apply to craft to which this Code would otherwise apply while such craft are being navigated within the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of the St. Lambert Lock at Montreal in the Province of Quebec, Canada.¹

14.1.3 No provision in this chapter shall prevent the use by any craft, survival craft or person in distress of any means at their disposal to attract attention, make known their position and obtain help.

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

14.2 Terms and definitions

14.2.1 For the purpose of this chapter, the following terms shall have the meanings defined below:

.1 *AIS-SART* means an automatic identification system search and rescue transmitter capable of operating on frequencies dedicated for AIS (161.975 MHz (AIS1) and 162.025 MHz (AIS2)).

.42 *Bridge-to-bridge communications* means safety radiocommunications between craft and ships from the position from which the craft is normally navigated.

* Deletions are indicated in "strikeout" and "grey shading", and insertions are presented in "grey shading" only. Where practical, insertions of new regulations, paragraphs or tables, or deletion of existing ones, are not indicated by tracked changes.

- ~~.23~~ *Continuous radio watch* means that the radio and listening watch concerned shall not be interrupted other than for brief intervals when the craft's receiving capability is impaired or blocked by its own communications or when the facilities are under periodical maintenance or checks.
- ~~.34~~ *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 Telecommunication Union Radiocommunication Sector (ITU-R).
- ~~.45~~ *Direct printing telegraphy* means automated telegraphy techniques which comply with the relevant recommendations of the International Telecommunication Union Radiocommunication Sector (ITU-R).
- .5 *Emergency position-indicating radio beacon (EPIRB)* means a transmitter operating in the frequency band 406.0-406.1 MHz capable of, transmitting a distress alert via satellite to a rescue coordination centre, and transmitting signals for on-scene locating.
- ~~.56~~ *General radiocommunications* means operational communications and public correspondence traffic other than distress, urgency and safety messages, conducted by radiocommunications.
- ~~.7~~ *Global Maritime Distress and Safety System (GMDSS)* means a system that performs the functions set out in paragraph 14.5.
- ~~.68~~ *Global Maritime Distress and Safety System (GMDSS) identities* means maritime mobile services identity, the craft's call sign, Inmarsat identities and serial number identity which may be transmitted by the craft's equipment and used to identify the craft. information which may be transmitted to uniquely identify the craft or its associated rescue boats and survival craft. These identities are the craft's call sign, Maritime Mobile Service Identity (MMSI), EPIRB hexadecimal identity, recognized mobile satellite service identities and equipment serial numbers.
- ~~.7~~ *Inmarsat* means the Organization established by the Convention on the International Maritime Satellite Organization (Inmarsat) adopted on 3 September 1976.
- ~~.8~~ *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.*
- .9 *Locating* means the finding of the ships, craft, aircraft, units survival craft or persons in distress.
- .10 *Maritime safety information (MSI)*² means navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships and craft.

- .11 *Radar SART* means a search and rescue transponder operating on radar frequencies in the frequency band 9.2 – 9.5 GHz.
- .12 *Radio Regulations* mean the Radio Regulations ~~annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention~~ complementing the Constitution and Convention of the International Telecommunications Union which is in force at any given time.
- .4713 *Recognized mobile satellite service* means any service which operates through a satellite system and is recognized by the Organization, for use in ~~the~~ GMDSS.
- .1114 ~~Polar orbiting~~ *Satellite service on 406 MHz* means a service operating through a satellite system having global availability designed to detect EPIRBs transmitting in the frequency band 406.0-406.1 MHz. ~~which is based on polar orbiting satellites which receive and relay distress alerts from satellite EPIRBs and which provides their position.~~
- .4315 *Sea area A1* means an area within the radiotelephone coverage of at least one very high frequency (VHF) coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government to the Convention.³
- .4416 *Sea area A2* means an area, excluding sea area A1, within the radiotelephone coverage of at least one medium frequency (MF) coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government to the Convention.³
- .4517 *Sea area A3* means an area, excluding sea areas A1 and A2, within the coverage of an ~~Inmarsat geostationary satellite~~ a recognized mobile satellite service supported by the ship earth station carried on board, in which continuous alerting is available.
- .4618 *Sea area A4* means an area outside of sea areas A1, A2 and A3.

14.2.2 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 it may be amended, shall have the meanings as defined in those Regulations and the SAR Convention.

* ~~Refer to the NAVTEX Manual approved by the Organization.~~

² Refer to *Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI)* (MSC.1/Circ.1310, as revised).

³ Refer to *Provision of radio services for the Global Maritime Distress and Safety System (GMDSS)* (resolution A.801(19), as amended MSC.[...]).

14.3 Exemptions

14.3.1 It is considered highly desirable not to deviate from the requirements of this chapter; nevertheless, the Administration, in conjunction with the base port State, may grant partial or conditional exemptions to individual craft from the requirements of 14.7 to 14.11 provided:

- .1 such craft comply with the functional requirements of 14.5; 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 and craft.

14.3.2 An exemption may be granted under 14.3.1 only:

- .1 if the conditions affecting safety are such as to render the full application of 14.7 to 14.11 unreasonable or unnecessary; or
- .2 in exceptional circumstances, for a single voyage outside the sea area or sea areas for which the craft is equipped.

14.3.3 Each Administration shall submit report to the Organization on, as soon as possible after the first of January in each year, a report showing all exemptions granted under 14.3.1 and 14.3.2 during the previous calendar year and giving the reasons for granting such exemptions.⁴

⁴ Exemptions should be reported through the Organization's Global Integrated Shipping Information System (GISIS) with reference to *Issue of Exemption Certificates under the 1974 SOLAS Convention and Amendments thereto* (SLS.14/Circ.115, as amended).

14.4 ~~Global Maritime Distress and Safety System~~ GMDSS Identities

14.4.1 This section applies to all craft on all voyages.

14.4.2 Each Administration 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 coordination centres on a 24-hour basis. Where appropriate, international organizations maintaining a registry of these identities, such as the ITU Maritime Mobile Access and Retrieval System (MARS), shall be notified by the Administration of these identity assignments.

14.5 Functional requirements⁵

14.5.1 Every craft, while at sea, shall be capable of:

- .1 performing the GMDSS functions, which are as follows:
 - .1 ~~except as provided in 14.8.1.1 and 14.10.1.4.3, of~~ transmitting ship-to-shore distress alerts by at least two separate and independent means, each using a different radiocommunication service;
 - .2 ~~of~~ receiving shore-to-ship distress alerts ~~relays~~;
 - .3 ~~of~~ transmitting and receiving ship-to-ship distress alerts;
 - .4 ~~of~~ transmitting and receiving search and rescue coordinating communications;
 - .5 ~~of~~ transmitting and receiving on-scene communications;

- .6 ~~of transmitting and, as required by 13.5~~ receiving signals for locating ~~* 6;~~
 - .7 ~~of transmitting and receiving** MSI maritime safety information;~~⁷
 - .8 ~~of transmitting and receiving general~~ urgency and safety radiocommunications ~~to and from shore-based radio systems or networks subject to 14.15.8;~~ and
 - .9 ~~of transmitting and receiving bridge-to-bridge communications;~~ and
- .2 transmitting and receiving general radiocommunications.

⁵ It should be noted that ships performing GMDSS functions should use *Guidelines for the avoidance of false distress alerts* (resolution MSC.[...]).

* ~~Refer to Carriage of radar operating in the frequency band 9,300–9,500 MHz (resolution A.614(15))~~

⁶ Refer also to 13.5 and 13.15, as appropriate.

** ⁷ It should be noted that craft may have a need for reception of certain maritime safety information while in port.

14.6 Radio installations

14.6.1 Every craft shall be provided with radio installations capable of complying with the functional requirements prescribed by 14.5 throughout its intended voyage and, unless exempted under 14.3, complying with the requirements of 14.7 and, as appropriate for the sea area or areas through which it will pass during its intended voyage, the requirements of either 14.8, 14.9, 14.10 or 14.11.

14.6.2 Every radio installation shall:

- .1 be ~~located in such a way so located~~ that no harmful interference of mechanical, electrical or other origin affects its proper use, and ~~so as to ensure~~ that electromagnetic compatibility is ensured and ~~avoidance of~~ harmful interaction avoided with other equipment and systems;
- .2 be so located as to ensure the greatest possible degree of safety and operational availability;
- .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 sources of electrical power, for the adequate illumination of the radio controls for operating the radio installation; and
- .5 be clearly marked with the ~~GMDSS identities call sign, the ship station identity and other codes,~~ as applicable, for the use of by the radio installation operator.

14.6.3 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 shall be available to permit radiocommunications from the wings of the navigating bridge. Portable VHF equipment may be used to meet the latter provision.

14.6.4 In passenger craft, a distress panel shall be installed at the conning position, which shall:

- .1 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;
- .2 The panel shall clearly and visually indicate whenever any button or buttons have been pressed; and
- .3 Means shall be provided with means to prevent inadvertent activation of the button or buttons referred to in 14.6.4.1 and 14.6.4.2.

14.6.5 In passenger craft, if an the satellite EPIRB is used as the secondary means of distress alerting and is not remotely activated from the distress panel, it shall be acceptable to have an additional EPIRB installed in the wheelhouse near the conning position.

~~14.6.5 In passenger craft, information on the craft'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.~~

14.6.6 In passenger craft, a distress alert panel shall be installed at the conning position, which:-

- .1 ~~The distress alarm panel~~ shall provide visual and aural indication of any distress alert or alerts received on board; and
- .2 shall also indicate through which radiocommunication service the distress alerts have been received; and
- .3 and may be combined with the distress panel.

14.7 Radio equipment: General

14.7.1 Every craft shall be provided with:

- .1 a VHF radio installation capable of transmitting and receiving, for distress, urgency and safety communications purposes:
 - ~~.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 craft is normally navigated; 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 14.7.1.1.1;
- .3 a radar transponder capable of operating in the 9 GHz band SART or an AIS-SART, which:
 - ~~.3.1~~ shall be so stowed that it can be easily utilized; and

- ~~3.2~~ may be one of those required by ~~8.2.1.2~~ 14.7.2.1 for a survival craft;
- .4 receiver(s) capable of receiving MSI and search and rescue related information throughout the entire voyage in which the craft is engaged;⁸ a receiver capable of receiving International NAVTEX service broadcasts if the craft is engaged on voyages in any area in which an International NAVTEX service is provided;
- ~~.5~~ a radio facility for reception of maritime safety information by the Inmarsat enhanced group calling system if the craft is engaged on voyages in any area of Inmarsat coverage but in which an International NAVTEX service is not provided. However, craft engaged exclusively on voyages in areas where a HF direct printing telegraphy maritime safety information service is provided and fitted with equipment capable of receiving such service may be exempt from this requirements;*
- .65 subject to the provisions of 14.8.3, a satellite emergency position indicating radio beacon (satellite an EPIRB)⁹ which shall be:
- ~~.6.1~~ capable of transmitting a distress alert either through the polar orbiting satellite service operating in the 406 MHz band or, if the craft is engaged only on voyages within Inmarsat coverage, through the Inmarsat geostationary satellite service operating in the 1.6 GHz band;
- ~~.6.2.1~~ installed in an easily accessible position;
- ~~.6.3.2~~ ready to be manually released and capable of being carried by one person into a survival craft;
- ~~.6.4.3~~ capable of floating free if the craft sinks and of being automatically activated when afloat; and
- ~~.6.5.4~~ capable of being activated manually; and
- .6 a radio installation capable of transmitting and receiving general radiocommunications operating on working frequencies in the band between 156 MHz and 174 MHz. This requirement may be fulfilled by the addition of this capability in the equipment required by 14.7.1.1.

14.7.2 Every passenger high-speed craft and every cargo high-speed craft of 500 gross tonnage and upwards shall be provided with at least:

- .1 one radar SART or AIS-SART on each side of the craft; and
- .2 three two-way VHF radiotelephone apparatuses.

14.7.3 The radar SARTs or AIS-SARTs required by 14.7.2.1 shall be stowed in such locations that they can be rapidly placed in any one of the liferafts. Alternatively, one radar SART or AIS-SART shall be stowed in each survival craft.

14.7.24 Every passenger craft 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 craft is normally navigated. These means may be portable.

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

⁸ ~~Refer to Guidance for reception of maritime safety information and search and rescue related information as required in the Global Maritime Distress and Safety System (GMDSS) (MSC.1/Circ.[...]).~~

⁹ Refer to Search and rescue homing capability (resolution A.616(15))

14.8 Radio equipment: sea area A1

14.8.1 In addition to meeting the requirements of 14.7, every craft 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 craft is normally navigated, operating either:

~~.1 on VHF using DSC; this requirement may be fulfilled by the EPIRB prescribed by 14.8.3, either by installing the EPIRB close to, or by remote activation from, the position from which the craft is normally navigated; or~~

~~.21 through the polar orbiting satellite service on 406 MHz this requirement may be fulfilled by the satellite EPIRB, required by 14.7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated; or~~

~~.32 if the craft is on voyages within coverage of MF coast stations equipped with DSC, on MF using DSC; or~~

~~.43 on high frequency (HF) using DSC; or~~

~~.54 through a recognized mobile the Inmarsat geostationary satellite service ship earth station.; this requirement may be fulfilled by:~~

~~.5.1 an Inmarsat ship earth station*; or~~

~~.5.2 the satellite EPIRB, required by 14.7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated.~~

14.8.2 The requirement in 14.8.1.1 may be fulfilled by installing:

.1 the EPIRB required by 14.7.1.5 close to the position from which the craft is normally navigated, but in a location whereby it can still float free of the craft in an emergency; or

.2 the EPIRB required by 14.7.1.5 elsewhere on the craft, provided that this EPIRB has a means of remote activation which is installed near the position from which the craft is normally navigated; or

.3 a second EPIRB near the position from which the craft is normally navigated.

14.8.2 The VHF radio installation, required by 14.7.1.1, shall also be capable of transmitting and receiving general radiocommunications using radiotelephony.

14.8.3 ~~Craft engaged on voyages exclusively in sea area A1 may carry, in lieu of the satellite EPIRB required by 14.7.1.6, an EPIRB which shall be:~~

- ~~.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;~~
- ~~.2 installed in an easily accessible position;~~
- ~~.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 craft sinks and of being automatically activated when afloat; and~~
- ~~.5 capable of being activated manually~~

~~* This requirement can be met by recognized mobile satellite service ship earth stations capable of two-way communications, such as Fleet 77 (resolutions A.808(19) and MSC.130(75)) or Inmarsat-C (resolution A.807(19), as amended) ship earth stations. Unless otherwise specified, this footnote applies to all requirements for a recognized mobile satellite service ship earth station prescribed by this chapter.~~

14.9 Radio equipment: sea areas A1 and A2

14.9.1 ~~In addition to meeting the requirements of 14.7, every craft engaged on voyages beyond sea area A1, but remaining within sea area A2, shall be provided with:~~

- .1 an MF radio installation capable of transmitting and receiving, for distress, urgency and safety communications purposes, on the frequencies:
 - ~~.1~~ 2 187.5 kHz using DSC; and
 - ~~.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 14.9.1.1~~4~~; and
- .3 a secondary 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; ~~or this requirement may be fulfilled by the satellite EPIRB, required by 14.7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated; or~~
 - ~~.3.2~~ on HF using DSC; or
 - ~~.3.3~~ through the ~~Inmarsat geostationary~~ recognized mobile satellite service ship earth station.; ~~this requirement may be fulfilled by:~~
 - ~~.3.3.1~~ the equipment specified in 14.9.3.2; or

~~.3.3.2 the satellite EPIRB, required by 14.7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated.~~

14.9.2 It shall be possible to initiate transmission of distress alerts by the radio installations specified in 14.9.1.1 and 14.9.1.3 from the position from which the craft is normally navigated.

14.9.3 The requirement in 14.9.1.3.1 may be fulfilled by installing:

- .1 the EPIRB required by 14.7.1.5 close to the position from which the craft is normally navigated, but in a location whereby it can still float free of the craft in an emergency; or
- .2 the EPIRB required by 14.7.1.5 elsewhere on the craft, provided that this EPIRB has a means of remote activation which is installed near the position from which the craft is normally navigated; or
- .3 a second EPIRB near the position from which the craft is normally navigated.

14.9.34 The craft shall, in addition, be capable of transmitting and receiving general radiocommunications ~~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 14.9.1.1; or
- .2 ~~an Inmarsat~~ recognized mobile satellite service ship earth station.

14.10 Radio equipment: sea areas A1, A2 and A3

14.10.1 In addition to meeting the requirements of 14.7, every craft 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 14.10.2,~~ be provided with:

- .1 ~~an Inmarsat~~ a recognized mobile satellite service ship earth station capable of:
 - ~~.4.1~~ transmitting and receiving distress, urgency and safety communications ~~using direct printing telegraphy~~;
 - ~~.4.2~~ initiating and receiving distress priority calls; and
 - ~~.4.3~~ maintaining watch for shore-to-ship distress alert relays, including those directed to specifically defined geographical areas; ~~and~~
 - ~~.1.4~~ transmitting and receiving general radiocommunications, using either radiotelephony or direct printing telegraphy;
- .2 an MF radio installation capable of transmitting and receiving, for distress, urgency and safety communications purposes, on the frequencies:
 - ~~.2.1~~ 2 187.5 kHz using DSC; and

- ~~.2~~ 2 182 kHz using radiotelephony;
- .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 14.10.1.2-1; and
- .4 a secondary 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; or this requirement may be fulfilled by the satellite EPIRB, required by 14.7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated; or
 - ~~.4.2~~ on HF using DSC; or
 - .3 through any recognized mobile satellite service on an additional ship earth station.
 - ~~.4.3~~ through the Inmarsat geostationary satellite service, by an additional ship earth station or by the satellite EPIRB required by 14.7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated.

14.10.2 In addition to meeting the requirements of 14.7, every craft 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 14.10.1, 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;
- ~~.2~~ equipment capable of maintaining a 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 14.10.2.1;
- ~~.3~~ means of initiating the transmission of ship to shore distress alerts by a radiocommunication 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 14.7.1.6, either by installing the satellite EPIRB close to, or by

~~remote activation from, the position from which the craft is normally navigated; or~~

~~.3.2 through the Inmarsat geostationary satellite service, this requirement may be fulfilled by:~~

~~.3.2.1 an Inmarsat ship earth station; or~~

~~.3.2.2 the satellite EPIRB, required by 14.7.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated; and~~

~~.4 in addition, the craft shall be capable of transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy by an MF/HF radio installation operating on working frequencies in the bands between 1,605 kHz and 4,000 kHz and between 4,000 kHz and 27,500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by 14.10.2.1.~~

~~14.10.32 It shall be possible to initiate transmission of distress alerts by the radio installations specified in 14.10.1.1, 14.10.1.2, and 14.10.1.4, 14.10.2.1 and 14.10.2.3 from the position from which the craft is normally navigated.~~

~~14.10.3 The requirement in 14.10.1.4.1 may be fulfilled by installing:~~

~~.1 the EPIRB required by 14.7.1.5 close to the position from which the craft is normally navigated, but in a location whereby it can still float free of the craft in an emergency; or~~

~~.2 the EPIRB required by 14.7.1.5 elsewhere on the craft, provided that this EPIRB has a means of remote activation which is installed near the position from which the craft is normally navigated; or~~

~~.3 a second EPIRB near the position from which the craft is normally navigated.~~

~~14.10.4 The craft shall, in addition, be capable of transmitting and receiving general radiocommunications by either:~~

~~.1 a recognized mobile satellite service ship earth station; or~~

~~.2 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.~~

~~14.10.5 The requirements in 14.10.4.1 and 14.10.4.2 may be fulfilled by the addition of this capability in the equipment required by 14.10.1.1 or 14.10.1.2, respectively.~~

14.11 Radio equipment: sea areas ~~A1, A2, A3 and A4~~

~~14.11.1 In addition to meeting the requirements of 14.7, every craft engaged on voyages in all sea areas within sea area A4, shall be provided with: the radio installations and equipment required by 14.10.2, except that the equipment required by 14.10.2.3.2 shall not be accepted as an alternative to that required by 14.10.2.3.1, which shall always be provided. In addition, craft engaged on voyages in all sea areas shall comply with the requirements of 14.10.3.~~

- .1 an MF/HF radio installation capable of transmitting and receiving, for distress, urgency and safety communications purposes, on all distress, urgency and safety frequencies in the bands between 1 605 kHz and 4 000 kHz and between 4 000 kHz and 27 500 kHz:
 - .1 using DSC; and
 - .2 using radiotelephony;
- .2 equipment capable of maintaining DSC watch on 2 187.5 kHz, 8 414.5 kHz and on at least one of the DSC frequencies 4 207.5 KHz, 6 312 kHz, 12 577 kHz or 16 804.5 kHz; it shall be possible at any time to select any of these DSC frequencies for distress, urgency and safety communications purposes. This equipment may be separate from, or combined with, the equipment required by 14.1.1; and
- .3 a secondary means of initiating the transmission of ship-to-shore distress alerts by a radio communication service other than HF operating through the satellite service on 406 MHz.

14.11.2 The craft shall, in addition, be capable of transmitting and receiving general radiocommunications by a radio installation operating on working frequencies in the bands between 1 605 kHz and 4 000 kHz and between 4 000 kHz and 27 500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by 14.11.1.1.

14.11.3 It shall be possible to initiate transmission of distress alerts by the radio installations specified in 14.11.1.1 and 14.11.1.3 from the position from which the craft is normally navigated.

14.11.4 The requirement in 14.11.1.3 may be fulfilled by installing:

- .1 the EPIRB required by 14.7.1.5 close to the position from which the craft is normally navigated, but in a location whereby it can still float free of the craft in an emergency; or
- .2 the EPIRB required by 14.7.1.5 elsewhere on the craft, provided that this EPIRB has a means of remote activation which is installed near the position from which the craft is normally navigated; or
- .3 a second EPIRB near the position from which the craft is normally navigated.

14.12 Watches

14.12.1 Every craft, while at sea, shall maintain a continuous radio watch for distress, urgency and safety communications purposes:

- .1 on VHF DSC channel 70, ~~if the craft, in accordance with the requirements of 14.7.1.2, is fitted with a VHF radio installation;~~
- .2 on ~~the distress and safety~~ DSC frequency 2 187.5 kHz, if the craft, in accordance with the requirements of 14.9.1.2 or 14.10.1.3, 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 craft, if the craft, in accordance with the requirement of ~~14.10.2.2 or~~ 14.11.1.2, is fitted with an MF/HF radio installation. This watch may be kept by means of a scanning receiver; and
- .4 for satellite shore-to-ship distress alerts ~~relays~~, if the craft, in accordance with the requirements of 14.10.1.1, is fitted with ~~an Inmarsat~~ a recognized mobile satellite service ship earth station.

14.12.2 Every craft, while at sea, shall maintain a radio watch for broadcasts of ~~maritime safety information~~ MSI and search and rescue related information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the craft is navigating.

14.12.3 ~~Until 1 February 2005, e~~Every craft, while at sea, shall ~~continue to~~ maintain, when practicable, a continuous listening watch, ~~on VHF channel 16. This watch which~~ shall be kept at the position from which the craft is normally navigated, on:-

- .1 VHF channel 16; and
- .2 other appropriate frequencies for urgency and safety radiocommunications for the area in which the craft is navigating.

14.13 Sources of energy

14.13.1 ~~There shall be available at all times, w~~While the craft is at sea, a supply of electrical energy shall be available at all times sufficient to operate the radio installations and to charge any batteries used as part of a reserve source of energy for the radio installations.

14.13.2 A ~~Reserve source or and emergency~~ sources of energy shall be provided on every craft to supply radio installations, for the purpose of conducting distress, urgency and safety radiocommunications, in the event of failure of the craft's main and emergency sources of electrical power. The reserve source of energy shall be capable of simultaneously operating the VHF radio installation required by 14.7.1.1 and, as appropriate for the sea area or sea areas for which the craft is equipped, either the MF radio installation required by 14.9.1.1 or 14.10.1.2, the MF/HF radio installation required by ~~14.10.2.1 or~~ 14.11.1.1 or the ~~Inmarsat~~ ship earth station required by 14.10.1.1 and any of the additional loads mentioned in 14.13.5 and 14.13.8 for a period of at least:

- .1 one hour on craft provided with an emergency source of electrical power, if such source of power complies fully with all relevant provisions of 12.3 and 12.7 or 12.8, including the supply of such power to the radio installations; and
- .2 six hours on crafts not provided with an emergency source of electrical power complying fully with all relevant provisions of 12.3 and 12.7 or 12.8, including the supply of such power to the radio installations.

The reserve source or sources of energy need not supply independent HF and MF radio installations at the same time.

14.13.3 The reserve source of energy shall be independent of the propelling power of the craft and the craft's electrical system.

14.13.4 Where, in addition to the VHF radio installation, two or more of the other radio installations referred to in 14.13.2 can be connected to the reserve source or sources of energy, they shall be capable of simultaneously supplying, for the period specified in 14.13.2, the VHF radio installation and:

- .1 all other radio installations which can be connected to the reserve source of energy at the same time; or
- .2 whichever of the radio installations will consume the most power, if only one of the other radio installations can be connected to the reserve source of energy at the same time as the VHF radio installation.

14.13.5 The reserve source of energy may be used to supply the electrical lighting required by 14.6.2.4.

14.13.6 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 hours; and
- .2 the capacity of the battery or batteries shall be checked, using an appropriate method,¹⁰ at intervals not exceeding 12 months, when the craft is not at sea.

14.13.7 The siting and installation of accumulator batteries which provide a reserve source of energy shall be such as to ensure:

- .1 the highest degree of service;
- .2 a reasonable lifetime;
- .3 reasonable safety;
- .4 that the 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.

14.13.8 If an uninterrupted input of information from the craft's navigational or other equipment to a radio installation required by this chapter is needed to ensure its proper performance, including the navigation receiver referred to in 14.18, means shall be provided to ensure the continuous supply of such information in the event of failure of the craft's main or emergency source of electrical power.

¹⁰ 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.

14.14 Performance standards

14.14.1 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.¹¹

¹¹ Refer to the following performance standards adopted by the Organization:

General requirements

- .1 *General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids* (resolution A.694(17));
- .2 *Performance standards for the presentation of navigation-related information on shipborne navigational displays* (resolution MSC.191(79), as amended);
- .3 *Performance standards for bridge alert management* (resolution MSC.302(87));

VHF equipment

- .4 *Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling* (resolution MSC.[...]);
- .5 *Performance standards for survival craft portable two-way VHF radiotelephone apparatus* (resolution MSC.[...]);
- .6 *Recommendation on Performance standards for on-scene (aeronautical) portable two-way VHF radiotelephone apparatus* (annex 1 to resolution MSC.80(70), as amended);

MF and HF equipment

- .7 *System performance standard for the promulgation and coordination of maritime safety information using high-frequency narrow-band direct-printing* (resolution MSC [...]);
- .8 *Performance standards for shipborne MF and MF/HF radio installations capable of voice communication, digital selective calling and reception of maritime safety information and search and rescue related information* (resolution MSC.[...]);
- .9 *Performance standards for the reception of maritime safety information and search and rescue related information by MF (NAVTEX) and HF* (resolution MSC.[...]);

Ship earth stations and enhanced group call (EGC) equipment

- .10 *Performance standards for Inmarsat-C ship earth stations capable of transmitting and receiving direct-printing communications* (resolution MSC.[...]);
- .11 *Revised performance standards for enhanced group call (EGC) equipment* (resolution MSC.306(87), as amended);
- .12 *Performance standards for a ship earth station for use in the GMDSS* (resolution MSC.434(98));

Integrated radiocommunication systems

- .13 *Performance standards for a shipborne integrated communication system (ICS) when used in the Global Maritime Distress and Safety System (GMDSS)* (resolution MSC.[...]);

Emergency position-indicating radio beacons

- .14 *Performance standards for float-free release and activation arrangements for emergency radio equipment* (resolution A.662(16));
- .15 *Performance standards for float-free emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz* (resolution MSC.471(101));

Search and rescue transmitters and transponders

- .16 *Performance standards for search and rescue radar transponders* (resolution MSC.[...]); and
- .17 *Performance standards for survival craft AIS search and rescue transmitters (AIS-SART) for use in search and rescue operations* (resolution MSC.246(83)).

14.15 Maintenance requirements

14.15.1 Equipment shall be so designed that the main units can be replaced readily without elaborate recalibration or readjustment.

14.15.2 Where applicable, equipment shall be so constructed and installed that it is readily accessible for inspection and onboard maintenance purposes.

14.15.3 Adequate information shall be provided to enable the equipment to be properly operated and maintained, taking into account the recommendations of the Organization.¹²

14.15.4 Adequate tools and spares shall be provided to enable equipment to be maintained.

14.15.5 The Administration shall ensure that radio equipment required by this chapter is maintained to provide the availability of the functional requirements specified in 14.5 and to meet the recommended performance standards of such equipment.

14.15.6 On craft 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.

14.15.7 On craft 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*.

14.15.8 However, for craft operating solely between ports where adequate facilities for shore-based maintenance of the radio installations are available, and provided no journey between two such ports exceeds six hours, then the Administration may exempt such craft from the requirement to use at least two maintenance methods. For such craft, at least one maintenance method shall be used.

14.15.9 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 14.5, malfunction of the equipment for providing the general radiocommunications, required by 14.85.1.2, shall not be considered as making a craft unseaworthy or as a reason for delaying the craft in ports where repair facilities are not readily available, provided the craft is capable of performing all distress, urgency and safety functions.

14.15.10 ~~Satellite~~ EPIRBs shall be:

- .1 annually tested, either on board the craft¹³ or at an approved testing station, tested at intervals not exceeding 12 months for all aspects of operational efficiency with particular special emphasis on checking the emission on operational frequencies, frequency stability, signal strength and coding and registration, at intervals specified below:
 - .1 on passenger craft, within three months before the expiry date of the High-Speed Craft Safety Certificate; and
 - .2 on cargo craft, within three months before the expiry date, or within three months before or after the anniversary date, of the High-Speed Craft Safety Certificate. However, in cases where it appears proper and reasonable, the Administration may extend this

period to 17 months. The test may be conducted on board the craft or at an approved testing or servicing station; and

- .2 subject to maintenance at intervals not exceeding five years, to be performed at an approved shore-based maintenance facility.¹⁴

¹² Refer to *General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids* (resolution A.694(17)), *General requirements for electromagnetic compatibility (EMC) for all electrical and electronic ship's equipment* (resolution A.813(19)), and *Clarifications of certain requirements in IMO performance standards for GMDSS equipment* (MSC/Circ.862).

* Administrations should take account of the ~~Radio maintenance guidelines for the Global Maritime Distress and Safety System (GMDSS) related to sea areas A3 and A4, adopted by the Organization by resolution A.702(17)~~

¹³ Refer to *Guidelines on annual testing of emergency position-indicating radio beacons (EPIRBs)* (MSC.1/Circ.1040/Rev.2) and *Guidelines for the avoidance of false distress alerts* (resolution MSC.[...]).

¹⁴ Refer to *Guidelines for shore-based maintenance of emergency position-indicating radio beacons (EPIRBs)* (MSC.1/Circ.1039/Rev.1).

14.16 Radio personnel

14.16.1 Every craft shall carry personnel qualified for distress, urgency and safety radiocommunications purposes to the satisfaction of the Administration. The personnel shall be holders of the appropriate certificates specified in the Radio Regulations; ~~as appropriate, any one of the personnel whom~~ shall be designated ~~as having to have~~ primary responsibility for radiocommunications during distress incidents.

14.16.2 In passenger craft, at least one person qualified in accordance with 14.16.1 shall be assigned to perform only radiocommunications duties during distress incidents.

14.17 Radio records

A record shall be kept on board, 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.

14.18 Position-updating

14.18.1 All two-way communication equipment carried on board craft to which this chapter applies which is capable of automatically including the craft's position in the distress alert shall be automatically provided with this information from an internal or external navigation receiver, if either is installed. ~~If such a receiver is not installed, the craft's position and the time that position was correct shall be manually updated at intervals not exceeding 4 h, while the craft is underway, so that it is always ready for transmission by the equipment.~~

14.18.2 In case of malfunction of the internal or external navigation receiver, the craft's position and the time at which the position was determined shall be manually updated at intervals not exceeding four hours, while the craft is under way, so that it is always ready for transmission by the equipment. "

ANNEX

FORM OF HIGH-SPEED CRAFT SAFETY CERTIFICATE AND RECORD OF EQUIPMENT

High-Speed Craft Safety Certificate

3 In the High-Speed Craft Safety Certificate a footnote is included under the section "Particulars of craft", after the existing sentence "Sea areas in which the craft is certified to operate (paragraph 14.2.1)", as follows:

"
* For a craft certified to operate in sea area A3, indicate the recognized mobile satellite service in brackets."

Record of Equipment for High-Speed Craft Safety Certificate

4 In part 2 (Details of life-saving appliances), items 11, 11.1 and 11.2 are deleted.

5 In part 4 (Details of radio facilities), item 1.3.4 is deleted and items 2, 3, 3.1, 3.2, 3.3, 4, 4.1, 4.2, 5 and 6 are replaced by the following:

"2 Secondary means of alerting initiating the transmission of ship-to-shore distress alerts

3 Facilities for reception of maritime safety information, MSI and search and rescue related information

3.1 NAVTEX receiver

3.2 EGC receiver

3.3 HF direct-printing radiotelegraph receiver

4 Satellite EPIRB

4.1 COSPAS-SARSAT

4.2 Inmarsat

5 Two-way VHF-EPIRB radiotelephone apparatus

6 Ship's radar transponder Radar SART or AIS-SART"

ANNEX 10

DRAFT MSC RESOLUTION*

**AMENDMENTS TO THE CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 1983
(1983 SPS CODE)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.534(13), by which the Assembly, at its thirteenth session, adopted the Code of Safety for Special Purpose Ships, 1983 (1983 SPS Code),

RECALLING FURTHER that the Assembly authorized the Committee to amend the Code as may be necessary,

NOTING the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.[...],

HAVING CONSIDERED, at its [105th] session, consequential amendments to the Special Purpose Ship Safety Certificate and the Record of Equipment for the Special Purpose Ship Safety Certificate (Form SPS) of the 1983 SPS Code,

1 ADOPTS amendments to the 1983 SPS Code, the text of which is set out in the annex to the present resolution;

2 DETERMINES that the said consequential amendments to the 1983 SPS Code should become effective on [1 January 2024], in conjunction with the entry into force of the amendments to the Convention adopted by resolution MSC.[...].

* Deletions are indicated in "strikeout" and "grey shading", and insertions are presented in "grey shading" only. Where practical, insertions of new regulations, paragraphs or tables, or deletion of existing ones, are not indicated by tracked changes.

ANNEX

AMENDMENTS TO THE CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 1983 (1983 SPS CODE)

APPENDIX

FORM OF SAFETY CERTIFICATE FOR SPECIAL PURPOSE SHIPS

Special Purpose Ship Safety Certificate

1 In the Special Purpose Ship Safety Certificate, a footnote is included under the section "Particulars of ship", after the existing sentence "Sea areas in which ship is certified to operate (SOLAS regulation IV/2)", as follows:

"
* _____
For a ship certified to operate in sea area A3, indicate the recognized mobile satellite service in brackets."

ANNEX

RECORD OF EQUIPMENT FOR THE SPECIAL PURPOSE SHIP SAFETY CERTIFICATE (FORM SPS)

Record of Equipment for the Special Purpose Ship Safety Certificate (Form SPS)

2 In part 2 (Details of life-saving appliances), items 11, 11.1, 11.2 and 11.3 are deleted.

3 Items listed under part 3 (Details of radio facilities) are replaced by the following:

- "1 Primary systems
 - 1.1 VHF radio installation
 - 1.1.1 DSC encoder
 - 1.1.2 DSC watch receiver
 - 1.1.3 Radiotelephony
 - 1.2 MF radio installation
 - 1.2.1 DSC encoder
 - 1.2.2 DSC watch receiver
 - 1.2.3 Radiotelephony
 - 1.3 MF/HF radio installation
 - 1.3.1 DSC encoder
 - 1.3.2 DSC watch receiver
 - 1.3.3 Radiotelephony
 - ~~1.3.4 Direct printing radiotelegraphy~~
 - 1.4 ~~Ship earth station providing a~~ Recognized mobile satellite service ~~ship~~
earth station

- 2 Secondary means of alerting initiating the transmission of ship-to-shore distress alerts
- 3 Facilities for reception of ~~maritime safety information~~ MSI and search and rescue related information
 - 3.1 ~~NAVTEX receiver~~
 - 3.2 ~~EGC receiver~~
 - 3.3 ~~HF direct-printing radiotelegraph receiver~~
- 4 ~~Satellite~~ EPIRB
 - 4.1 ~~COSPAS SARSAT~~
- 5 Two-way VHF ~~EPIRB~~ radiotelephone apparatus
 - 5.1 Portable two-way VHF radiotelephone apparatus
 - 5.2 Two-way VHF radiotelephone apparatus fitted in survival craft
- 6 ~~Ship's radar transponder~~ Search and rescue locating devices
 - 6.1 Radar search and rescue transponders (radar SART) stowed for rapid placement in survival craft
 - 6.2 Radar search and rescue transponders (radar SART) stowed in survival craft
 - 6.3 AIS search and rescue transmitters (AIS-SART) stowed for rapid placement in survival craft
 - 6.4 AIS search and rescue transmitters (AIS-SART) stowed in survival craft"

ANNEX 11

DRAFT MSC RESOLUTION*

**AMENDMENTS TO THE CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 2008
(2008 SPS CODE)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution MSC.266(84), by which the Committee, at its eighty-fourth session, adopted the Code of Safety for Special Purpose Ships, 2008 (2008 SPS Code), which superseded the SPS Code adopted by resolution A.534(13), as amended, for special purpose ships certified on or after 13 May 2008,

NOTING the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.[...],

HAVING CONSIDERED, at its [105th] session, consequential amendments to the Special Purpose Ship Safety Certificate and the Record of Equipment for the Special Purpose Ship Safety Certificate (Form SPS) of the 2008 SPS Code,

1 ADOPTS amendments to the 2008 SPS Code, the text of which is set out in the annex to the present resolution;

2 DETERMINES that the said consequential amendments to the 2008 SPS Code should become effective on [1 January 2024], in conjunction with the entry into force of the amendments to the Convention adopted by resolution MSC.[...].

* Deletions are indicated in "strikeout" and "grey shading", and insertions are presented in "grey shading" only. Where practical, insertions of new regulations, paragraphs or tables, or deletion of existing ones, are not indicated by tracked changes.

ANNEX

AMENDMENTS TO THE CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 2008 (2008 SPS CODE)

ANNEX FORM OF SAFETY CERTIFICATE FOR SPECIAL PURPOSE SHIPS

Special Purpose Ship Safety Certificate

1 In the Special Purpose Ship Safety Certificate, a footnote is included under the section "Particulars of ship", after the existing sentence "Sea areas in which ship is certified to operate (SOLAS regulation IV/2)", as follows:

"
* _____
For a ship certified to operate in sea area A3, indicate the recognized mobile satellite service in brackets."

APPENDIX

FORM OF SAFETY CERTIFICATE FOR SPECIAL PURPOSE SHIPS

Record of Equipment for the Special Purpose Ship Safety Certificate (Form SPS)

2 In part 2 (Details of life-saving appliances), items 10, 10.1, and 10.2 are deleted.

3 Items listed under part 3 (Details of radio facilities) are replaced by the following:

- "1 Primary systems
 - 1.1 VHF radio installation
 - 1.1.1 DSC encoder
 - 1.1.2 DSC watch receiver
 - 1.1.3 Radiotelephony
 - 1.2 MF radio installation
 - 1.2.1 DSC encoder
 - 1.2.2 DSC watch receiver
 - 1.2.3 Radiotelephony
 - 1.3 MF/HF radio installation
 - 1.3.1 DSC encoder
 - 1.3.2 DSC watch receiver
 - 1.3.3 Radiotelephony
 - ~~1.3.4 Direct printing radiotelegraphy~~
 - 1.4 Recognized mobile satellite service ship earth station
- 2 Secondary means of ~~alerting~~ initiating the transmission of ship-to-shore distress alerts

- 3 Facilities for reception of ~~maritime safety information~~ MSI and search and rescue related information
 - 3.1 ~~NAVTEX receiver~~
 - 3.2 ~~EGC receiver~~
 - 3.3 ~~HF direct printing radiotelegraph receiver~~

- 4 ~~Satellite~~ EPIRB
 - 4.1 ~~COSPAS SARSAT~~
 - 4.2 ~~Inmarsat~~

- 5 Two-way VHF ~~EPIRB~~ radiotelephone apparatus
 - 5.1 Portable two-way VHF radiotelephone apparatus
 - 5.2 Two-way VHF radiotelephone apparatus fitted in survival craft

- 6 ~~Ship's radar transponder~~ Search and rescue locating devices
 - 6.1 Radar search and rescue transponders (radar SART) stowed for rapid placement in survival craft
 - 6.2 Radar search and rescue transponders (radar SART) stowed in survival craft
 - 6.3 AIS search and rescue transmitters (AIS-SART) stowed for rapid placement in survival craft
 - 6.4 AIS search and rescue transmitters (AIS-SART) stowed in survival craft"

ANNEX 12

DRAFT MSC RESOLUTION

**AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF
MOBILE OFFSHORE DRILLING UNITS, 1979 (1979 MODU CODE)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO that the Assembly, when adopting resolution A.414(XI) on the Code for the Construction and Equipment of Mobile Offshore Drilling Units, 1979 (1979 MODU Code), authorized the Committee to amend the Code as necessary after due consultations with relevant organizations as the Committee deems necessary,

NOTING the amendments to the International Convention for the Safety of Life at Sea, 1974 adopted by resolution MSC.[...],

HAVING CONSIDERED, at its [105th] session, consequential amendments to the 1979 MODU Code,

- 1 ADOPTS amendments to the 1979 MODU Code, the text of which is set out in the annex to the present resolution;
- 2 INVITES all Governments concerned to take appropriate steps to give effect to the annexed amendments to the 1979 MODU Code as from [1 January 2024].

ANNEX

AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF MOBILE OFFSHORE DRILLING UNITS, 1979 (1979 MODU CODE)

CHAPTER 10 LIFE-SAVING APPLIANCES AND EQUIPMENT

- 1 Paragraphs 10.7, 10.7.1 and 10.7.2 are replaced by the following:

"10.7 [Reserved*]"

* The provisions related to radio life-saving appliances were relocated under chapter 11 (refer to resolution MSC.[...]). Paragraph 10.7 was intentionally left blank to avoid renumbering of existing paragraphs."

CHAPTER 11 RADIOCOMMUNICATION INSTALLATIONS

- 2 The text of chapter 11 is replaced by the following:

"Mobile offshore drilling units should be provided with radiocommunications facilities as specified in chapter 11 of the 2009 MODU Code (resolution A.1023(26)), as amended up to and including resolution MSC.[...], that are fitted and operated in accordance with the provisions of that chapter."

ANNEX 13

DRAFT MSC RESOLUTION

**AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF
MOBILE OFFSHORE DRILLING UNITS, 1989 (1989 MODU CODE)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO that the Assembly, when adopting resolution A.649(16) on the Code for the Construction and Equipment of Mobile Offshore Drilling Units, 1989 (1989 MODU Code), authorized the Committee to amend the Code, when appropriate, taking into consideration development in the design and technologies, in consultation with appropriate organizations,

NOTING the amendments to the International Convention for the Safety of Life at Sea, 1974, adopted by resolution MSC.[...].

HAVING CONSIDERED, at its [105th] session, consequential amendments to the 1989 MODU Code,

- 1 ADOPTS amendments to the 1989 MODU Code, the text of which is set out in the annex to the present resolution;
- 2 INVITES all Governments concerned to take appropriate steps to give effect to the annexed amendments to the 1989 MODU Code as from [1 January 2024].

ANNEX

AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF MOBILE OFFSHORE DRILLING UNITS, 1989 (1989 MODU CODE)

CHAPTER 10 LIFE-SAVING APPLIANCES AND EQUIPMENT

- 1 Paragraphs 10.13, 10.13.1 and 10.13.2 are replaced by the following:

"10.13 [Reserved]"

* The provisions related to radio life-saving appliances were relocated under chapter 11 (refer to resolution MSC.[...]). Paragraph 10.13 was intentionally left blank to avoid renumbering of existing paragraphs."

CHAPTER 11 RADIOCOMMUNICATION INSTALLATIONS

- 2 The text of chapter 11 is replaced by the following:

"Mobile offshore drilling units should be provided with radiocommunications facilities as specified in chapter 11 of the 2009 MODU Code (resolution A.1023(26)), as amended up to and including resolution MSC.[...], that are fitted and operated in accordance with the provisions of that chapter."

ANNEX 14

DRAFT MSC RESOLUTION*

**AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT
OF MOBILE OFFSHORE DRILLING UNITS, 2009 (2009 MODU CODE)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO that the Assembly, when adopting resolution A.1023(26) on the Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009 (2009 MODU Code), authorized the Committee to amend the Code as appropriate, taking into consideration development in the design and technologies, in consultation with appropriate organizations,

NOTING the amendments to the International Convention for the Safety of Life at Sea, 1974, adopted by resolution MSC.[...],

HAVING CONSIDERED, at its [105th] session, consequential amendments to the 2009 MODU Code,

- 1 ADOPTS amendments to the 2009 MODU Code, the text of which is set out in the annex to the present resolution;
- 2 INVITES all Governments concerned to take appropriate steps to give effect to the annexed amendments to the 2009 MODU Code as from [1 January 2024].

* Deletions are indicated in "strikeout" and "grey shading", and insertions are presented in "grey shading" only. Where practical, insertions of new regulations, paragraphs or tables, or deletion of existing ones are not indicated by tracked changes.

ANNEX

AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF MOBILE OFFSHORE DRILLING UNITS, 2009 (2009 MODU CODE)

CHAPTER 10 LIFE-SAVING APPLIANCES AND EQUIPMENT

- 1 Paragraphs 10.14, 10.14.1 and 10.14.2 are replaced by the following:

"10.14 [Reserved]"

* The provisions related to radio life-saving appliances were relocated under chapter 11 (refer to resolution MSC.[...]). Paragraph 10.14 was intentionally left blank to avoid renumbering of existing paragraphs."

CHAPTER 11 RADIOCOMMUNICATION AND NAVIGATION

- 2 The text of chapter 11 is replaced by the following:

"11.1 General

The purpose of this chapter is to provide minimum provisions for navigation equipment and for distress and safety radiocommunications between mobile offshore drilling units, including associated survival craft, and coast stations, ships and supporting aircraft.

11.2 Training

Training should be provided to personnel responsible for radio communications in the use of IMO Standard Marine Communication Phrases.¹

¹ Refer to *IMO Standard Marine Communication Phrases*, adopted by the Organization by (resolution A.918(22)).

11.3 Self-propelled units

Each unit should comply with the applicable provisions concerning radio stations for cargo ships in SOLAS chapter IV.²

² All requirements of SOLAS chapter IV referring to "from the position from which the ship is normally navigated" should be applied as meaning "from the position the MODU is normally navigated".

11.4 Non-self-propelled units under tow

11.4.1 The provisions for non-self-propelled units under tow when manned depend upon the radio installations fitted in the towing ship, as set out in paragraphs 11.4.2 and 11.4.3.

11.4.2 In cases where the towing ship complies fully with all applicable requirements concerning radiocommunications for ships prescribed in SOLAS chapter IV, the unit under tow when manned should:

- .1 be fitted with VHF facilities as required by SOLAS regulations IV/7.1.1³ and 7.1.2 and with MF facilities as required by regulations IV/9.1.1 and 9.1.2;
- .2 be fitted with ~~the satellite~~ an EPIRB as required by SOLAS regulation IV/7.1.5~~6~~, ~~as appropriate, for the area in which the unit is being towed~~; and
- .3 be fitted with receiver(s) capable of receiving MSI and SAR related information throughout the entire voyage in which the unit is engaged ~~equipment for automatic reception of navigational and meteorological warnings in accordance with SOLAS regulations IV/7.1.4 and IV/7.1.5, as appropriate.~~

11.4.3 In cases where the towing ship does not comply fully with the applicable requirements concerning radiocommunications for ships prescribed in SOLAS chapter IV, the unit under tow when manned should comply with all the applicable provisions concerning radiocommunications prescribed in SOLAS chapter IV.³

³ All requirements of SOLAS chapter IV referring to "from the position from which the ship is normally navigated" should be applied as meaning "from a position which is continuously manned and which is controlling the MODU while under tow".

11.5 Units stationary at the site or engaged in drilling operations

11.5.1 Each unit, while stationary at the site, including when engaged in drilling operations, should comply with all requirements prescribed in SOLAS chapter IV that are applicable to a ship sailing through the same area.⁴ Each unit should also report its position to the relevant World-Wide Navigational Warning Service (WWNWS) NAVAREA Coordinator when arriving on-site, in order for a Navigational Warning to be broadcast.⁵ Additionally, units should inform the NAVAREA Coordinator when departing from that site, in order for the broadcast to be cancelled.

11.5.2 On units which do not have a navigation bridge, it should be possible to initiate transmission of the distress alerts by the radio installation specified in SOLAS regulations IV/10.1.1, ~~IV/10.1.2~~, and ~~IV/10.1.4~~³⁴, ~~IV/10.2.1~~ and ~~IV/10.2.3~~, as applicable, from a position in an accessible and protected area which is acceptable to the Administration.

11.5.3 If the acoustic noise level in a room fitted with operating controls for radio equipment is so high or could be so high, during particular operating conditions, that it may disturb or prevent proper use of the radio equipment, then adequate noise protection should be provided by mechanical or other means, in association with the operating controls for the radio equipment.

⁴ All requirements of SOLAS chapter IV referring to "from the position ~~at~~ from which the ship is normally navigated" should be applied as meaning "from a position (or from the positions) which is continuously manned and which is controlling the MODU while stationary at the site including its drilling operations (i.e. normally the control room)".

⁵ Refer to the *World-Wide Navigational Warning Service*, ~~adopted by the Organization by~~ (resolution A.706(17), as amended).

11.6 Radio life-saving appliances

Two-way VHF radiotelephone apparatus

11.6.1 All lifeboats should carry a two-way VHF radiotelephone apparatus.

11.6.2 At least two two-way VHF radiotelephone apparatuses should be available on the MODU, so stowed that they can be rapidly placed in any liferaft.⁶ All two-way VHF radiotelephone apparatuses should conform to performance standards not inferior to those adopted by the Organization.

⁶ The two-way VHF radiotelephone apparatus required by 11.6.2 may fulfil or partially fulfil the requirements of SOLAS regulations IV/7.2, 7.3 or 7.4, as applicable.

Search and rescue locating device

11.6.3 All lifeboats should carry one radar SART or AIS-SART.

11.6.4 At least two radar SARTs or AIS-SARTs should be available on the MODU, so stowed that they can be rapidly placed in any liferaft.⁷ All SARTs or AIS-SARTs should conform to performance standards not inferior to those adopted by the Organization.

⁷ The radar SARTs or AIS-SARTs required by 11.6.4 may fulfil the requirements of SOLAS regulations IV/7.1.3, 7.2, 7.3 or 7.5, as applicable.

11.76 Helicopter communications

In order to ensure communication with helicopters, MODUs should carry an aeromobile VHF radiotelephone station complying with the relevant requirements of ICAO⁸ and suitable for communication with helicopters in its area of operation.

⁸ Refer to Volume 3, Part II of annex 10, and Part III, section II of annex 6 to the ICAO Convention.

11.87 Internal communications

All types of MODUs should be fitted with efficient means of communication between the control room, the bridge (if provided) and position or positions fitted with facilities for operation of radio equipment.

11.98 Performance standards

All radio equipment should be of a type approved by the Administration issuing the licence. Such equipment should conform to appropriate performance standards not inferior to those adopted by the Organization.⁹

⁹ Refer to the following performance standards adopted by the Organization:

General requirements

- .1 *General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids* (resolution A.694(17));
- .2 *Performance standards for the presentation of navigation-related information on shipborne navigational displays* (resolution MSC.191(79), as amended);
- .3 *Performance standards for bridge alert management* (resolution MSC.302(87));

VHF equipment

- .4 *Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling (resolution MSC.[...]);*
- .5 *Performance standards for survival craft portable two-way VHF radiotelephone apparatus (resolution MSC.[...]);*
- .6 *Recommendation on Performance standards for on-scene (aeronautical) portable two-way VHF radiotelephone apparatus (annex 1 to resolution MSC.80(70), as amended);*

MF and HF equipment

- .7 *System performance standard for the promulgation and coordination of maritime safety information using high-frequency narrow-band direct-printing (resolution MSC [...]);*
- .8 *Performance standards for shipborne MF and MF/HF radio installations capable of voice communication, digital selective calling and reception of maritime safety information and search and rescue related information (resolution MSC.[...]);*
- .9 *Performance standards for the reception of maritime safety information and search and rescue related information by MF (NAVTEX) and HF (resolution MSC.[...]);*

Ship earth stations and enhanced group call (EGC) equipment

- .10 *Performance standards for Inmarsat-C ship earth stations capable of transmitting and receiving direct-printing communications (resolution MSC.[...]);*
- .11 *Revised performance standards for enhanced group call (EGC) equipment (resolution MSC.306(87), as amended);*
- .12 *Performance standards for a ship earth station for use in the GMDSS (resolution MSC.434(98));*

Integrated radiocommunication systems

- .13 *Performance standards for a shipborne integrated communication system (ICS) when used in the Global Maritime Distress and Safety System (GMDSS) (resolution MSC.[...]);*

Emergency position-indicating radio beacons

- .14 *Performance standards for float-free release and activation arrangements for emergency radio equipment (resolution A.662(16));*
- .15 *Performance standards for float-free emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz (resolution MSC.471(101));*

Search and rescue transmitters and transponders

- .16 *Performance standards for search and rescue radar transponders (resolution MSC.[...]);*
and
- .17 *Performance standards for survival craft AIS search and rescue transmitters (AIS-SART) for use in search and rescue operations (resolution MSC.246(83)).*

11.109 Survey of the radio station

11.109.1 The radio station of a unit should be subject to survey as specified below:

- .1 by the Administration which issues the licence or its authorized representative before the radio station is put into service;
- .2 when the unit is moved and comes under the administrative control of another coastal State a survey may be carried out by that State or its authorized representative; and
- .3 within three months before or after the anniversary date of the MODU Code certificate, a periodical survey carried out by an officer of the Administration and/or the coastal State or their respective authorized representative.

11.109.2 ~~Satellite~~ EPIRBs should be serviced at intervals not exceeding five years, to be performed by an approved shore-based maintenance facility.

11.109.3 The Administration may recognize the coastal State as its authorized representative.

11.109.4 In every case when an authorized representative of the coastal State carries out an inspection, a report should be issued and kept with the radio documents, and a copy, if requested, should be forwarded to the Administration.

11.110 Navigation equipment

11.110.1 All units should comply with SOLAS chapter V.

11.110.2 Administrations may exempt units from navigation equipment carriage requirements, in accordance with SOLAS regulation V/3."

ANNEX 15

DRAFT MSC RESOLUTION

SYSTEM PERFORMANCE STANDARD FOR THE PROMULGATION AND COORDINATION OF MARITIME SAFETY INFORMATION USING HIGH-FREQUENCY NARROW-BAND DIRECT-PRINTING

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.699(17), by which the Assembly, at its seventeenth session, adopted the *System performance standard for the promulgation and coordination of maritime safety information using high-frequency narrow-band direct-printing*,

RECALLING FURTHER resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, should be performed by the Maritime Safety Committee on behalf of the Organization,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention"), adopted by resolution MSC.[...],

NOTING, in particular, regulation V/5 of the Convention which establishes the requirement for promulgating information on direct dangers to navigation, as well as regulation IV/7.1.4 which states that "every ship shall be provided with receiver(s) capable of receiving maritime safety information and search and rescue related information throughout the entire voyage in which the ship is engaged",

BEARING IN MIND resolution MSC.[...], which establishes standards on the reception of maritime safety information using a variety of radio teleprinting techniques, including high-frequency (HF) narrow-band direct-printing (NBDP),

NOTING that ITU Radio Regulations No.33.48 identifies frequencies in the HF bands for the transmission of maritime safety information using NBDP and that the global coordinated plan for the use of these channels is published in the Master plan of shore-based facilities for the Global Maritime Distress and Safety System (GMDSS) through the Global Integrated Shipping Information System (GISIS),

RECOGNIZING the need to revise the System performance standard for the promulgation and coordination of maritime safety information using high-frequency narrow-band direct-printing,

HAVING CONSIDERED, at its [105th] session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS the revised *System performance standard for the promulgation and coordination of maritime safety information using high-frequency narrow-band direct-printing*, set out in the annex to the present resolution, which should become effective on [1 January 2024], in conjunction with the entry into force of amendments to the Convention adopted by resolution MSC.[...];

2 DECIDES that broadcasts of maritime safety information using HF NBDP techniques, intended to meet the requirements of regulation IV/7.1.4 of the Convention, should be in accordance with the recommendation set out in the annex to the present resolution;

3 URGES Governments to cooperate by ensuring that maritime safety information using HF NBDP techniques is provided in accordance with this system;

4 REQUESTS the Secretary-General to convey this system performance standard to the executive heads of the International Telecommunication Union (ITU), the World Meteorological Organization (WMO) and the International Hydrographic Organization (IHO);

5 DETERMINES that this resolution supersedes resolution A.699(17), as from [1 January 2024];

6 INVITES the Assembly to endorse the action taken by the Maritime Safety Committee.

ANNEX

**SYSTEM PERFORMANCE STANDARD FOR THE PROMULGATION AND
COORDINATION OF MARITIME SAFETY INFORMATION USING HIGH-FREQUENCY
NARROW-BAND DIRECT-PRINTING**

1 Administrations desiring to broadcast maritime safety information using HF narrow-band direct-printing, in accordance with the provisions of regulation IV/7.1.4 of the 1974 SOLAS Convention, should notify their intentions to the IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR). The NCSR Sub-Committee will coordinate proposals with other Administrations, and will make recommendations on frequencies, schedules, transmit power, broadcast duration and broadcast content, as well as on other pertinent characteristics. The NCSR Sub-Committee may authorize a correspondence panel to perform this coordination function between sessions if, in the Sub-Committee's view, this becomes necessary. Administrations may notify their intentions to the correspondence panel.

2 The NCSR Sub-Committee may periodically recommend revision and adjustments to the broadcast schedule, including shifting existing broadcasts to other schedules, in order to meet the needs of Administrations.

3 Broadcasts should be made simultaneously on groups of frequencies in accordance with Recommendation ITU-R M.688 and Radio Regulations No.33.47.

4 Following approval of these broadcasts by the NCSR Sub-Committee, Administrations should notify the ITU Radiocommunication Bureau (BR) in accordance with the requirements of the Radio Regulations.

5 IMO will coordinate broadcasts with WMO and IHO and will periodically issue schedules of broadcasts.*

6 Administrations providing an HF narrow-band direct-printing maritime safety information service should make provisions to alert vessels with respect to unscheduled broadcasts by digital selective calling. The system should be capable of automatic reception.

* Refer to the module "Master plan of shore-based facilities for the GMDSS" of the Global Integrated Shipping Information System (GISIS).

ANNEX 16

DRAFT MSC RESOLUTION

**PERFORMANCE STANDARDS FOR THE RECEPTION OF MARITIME SAFETY
INFORMATION AND SEARCH AND RESCUE RELATED INFORMATION
BY MF (NAVTEX) AND HF**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.525(13), by which the Assembly, at its thirteenth session, adopted the *Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships*, and resolution A.700(17), by which the Assembly, at its seventeenth session, adopted the *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*,

RECALLING FURTHER resolution MSC.148(77), by which it adopted, at its seventy-seventh session, the revised *Recommendation on Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)*, as amended by resolution MSC.430(98),

RECALLING resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention"), adopted by resolution MSC.[...],

NOTING, in particular, the carriage requirement in regulation IV/7.1.4 of the Convention for receiver(s) capable of receiving maritime safety information and search and rescue related information throughout the entire voyage in which the ship is engaged,

NOTING ALSO the success of the International NAVTEX and HF-MSI service in the promulgation of maritime safety information,

NOTING FURTHER the enhanced storage, processing and display possibilities offered by recent technical advances,

RECOGNIZING that further growth in information promulgated to ships will be constrained by the capacity of the International NAVTEX service and the increasing importance of National NAVTEX services, and that HF NBDP broadcasts may be used in the Global Maritime Distress and Safety System (GMDSS),

RECOGNIZING ALSO the need to revise the *Recommendation on Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)* (resolution MSC.148(77), as amended) and the *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* (resolution A.700(17)),

HAVING CONSIDERED, at its [105th] session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS the revised *Performance standards for the reception of maritime safety information and search and rescue related information by MF (NAVTEX) and HF*, set out in the annex to the present resolution;

2 RECOMMENDS Governments to ensure that NAVTEX receiver equipment:

- .1 if installed on or after [1 January 2024], conforms to performance standards not inferior to those specified in the annex to the present resolution;
- .2 if installed on or after 1 July 2019, but before [1 January 2024], conforms to performance standards not inferior to those specified in the annex to resolution MSC.148(77), as amended;
- .3 if installed on or after 1 July 2005, but before 1 July 2019, conforms to performance standards not inferior to those specified in the annex to resolution MSC.148(77); and
- .4 if installed before 1 July 2005, conforms to performance standards not inferior to those specified in the annex to resolution A.525(13).

3 ALSO RECOMMENDS that equipment for the reception of NBDP broadcasts of navigational and meteorological warnings and urgent information to ships by HF:

- .1 if installed on or after [1 January 2024], conforms to performance standards not inferior to those specified in the annex to the present resolution; and
- .2 if installed before [1 January 2024], conforms to performance standards not inferior to those specified in the annex to resolution A.700(17).

4 FURTHER RECOMMENDS Governments to allow ships carrying MF/HF radio installations in accordance with resolution MSC.[...] to use such equipment in lieu of equipment complying with the standard specified in the annex to the present resolution.

ANNEX

PERFORMANCE STANDARDS FOR THE RECEPTION OF MARITIME SAFETY INFORMATION AND SEARCH AND RESCUE RELATED INFORMATION BY MF (NAVTEX) AND HF

1 INTRODUCTION

1.1 The equipment receives maritime safety information (MSI) and search and rescue (SAR) related information transmitted by NAVTEX services and HF, and may be used to meet the requirements of SOLAS regulation IV/7.1.4.

1.2 In addition to meeting the requirements of the Radio Regulations, NAVTEX receiver should comply with Recommendation ITU-R M.540 and receiver for HF-MSI should comply with Recommendation ITU-R M.688.

1.3 The equipment should comply also with the requirements set out in resolutions A.694(17) and MSC.191(79) and with the following performance standards.

2 GENERAL

The equipment should comprise radio receivers of at least one frequency band, a signal processor and either:

- .1 an integrated printing device; or
- .2 a dedicated display device,¹ printer output port and a non-volatile message memory; or
- .3 a connection to an integrated navigation system and a non-volatile message memory.

3 CONTROLS AND INDICATORS

Details of the coverage areas and message categories which have been excluded by the operator from reception and/or display should be readily available.

4 RECEIVERS

4.1 Receiver for NAVTEX

4.1.1 The equipment should contain one receiver operating on the frequency prescribed by the Radio Regulations for the International NAVTEX System. The equipment should contain a second receiver capable of working at the same time as the first one on at least two other frequencies recognized for the transmission of NAVTEX information. The first receiver should have priority in the display or printing of received information. Printing or displaying of messages from one receiver should not prevent reception by the other receiver.

4.1.2 The receiver sensitivity should be such that for a source with an e.m.f. of 2 μ V in series with a non-reactive impedance of 50 Ω , the character error rate is below 4%.

¹ Where there is no printer, the dedicated display device should be located in the position from which the ship is normally navigated.

4.2 Receiver for HF-MSI

4.2.1 The receiver sensitivity should be equal to or better than e.m.f of 6 μ V at the receiver input to produce an NBDP output character-error rate of not greater than 10^{-2} .

4.2.2 A UTC clock, accurate to at least one second, and associated with a reprogrammable memory which contains the frequency sequence and UTC broadcast schedules of all stations, should control the HF receiver to provide automatic MSI reception.

5 DISPLAY DEVICE AND PRINTER

5.1 The display device and/or printer should be able to display a minimum of 32 characters per line.

5.2 If a dedicated display device is used, the following requirements should be met:

- .1 an indication of newly received unsuppressed messages should be immediately displayed until acknowledged or until 24 hours after receipt; and
- .2 newly received unsuppressed messages should also be displayed.

5.3 The display device should be able to display at least 16 lines of message text.

5.4 The design and size of the display device should be such that displayed information is easily read under all conditions by observers at normal working distances and viewing angles.

5.5 If automatic line feed entails division of a word, this should be indicated in the displayed/printed text.

5.6 When displaying received messages on a display device, a clear indication of the end of a message should be given by automatically adding line feeds after the message or including some other form of delineation. The printer or printer output should automatically insert line feeds after completing print of the received message.

5.7 The equipment should display/print an asterisk if the character is received corrupted.

5.8 Where the printer is not integrated, it should be possible to select the following data to be output to a printer:

- .1 all messages as they are received;
- .2 all messages stored in the message memory;
- .3 all messages received on specified frequencies, from specified locations or having specified message designators;
- .4 all messages currently displayed; and
- .5 individual messages selected from those appearing on the display.

6 STORAGE

6.1 Non-volatile message memory

6.1.1 For each receiver fitted it should be possible to record at least 200 messages of average length 500 characters (printable and non-printable) in non-volatile message memory. It should not be possible for the user to erase messages from memory. When the memory is full, the oldest messages should be overwritten by new messages.

6.1.2 The user should be able to tag individual messages for permanent retention. These messages may occupy up to 25% of the available memory and should not be overwritten by new messages. When no longer required, the user should be able to remove the tag on these messages which may then be overwritten in normal course.

6.2 Message identifications

6.2.1 The equipment should be capable of internally storing at least 200 message identifications for each receiver provided.

6.2.2 After between 60 h and 72 h, a message identification should automatically be erased from the store. If the number of received message identifications exceeds the capacity of the store, the oldest message identification should be erased.

6.2.3 Only message identifications which have been satisfactorily received should be stored; a message is satisfactorily received if the error rate is below 4%.

6.3 Programmable control memories

Information for location (B1)² and message (B2)² designators in programmable memories should not be erased by interruptions in the power supply of less than 6 h.

7 ALERT

The receipt of search and rescue information (B2 = D) should give an alert at the position from which the ship is normally navigated. It should only be possible to reset this alert manually.

8 TEST FACILITIES

The equipment should be provided with a facility to test that the radio receiver, the display device/printer and non-volatile message memory are functioning correctly.

9 INTERFACES

9.1 The equipment should include at least one interface for the transfer of received data to other navigation or communication equipment.

9.2 All interfaces provided for communication with other navigation or communication equipment should comply with the relevant international standards.³

9.3 If there is no integrated printer, the equipment should include a standard printer interface.

² Refer to Recommendation ITU-R M.540.

³ Refer to IEC 61162.

9.4 The equipment should include an interface for alert management in accordance with the *Performance standards for bridge alert management* (resolution MSC.302(87)).

ANNEX 17

DRAFT MSC RESOLUTION

**PROVISION OF RADIO SERVICES FOR THE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO that the Assembly, at its nineteenth session, adopted resolution A.801(19) on *Provision of radio services for the Global Maritime Distress and Safety System (GMDSS)*, authorizing the Maritime Safety Committee to keep the resolution under review and to adopt amendments thereto, as necessary,

RECALLING FURTHER resolution MSC.199(80), by which it adopted, at its eightieth session, amendments to annex 4 to resolution A.801(19) concerning criteria for use when providing a NAVTEX service,

TAKING INTO ACCOUNT the amendments to chapter IV of the International Convention for the Safety of Life at Sea, 1974 ("the Convention"), adopted by resolutions MSC.436(99) and MSC.[...],

NOTING, in particular, regulation IV/5 of the Convention concerning provision of radiocommunication services,

HAVING CONSIDERED, at its [105th] session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS the revised *Recommendation on provision of radio services for the GMDSS*, the *Criteria for use when providing shore-based digital selective calling (DSC) facilities for use in the GMDSS*, the *Criteria for establishing GMDSS sea areas* and the *Criteria for use when providing a NAVTEX service*, set out in annexes 1, 2, 3 and 4, respectively, to the present resolution;

2 RECOMMENDS Governments to ensure that provision of radio services for the GMDSS established on or after [1 January 2024] conforms to criteria not inferior to that set out in the annexes to the present resolution;

3 INVITES Governments to:

- .1 provide, either individually or in cooperation with other Governments, the radio services deemed practicable and necessary for the proper operation of the GMDSS; and
- .2 inform the Secretary-General of shore-based facilities to be provided in support of the GMDSS in response to this resolution through the Organization's Global Integrated Shipping Information System (GISIS).

4 DETERMINES that this resolution supersedes resolution A.801(19), as amended, as from [1 January 2024];

5 INVITES the Assembly to endorse the action taken by the Maritime Safety Committee.

ANNEX 1

RECOMMENDATION ON PROVISION OF RADIO SERVICES FOR THE GMDSS

1 Governments should establish such coast stations, individually or in cooperation with other Governments, as are needed to designate a sea area or areas A1 or A2, or both, off their coasts. Each sea area should be established in accordance with the *Criteria for establishing GMDSS sea areas* recommended in annex 3.

2 Governments that do not define sea areas A1 or A2 should establish such coast stations, individually or in cooperation with other Governments, as are needed to designate a sea area (or areas) A3 or A4 in accordance with SOLAS regulations IV/2.1.17 and 2.1.18. Each sea area should be established in accordance with the *Criteria for establishing GMDSS sea areas* recommended in annex 3.

3 Each Government should submit to the Organization information on the sea area or sea areas (A1, A2, A3 and/or A4) designated, radiocommunication services it has established for the GMDSS, and when there are changes to the sea area or areas it has so defined.

4 Governments should make provision for radiocommunication services in each sea area they have defined, so that a ship, while at sea, can receive shore-to-ship radiocommunication and that coast stations can receive ship-to-shore radiocommunication in accordance with the functional requirements set out in SOLAS regulation IV/4.1.

ANNEX 2

CRITERIA FOR USE WHEN PROVIDING SHORE-BASED DIGITAL SELECTIVE CALLING (DSC) FACILITIES FOR USE IN THE GMDSS

1 Governments, individually or in cooperation with other Governments, desiring to provide a high frequency (HF) DSC coast station for use in the GMDSS should notify the Organization so it can maintain in the GMDSS Master Plan details of HF coast stations providing HF DSC distress watch. Governments should ensure that such HF DSC coast stations are provided in accordance with appendix 1.

2 Governments, individually or in cooperation with other Governments, desiring to provide a medium frequency (MF) DSC coast station serving, either wholly or in part, a particular sea area A2, should notify the Organization as to the extent of continuous coverage and the extent of coverage from shore. This information should be determined by Governments in accordance with the criteria recommended in annex 3. Governments should ensure that MF DSC coast stations are provided in accordance with appendix 2.

3 Governments, individually or in cooperation with other Governments desiring to provide a very high frequency (VHF) DSC coast station serving, either wholly or in part, a particular sea area A1, should notify the Organization as to the extent of continuous coverage and the extent of coverage from shore. This information should be determined by Governments in accordance with the criteria recommended in annex 3. Governments should ensure that VHF DSC coast stations are provided in accordance with appendix 3.

4 In addition, Report ITU-R M.2027 provides engineering guidance to upgrade shore-based facilities to operate the GMDSS in sea areas A1, A2, A3 and A4.

APPENDIX 1

1 BASIC PRINCIPLES FOR ESTABLISHING HF DSC COAST STATIONS FOR SEA AREAS A3 AND A4

The location of HF DSC coast stations for sea areas A3 and A4 should be based where practicable on the following principles:

- .1 each area should have a minimum of two stations to provide the required coverage;
- .2 stations should be selected to provide redundant coverage; and
- .3 in areas of high traffic density, more than two stations should be provided.

Governments are encouraged to cooperate in order to achieve the above basic principles for establishing HF DSC coast stations and a complete global coverage.

2 CRITERIA FOR THE PROVISION OF HF DSC COAST STATIONS

Stations participating in HF DSC watchkeeping in the GMDSS should:

- .1 be affiliated to an RCC and have reliable communications between them;
- .2 monitor all HF DSC distress frequencies;
- .3 provide as complete a coverage of their area as possible;
- .4 be in continuous operation; and
- .5 be able to relay distress alerts and communications under an international common procedure as agreed by the Organization.*

3 AVAILABILITY AND COVERAGE OF HF DSC COAST STATIONS

The minimum number of HF DSC coast stations indicated in paragraph 1 may need to be adjusted in future in order to:

- .1 ensure coast stations can provide a mutual backup in the event of operational failure; and
- .2 provide a methodology for predicting coverage to include in the GMDSS Master Plan.

* Refer to IAMSAR Manual, Volume II, section 3.6 "Designation of the RCC or RSC responsible for initiating SAR action".

APPENDIX 2

1 BASIC PRINCIPLES FOR ESTABLISHING MF DSC COAST STATIONS FOR SEA AREA A2

The selection of MF DSC coast stations for sea area A2 should be based on the following principles:

- .1 each sea area designated as A2 requires a continuous MF guard on the distress frequencies and a sufficient number of coast stations to provide MF coverage in the coastal area of the Government concerned; and
- .2 in certain areas, several Governments may collectively provide complete coverage (e.g. the North Sea).

2 CRITERIA FOR THE PROVISION OF MF DSC COAST STATIONS

Stations participating in MF DSC watchkeeping in the GMDSS should:

- .1 be affiliated to an RCC and have reliable communications between them;
- .2 provide as complete a coverage of their immediate sea area as possible; and
- .3 be in continuous operation.

APPENDIX 3

1 BASIC PRINCIPLES FOR ESTABLISHING VHF DSC COAST STATIONS FOR SEA AREA A1

The selection of VHF DSC coast stations for sea area A1 should be based on the following principles:

- .1 each sea area designated as A1 requires a continuous VHF guard and should have the minimum number of stations necessary to provide VHF coverage in the coastal area of the Government concerned; and
- .2 in certain areas, several Governments may collectively provide complete coverage along their coasts (e.g. the North Sea).

2 CRITERIA FOR THE PROVISION OF VHF DSC COAST STATIONS

Stations participating in VHF DSC watchkeeping in the GMDSS should:

- .1 be affiliated to an RCC and have reliable communications between them;
- .2 provide as complete a coverage of their immediate sea area as possible; and
- .3 be in continuous operation.

ANNEX 3

CRITERIA FOR ESTABLISHING GMDSS SEA AREAS

1 INTRODUCTION

Governments should use the following criteria when establishing sea areas as defined in SOLAS regulation IV/2.

2 SEA AREA A1

2.1 General

The communication range of stations operating in the maritime mobile VHF band is likely to be limited by propagation factors rather than lack of radiated power.

2.2 Guidance criteria

Sea area A1 is that sea area which is within a circle of radius A nautical miles over which the radio propagation path lies substantially over water. The radius A is equal to the transmission distance between a ship's VHF antenna at a height of 4 m above sea level and the antenna of the VHF coast station which lies at the centre of the circle.

2.3 Determination of radius A

2.3.1 The following formula should be used to calculate the range A in nautical miles:

$$A = 2.5 (\sqrt{H(\text{in metres})} + \sqrt{h(\text{in metres})})$$

H is the height above sea level of the VHF coast station receiving antenna and h is the height of the ship's transmitting antenna which is assumed to be 4 m.

2.3.2 The formula given above applies to line-of-sight cases but is not considered adequate for cases where both antennae are at a low level. The VHF range in sea area A1 should be verified by field strength measurements.

3 SEA AREA A2

3.1 General

3.1.1 Consideration of the reception of radio signals in the 2 MHz band indicates that the range is likely to be limited by propagation conditions and atmospheric noise, which are affected by variations in geographical position and time of day, as well as radiated power.

3.1.2 The theoretical distance to be expected from ground wave propagation can be determined by reference to the "Ground-wave propagation curves for frequencies between 10 kHz and 30 MHz" in the most recent version of Recommendation ITU-R P.368, to be used above seawater and adjusted as necessary to take account of the actual radiated field strength from the transmitting antenna and the minimum field strength necessary for the proper operation of a receiver conforming with the latest performance standard adopted by the Organization.

3.1.3 The determination of the minimum signal level required for satisfactory radio reception in the absence of other unwanted signals necessitates taking account of the noise with which the wanted signal must compete. The latest Recommendation ITU-R P.372 gives the world distribution of values of noise level and of other noise parameters and shows the method of using these in the evaluation of the probable performance of a radio circuit.

3.1.4 In addition, the most recent version of Recommendation ITU-R M.1467 provides guidance to Administrations for predicting sea area A2 by taking into account variations in the propagation conditions.

3.2 Guidance criteria

Sea area A2 is that sea area which is within a circle of radius B nautical miles over which the propagation path lies substantially over water and which is not part of any sea area A1, the centre of the circle being the position of the coast station receiving antenna.

3.3 Determination of radius B

The radius B may be determined for each coast station by reference to the most recent versions of Recommendations ITU-R P.368 and ITU-R P.372 for the performance of a single sideband (J3E) system under the following conditions:

Frequency	-	2 182 kHz
Bandwidth	-	3 kHz
Propagation	-	ground wave
Time of day	-	1
Season	-	1
Ship's transmitter power (PEP)	-	60 W ²
Ship's antenna efficiency	-	25%
Radio frequency signal over noise (RF S/N)	-	9 dB (voice)
Mean transmitter power	-	8 dB below peak power
Fading margin	-	3 dB

The range of sea area A2 should be verified by field strength measurements.

4 SEA AREA A3

Guidance criteria

Sea area A3 means an area, excluding sea areas A1 and A2, within the coverage of a recognized mobile satellite service supported by the ship earth station carried on board in which continuous alerting is available.

5 SEA AREA A4

Guidance criteria

Sea area A4 means an area outside of sea areas A1, A2 and A3.

¹ Administrations should determine time periods and seasons appropriate to their geographic area based on prevailing noise level.

² In the absence of field strength measurements, it may be assumed that this range will be obtained by a radio frequency power of 60 watts PEP for full carrier emissions generated by a single sinusoidal oscillation in an antenna of 25% efficiency.

ANNEX 4

CRITERIA FOR USE WHEN PROVIDING A NAVTEX SERVICE

1 There are two basic areas which must be defined when establishing a NAVTEX service. They are:

Coverage area: An area defined by an arc of a circle having a radius from the transmitter calculated according to the method and criteria given in this annex.

Service area: A unique and precisely defined sea area, wholly contained within the coverage area, for which MSI is provided from a particular NAVTEX transmitter. It is normally defined by a line which takes full account of local propagation conditions and the character and volume of information and maritime traffic patterns in the region.

2 Governments desiring to provide a NAVTEX service should use the following criteria for calculating the coverage area of the NAVTEX transmitter they intend to install, in order to:

- .1 determine the most appropriate location for NAVTEX stations having regard to existing or planned stations;
- .2 avoid interference with existing or planned NAVTEX stations; and
- .3 establish a service area for promulgation to seafarers.

3 The ground-wave coverage may be determined for each coast station by reference to the most recent versions of Recommendations ITU-R P.368 and ITU-R P.372 for the performance of a system under the following conditions:

Frequency	-	518 kHz		
Bandwidth	-	300 Hz		
Propagation	-	ground wave		
Time of day	-	1		
Season	-	1		
Transmitter power	-	2		
Antenna efficiency	-	2		
Radio frequency signal over noise (RF S/N) in 500 Hz bandwidth	-		8 dB ³	
Percentage of time	-	90		

4 Full coverage of NAVTEX service area should be verified by field strength measurements.

¹ Administrations should determine time periods in accordance with NAVTEX time transmission table (see NAVTEX Manual) and seasons appropriate to their geographic area based on prevailing noise level.

² The range of a NAVTEX transmitter depends on the transmitter power and local propagation conditions. The actual range achieved should be adjusted to the minimum required for adequate reception in the NAVTEX area served, taking into account the needs of ships approaching from other areas. Experience has indicated that the required range of 250 to 400 nautical miles (nm) can generally be attained by transmitter power in the range between 100 and 1,000 W during daylight with a 60% reduction at night. The receiver characteristics, particularly as regards the bandwidth response, must be compatible with that of the NAVTEX transmitter.

³ Bit error rate 1×10^{-2} .

5 In addition, the most recent version of Recommendation ITU-R M.1467 provides guidance to Administrations for predicting NAVTEX coverage areas by taking into account variations in the propagation conditions.

ANNEX 18

DRAFT MSC RESOLUTION

PERFORMANCE STANDARDS FOR SEARCH AND RESCUE RADAR TRANSPONDERS

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.530(13), by which the Assembly, at its thirteenth session, adopted the *Recommendation on the signal characteristic of radar transponders to assist in search and rescue operations*,

RECALLING FURTHER resolution A.802(19), by which the Assembly, at its nineteenth session, adopted the *Recommendation on Performance standards for survival craft radar transponders for use in search and rescue operations*, which was subsequently amended by resolution MSC.247(83),

RECALLING resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.[...],

NOTING, in particular, regulations IV/7.2.1 and 7.3.1 of the Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require ships to be provided with search and rescue radar transponder(s) (radar SART(s)),

RECOGNIZING the need to revise the *Performance standards for survival craft radar transponders for use in search and rescue operations* to be used in the Global Maritime Distress and Safety System (GMDSS) in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment aboard ship,

NOTING that the International Telecommunication Union Radiocommunication Sector (ITU-R) has developed a Recommendation for the 9 GHz SAR transponders, and that the IEC has published a related technical standard for 9 GHz SAR transponders,

HAVING CONSIDERED, at its [105th] session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS the *Performance standards for search and rescue radar transponders*, set out in the annex to the present resolution;

2 RECOMMENDS Governments to ensure that radar SARTs, which will form part of the GMDSS, conform to performance standards not inferior to those specified in the annex to this resolution;

3 DETERMINES that this resolution supersedes resolutions A.530(13) and A.802(19), as amended, as from [1 January 2024];

4 INVITES the Assembly to endorse the action taken by the Maritime Safety Committee.

ANNEX

PERFORMANCE STANDARDS FOR SEARCH AND RESCUE RADAR TRANSPONDERS

1 INTRODUCTION

The search and rescue radar transponder (radar SART) carried on ships to meet the requirements of SOLAS regulations IV/7.2.1 or 7.3.1, in addition to meeting the requirements of the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 GENERAL

2.1 The radar SART should be capable of indicating the location of a unit in distress on the assisting units' radars by means of a series of 12 equally spaced dots.

2.2 The radar SART should:

- .1 be capable of being easily activated by unskilled personnel;
- .2 be fitted with means to prevent inadvertent activation;
- .3 be equipped with a means which is either visual or audible, or both visual and audible, to indicate correct operation and to alert survivors to the fact that a radar has triggered the radar SART;
- .4 be capable of manual activation and deactivation; provision for automatic activation may be included;*
- .5 be provided with an indication of the standby condition;
- .6 be capable of withstanding without damage drops from a height of 20 m into water;
- .7 be watertight at a depth of 10 m for at least 5 min;
- .8 maintain watertightness when subjected to a thermal shock of 45°C under specified conditions of immersion;
- .9 be capable of floating if it is not an integral part of the survival craft;
- .10 be equipped with buoyant lanyard, suitable for use as a tether, if it is capable of floating;
- .11 not be unduly affected by seawater or oil;
- .12 be resistant to deterioration in prolonged exposure to sunlight;

* If an onboard test is performed using a shipborne 9 GHz radar, activation of the radar SART should be limited to a few seconds to avoid harmful interference with other shipborne radars and excessive consumption of battery energy.

- .13 be of a highly visible yellow/orange colour on all surfaces where this will assist detection;
- .14 have a smooth external construction to avoid damaging the survival craft; and
- .15 be provided with a pole or other arrangement compatible with the antenna pocket in a survival craft in order to comply with paragraph 2.5, together with illustrated instructions.

2.3 The radar SART should have sufficient battery capacity to operate in the standby condition for 96 h and, in addition, following the standby period, to provide transponder transmissions for 8 h when being continuously interrogated with a pulse repetition frequency of 1 kHz.

2.4 The radar SART should be so designed as to be able to operate under ambient temperatures of -20°C to +55°C. It should not be damaged in stowage throughout the temperature range of -30°C to +65°C.

2.5 The height of the installed radar SART antenna should be at least 1 m above sea level.

2.6 The vertical polar diagram of the antenna and hydrodynamic characteristics of the device should permit the radar SART to respond to search radars under heavy swell conditions. The polar diagram of the antenna should be substantially omnidirectional in the horizontal plane. Horizontal polarization or circular polarization should be used for transmission and reception.

2.7 The radar SART should operate correctly when interrogated at a distance of up to at least five nautical miles by a navigational radar using unmodulated pulses and complying with resolutions MSC.192(79), A.477(XII) and A.222(VII), with an antenna height of 15 m. It should also operate correctly when interrogated at a distance of up to 30 nautical miles by an airborne radar with at least 10 kW peak output power at a height of 3,000 ft.

3 TECHNICAL CHARACTERISTICS

Technical characteristics of the radar SART should be in accordance with Recommendation ITU-R M.628.

4 LABELLING

In addition to the items specified in resolution A.694(17) on general requirements, the following should be clearly indicated on the exterior of the equipment:

- .1 brief operating instructions; and
- .2 expiry date for the primary battery used.

ANNEX 19

DRAFT MSC RESOLUTION

PERFORMANCE STANDARDS FOR SHIPBORNE VHF RADIO INSTALLATIONS CAPABLE OF VOICE COMMUNICATION AND DIGITAL SELECTIVE CALLING

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.803(19), by which the Assembly, at its nineteenth session, adopted the *Recommendation on Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling*, which was subsequently amended by resolution MSC.68(68), annex 1,

RECALLING FURTHER resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.[...],

NOTING, in particular, regulations IV/7.1.1, 7.1.2 and 8.2 of the Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require ships to be provided with a VHF radio installation capable of voice communication and digital selective calling,

RECOGNIZING the need to revise the *Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling* to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED, at its [105th] session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS the revised *Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling*, set out in the annex to the present resolution;

2 RECOMMENDS Governments to ensure that shipborne VHF radio installations capable of voice communication and digital selective calling which will form part of the GMDSS:

- .1 if installed on or after [1 January 2024], conform to performance standards not inferior to those specified in the annex to the present resolution; and
- .2 if installed before [1 January 2024], conform to performance standards not inferior to those specified in the annex to resolution A.803(19), as amended, or conform to performance standard not inferior to those specified in the annex to this resolution.

ANNEX

PERFORMANCE STANDARDS FOR SHIPBORNE VHF RADIO INSTALLATIONS CAPABLE OF VOICE COMMUNICATION AND DIGITAL SELECTIVE CALLING

PART A – GENERAL

1 INTRODUCTION

1.1 This equipment meets the requirement for VHF installations on ships as required by SOLAS regulations IV/7.1.1, 7.1.2 and 8.2.

1.2 The VHF radio installation, in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolutions A.694(17) and MSC.191(79), should comply with the following performance standards.

2 GENERAL

2.1 The installation, which may consist of more than one piece of equipment, should be capable of operating on single-frequency channels or on single- and two-frequency channels.

2.2 The equipment should provide for the following categories of calls using both voice and digital selective calling (DSC):

- .1 distress, urgency and safety;
- .2 ship operational requirements; and
- .3 general radiocommunications.

2.3 The equipment should provide for the following categories of communications using voice:

- .1 distress, urgency and safety;
- .2 ship operational requirements; and
- .3 general radiocommunications.

2.4 The equipment should comprise at least:

- .1 a transmitter/receiver including antenna;
- .2 an integral control unit or one or more separate control units;
- .3 a microphone with a press-to-transmit switch, which may be combined with a telephone in a handset;
- .4 an internal or external loudspeaker;
- .5 an integral or separate digital selective calling facility; and
- .6 a dedicated DSC watchkeeping facility to maintain a continuous watch on channel 70.

2.5 The installation may also include additional receivers.

2.6 A distress alert should be activated only by means of a dedicated distress button. This button should not be any key of an ITU-T digital input panel or an ISO keyboard associated with the equipment and should be physically separated from functional buttons/keys used for normal operation. This button should be a single button for no other purpose than to initiate a distress alert.

2.7 The dedicated distress button should:

- .1 be clearly identified and be red in colour and marked "DISTRESS". Where a non-transparent protective lid or cover is used, it should also be marked "DISTRESS"; and
- .2 be protected against inadvertent operation. The required protection of the distress button should consist of a spring-loaded lid or cover permanently attached to the equipment by, for example, hinges. It should not be necessary for the user to remove additional seals or to break the lid or cover in order to operate the distress button.

The operation of the distress button should generate a visible and audible indication. The distress button should initiate a distress alert when kept pressed for at least three seconds. A flashing light and an intermittent acoustic signal should start immediately. After the three seconds, the transmission of the distress alert is initiated and the indication should become steady and the acoustic signal should stop. If the distress button is released before a distress alert is initiated, the light should go out and the acoustic signal should stop.

2.8 The distress alert initiation should require at least two independent actions. The lifting of the protective lid or cover is considered as the first action. Pressing the distress button as specified above is considered as the second independent action.

2.9 The equipment should indicate the status of the distress alert transmission.

2.10 It should be possible to interrupt and initiate distress alerts at any time and to interrupt repetitive transmissions of distress messages. Such operation should not interrupt the transmission of a distress alert or distress message in progress but should prevent repetitive transmissions of a distress message.

3 POWER SUPPLY

The VHF radio installation should be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the VHF installation from an alternative source of electrical energy.

4 CONTROLS AND INDICATORS

4.1 Control of the equipment should be possible at the position from which the ship is normally navigated. Control from that position should have priority if additional control units are provided. When there is more than one control unit, indication should be given to the other units that the equipment is in operation.

4.2 The equipment should provide a standard interface to enable the selections of channels and setting of Maritime Mobile Service Identity (MMSI) to be called from a remote control unit (e.g. INS) by using standardized interfaces.¹

4.3 DSC controls and indicators

4.3.1 It should be possible to initiate and make distress and safety calls from the position from which the ship is normally navigated. The means for initiating a distress call should be as prescribed in Part A – General, paragraphs 2.6 to 2.8.

4.3.2 Initiation of DSC distress calls should supersede any other operation of the facility.

4.3.3 Self-identification data should be stored in the DSC unit. It should not be possible for the user easily to change these data.

4.3.4 Means should be provided to enable routine testing of the DSC facilities without radiation of signals.

4.3.5 Provision should be made for:

.1 specific alerts to indicate receipt of a distress or urgency calls or a call having distress category.² It should not be possible to disable this alarm and indication. Provision should be made to ensure that they can be reset only manually; and

.2 alerts for calls other than distress and urgency.

5 INTERFACES

5.1 Where the equipment is part of an integrated communication system (ICS), integrated navigation system (INS), integrated bridge system (IBS) or connected to a navigation system, this should not impair any of the GMDSS functions of the system or the equipment itself.

5.2 Equipment should provide an interface for bridge alert management (BAM) in accordance with resolution MSC.302(87) on *Performance standards for bridge alert management*.

5.3 The equipment should provide an interface to report a ship identifier and location data from a received distress alert, maritime safety information (MSI) or search and rescue (SAR) related information to navigation display system in order to enable a graphical display and possible linking to available target information.

5.4 All interfaces provided for communication with other navigation and communication equipment should comply with the relevant international standards.³

¹ IEC 61162.

² Recommendation ITU-R M.493.

³ IEC 61162 Series.

6 HUMAN-MACHINE INTERFACE

6.1 Human-machine interface (HMI) should provide all functions necessary to carry out all communication procedures including those required by the GMDSS.

6.2 Visual indications and visual presentations of text and graphics of the system should conform to resolution MSC.191(79).

PART B – TRANSMITTER

1 FREQUENCIES AND CLASSES OF EMISSION

1.1 The equipment should be designated for operation on channels selected from and in accordance with appendix 18 to the Radio Regulations.

1.2 The radiotelephone facility should be capable of operating as follows:

- .1 in the band 156.025 MHz to 157.425 MHz on single-frequency channels as specified in appendix 18 to the Radio Regulations; and
- .2 in the band 156.025 MHz to 157.325 MHz for transmitting and the band 160.625 MHz to 161.925 MHz for receiving on two-frequency channels as specified in appendix 18 to the Radio Regulations.

1.3 The digital selective calling facility should be capable of operating on channel 70.

1.4 Class of emission should comply with chapter IX of the Radio Regulations.

2 FREQUENCY ACCURACY AND TOLERANCE

The frequency tolerance for ship station transmitters should not exceed 10 parts in 10^6 .

3 OUTPUT POWER

3.1 The transmitter output power should be between 6 and 25 W.

3.2 Provision should be made for reducing the transmitter output power to a value of less than 1 W. However, this reduction of the power is optional on channel 70.

4 PERMISSIBLE WARMING-UP PERIOD

The equipment should be operational within five seconds after switching on.

5 CONTINUOUS OPERATION

A manual non-locking push-to-talk switch to operate the transmitter with a visual indication that the transmitter is activated and facilities to limit the transmission time to a maximum of five minutes should be provided.

6 CONTROLS AND INDICATORS

6.1 Channel Control and switching

6.1.1 Change of channel should be capable of being made as rapidly as possible, but in any event within five seconds.

6.1.2 The time taken to switch from the transmit to the receive condition, and vice versa, should not exceed 0.3 seconds.

6.1.3 An on/off switch should be provided for the entire installation with a visual indication that the installation is switched on.

6.1.4 A visual indication that the carrier is being transmitted should be provided.

6.1.5 The equipment should indicate the four-digit channel number, as given in the Radio Regulations appendix 18, to which it is tuned. It should allow the determination of the channel number under all conditions of external lighting. Where practicable, channels 16 and 70 should be distinctively marked.

6.1.6 The equipment should not be able to transmit during a channel switching operation.

6.1.7 Operation of the transmit/receive control should not cause unwanted emissions.

6.2 Radiotelephone facility

6.2.1 Provision should be made for changing from transmission to reception by use of a press-to-transmit switch. Additionally, facilities for operation on two-frequency channels without manual control may be provided.

6.2.2 The receiver should be provided with a manual volume control by which the audio output may be varied.

6.2.3 A squelch (mute) control should be provided on the exterior of the equipment.

6.3 Loudspeaker and telephone handset (radiotelephone facility)

6.3.1 The receiver output should be suitable for use with a loudspeaker and a telephone handset. The audio output should be sufficient to be heard in the ambient noise level likely to be encountered on board ships.

6.3.2 It should be possible to switch off the loudspeaker without affecting the audio output of the telephone handset, if provided.

6.3.3 In the transmit condition during simplex operation, the output of the receiver should be muted.

6.3.4 In the transmit condition during duplex operation, only the telephone handset should be in circuit. Care should be taken to prevent any electrical or acoustic feedback, which could cause singing.

7 SAFETY PRECAUTIONS

7.1 The equipment, when operating, should not be damaged by the effects of open-circuited or short-circuited antenna terminals.

7.2 In case the standing wave ratio (SWR) becomes too high the power of the transmitter can be automatically reduced without stopping the transmission and an appropriate alert should be initiated.

8 ANTENNA SYSTEM

The VHF antenna or antennae should be vertically polarized and, as far as practicable, be omnidirectional in the horizontal plane. The installation should be suitable for efficient radiation and reception of signals at the operating frequencies.

PART C – RECEIVER

1 FREQUENCIES AND CLASSES OF EMISSION

See Part B 1.

2 FREQUENCY TOLERANCE AND ACCURACY

The frequency tolerance for ship station receivers should not exceed 10 parts in 10^6 .

3 USABLE SENSITIVITY

3.1 Radiotelephone facility

The sensitivity of the receiver should be equal to or better than 2 μ V e.m.f. for a signal-to-noise and distortion (SINAD) ratio of 20 dB.

3.2 Digital selective calling facility

With a DSC modulated input signal having a level of 1 μ V e.m.f. to its associated VHF receiver, the DSC equipment should be capable of decoding the received message with a maximum permissible output character error rate of 10^{-2} .

4 RECEIVER OUTPUT

4.1 For the reception of voice signals, the receiver should be suitable for use with a loudspeaker and a telephone handset and should be capable of providing power of at least 2 W to loudspeaker and at least 1 mW to the handset.

4.2 An output should be provided for DSC signals if the corresponding facility is not integrated.

5 PERMISSIBLE WARMING-UP PERIOD

See Part A 4.

6 IMMUNITY TO INTERFERENCE

The immunity to interference of the receiver should be such that the wanted signal is not seriously affected by unwanted signals.

7 CONTROLS

See Part B 6.

PART D – DIGITAL SELECTIVE CALLING FACILITY

1 DSC CAPABILITIES

1.1 The facility should conform to the provisions of the relevant ITU-R Recommendations pertaining to the DSC system.⁴

1.2 The DSC facility should comprise of:

- .1 means to decode and encode DSC messages;
- .2 means necessary for composing the DSC message;
- .3 means to verify the prepared message before it is transmitted;
- .4 means to display the information contained in a received call in plain language;
- .5 facilities to automatically update the ship's position and the time at which the position was determined from a suitable electronic position-fixing aid which may be an integral part of the equipment. For equipment which does not have an integral position-fixing aid, such facilities should include a suitable interface conforming to the appropriate international standards;⁵
- .6 means for the manual entry of position information and the time at which the position was determined; and
- .7 means to activate an alert when no position data is received from the electronic position-fixing aid or, in the case of manual input, the position information is over four hours old. Any position information not updated for more than 23.5 hours should be erased.

2 DISTRESS MESSAGE STORAGE

2.1 If the received messages are not printed immediately, sufficient capacity should be provided to enable at least 20 received distress messages to be stored in the DSC facility.

2.2 These messages should be stored until readout and should be erased after 48 hours after their reception.

⁴ Class A DSC equipment conforming to Recommendation ITU-R M.493 should be used to meet this requirement.

⁵ IEC 61162.

ANNEX 20

DRAFT MSC RESOLUTION

PERFORMANCE STANDARDS FOR SHIPBORNE MF AND MF/HF RADIO INSTALLATIONS CAPABLE OF VOICE COMMUNICATION, DIGITAL SELECTIVE CALLING AND RECEPTION OF MARITIME SAFETY INFORMATION AND SEARCH AND RESCUE RELATED INFORMATION

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolutions A.804(19) and A.806(19), by which the Assembly, at its nineteenth session, adopted the *Performance standards for shipborne MF radio installations capable of voice communication and digital selective calling* and the *Performance standards for shipborne MF/HF radio installations capable of voice communication, narrow-band direct-printing and digital selective calling*, respectively, which were subsequently amended by resolution MSC.68(68), annexes 2 and 3,

RECALLING FURTHER resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.[...],

NOTING, in particular, regulations IV/9, 10 and 11 of the Convention, concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require, respectively, that ships be provided with a MF or MF/HF radio installation capable of voice communication, digital selective calling and reception of maritime safety information and search and rescue related information,

RECOGNIZING the need to revise the performance standards for MF as well as MF/HF radio installations capable of voice communication, digital selective calling and reception of maritime safety information to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED, at its [105th] session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS the revised *Performance standards for shipborne MF and MF/HF radio installations capable of voice communication, digital selective calling and reception of maritime safety information and search and rescue related information*, set out in the annex to the present resolution;

2 RECOMMENDS Governments to ensure that shipborne MF and MF/HF radio installations capable of voice communication, digital selective calling and reception of maritime safety information which will form part of the GMDSS:

- .1 if installed on or after [1 January 2024], conform to performance standards not inferior to those specified in the annex to the present resolution, and
- .2 if installed before [1 January 2024], conform to performance standards not inferior to those specified in the annex to resolutions A.804(19), as amended, and A.806(19), as amended, or conform to performance standard not inferior to those specified in the annex to this resolution.

ANNEX

PERFORMANCE STANDARDS FOR SHIPBORNE MF AND MF/HF RADIO INSTALLATIONS CAPABLE OF VOICE COMMUNICATION, DIGITAL SELECTIVE CALLING AND RECEPTION OF MARITIME SAFETY INFORMATION AND SEARCH AND RESCUE RELATED INFORMATION

PART A – GENERAL

1 INTRODUCTION

The MF and MF/HF radiotelephone, digital selective calling (DSC) and reception of maritime safety information (MSI) and search and rescue (SAR) related information installation carried to meet any of the requirements of SOLAS regulations IV/9, 10 or 11, in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolutions A.694(17) and MSC.191(79) should comply with the following minimum requirements.

2 GENERAL

2.1 The installation, which may consist of more than one piece of equipment, should be capable of operating on single-frequency channels or on single- and two-frequency channels.

2.2 The equipment should provide for the following categories of calling, using both voice and DSC:

- .1 distress, urgency and safety;
- .2 general radiocommunications; and
- .3 ship operational requirements.

2.3 The equipment should provide capabilities for the reception and processing of MSI and SAR related information.

2.4 The equipment should comprise at least:

- .1 a transmitter/receiver, including antenna(e);
- .2 an integral main control unit and/or one or more separate control units, or control functions in an integrated communication system, with the possibility of separate slave control units;
- .3 a microphone with a press-to-transmit switch, which may be combined with a telephone in a handset;
- .4 an internal or external loudspeaker;
- .5 an integral or separate capability for reception and presentation of MSI and SAR related information;
- .6 an integral or separate DSC facility;

- .7 a dedicated DSC watchkeeping facility to maintain a continuous watch on distress channels. Where a scanning receiver is employed to watch more than one DSC channel, all selected channels should be scanned within two seconds and the dwell time on each channel should be adequate to allow detection of the dot pattern which precedes each DSC call. The scan should only stop on detection of a 100 baud dot pattern; and
- .8 an integral or separate facility to establish a connection between stations of the maritime mobile service by simple means using DSC.¹

2.5 A distress alert should be activated only by means of a dedicated distress button. This button should not be any key of an ITU-T digital input panel or an ISO keyboard provided on the equipment and should be physically separated from functional buttons/keys used for normal operation. This button should be a single button for no other purpose than to initiate a distress alert.

2.6 The dedicated distress button should:

- .1 be clearly identified, red in colour and marked "DISTRESS". Where a non-transparent protective lid or cover is used, it should also be marked "DISTRESS"; and
- .2 be protected against inadvertent operation. The required protection of the distress button should consist of a spring-loaded lid or cover permanently attached to the equipment by, for example, hinges. It should not be necessary for the user to remove additional seals or to break the lid or cover in order to operate the distress button. The operation of the distress button should generate a visible and audible indication. The distress button should initiate a distress alert when kept pressed for at least three seconds. A flashing light and an intermittent acoustic signal should start immediately. After the three seconds the transmission of the distress alert is initiated and the indication should become steady and the acoustic signal should stop. If the distress button is released before a distress alert is initiated, the light should go out and the acoustic signal should stop.

2.7 The distress alert initiation should require at least two independent actions. The lifting of the protective lid or cover is considered as the first action. Pressing the distress button as specified above is considered as the second independent action.

2.8 The equipment should indicate the status of the distress alert transmission.

2.9 It should be possible to interrupt and initiate distress alerts at any time and to interrupt repetitive transmissions of distress messages. Such operation should not interrupt the transmission of a distress alert or distress message in progress but should prevent repetitive transmissions of a distress message.

2.10 Valid GNSS position and timing data from either an internal or external source should be available to the equipment at all times. The loss of position information should generate a visible or audible indication.

¹ Conforming to Recommendation ITU-R M.493.

3 POWER SUPPLY

3.1 The MF and MF/HF radio installation should be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the installation from an alternative source of electrical energy including a reserve source of energy.

3.2 If it is necessary to delay the application of voltage to any part of the transmitter after switching on, this delay should be provided automatically.

3.3 If the transmitter or receiver or both include parts which are required to be heated in order to operate correctly, for example crystal ovens, the power supplies to the heating circuits should be so arranged that they can remain operative when other supplies to or within the equipment are switched off. If a special switch for the heating circuits is provided, its functions should be clearly indicated; it should normally be in the "on" position and be protected against inadvertent operation. The correct operating temperature should be reached within a period of five minutes after the application of power.

4 CONTROL AND INDICATORS

4.1 Operational controls

4.1.1 It should be possible to initiate distress alerts and conduct distress and safety communications from the position, or in the vicinity of the position, from which the ship is normally navigated.

4.1.2 The equipment should provide a standard interface to enable the selections of frequencies and setting of MMSI to be called from a remote control unit (e.g. INS) by using standardized interfaces.²

4.1.3 The equipment should provide functionality to establish connection with other stations of the mobile maritime service by simple means using DSC the "Automatic Connection System".³

4.1.4 The equipment should provide visual and audible indication of any distress alert or alerts received on board at the position from which the ship is normally navigated, which may be different from the position of the primary control of the equipment.

4.2 Transmitter controls

4.2.1 Provision should be made for indicating the antenna current or power delivered to the antenna. Failure of the indicating system should not interrupt the antenna circuit.

4.2.2 Manually tuned equipment should be fitted with a sufficient number of indicators to permit accurate and rapid tuning.

4.2.3 Operation of the transmit/receive control should not cause unwanted emissions.

4.2.4 All adjustment and controls necessary for switching the transmitter to operate on 2 182 kHz and 2 187.5 kHz should be clearly marked, in order that these operations may be performed readily.

² IEC 61162 Series.

³ Conforming to Recommendation ITU-R M.493.

4.3 Receiver controls

The receiver should be provided with automatic gain control.

4.4 DSC controls and indicators

4.4.1 It should be possible to initiate and make distress and safety calls from the position from which the ship is normally navigated. The means for initiating a distress call should be as prescribed in 2.5 to 2.9 of Part A.

4.4.2 Initiation of DSC distress calls should take precedence over any other operation of the facility.

4.4.3 Self-identification data should be stored in the DSC unit. It should not be possible for the user to easily change these data.

4.4.4 Means should be provided to enable routine testing of the DSC facilities without radiation of RF signals.

4.4.5 Provision should be made for alerts with specific audible signals and visual indications to indicate receipt of a distress or urgency call or a call having a distress category.⁴ It should not be possible to disable this alert. Provision should be made to ensure that it can be reset only manually.

5 INTERFACES

5.1 Where the equipment is part of an integrated communication system (ICS), integrated navigation system (INS), integrated bridge system (IBS) or connected to a navigation system, this should not impair any of the GMDSS functions of the system or the equipment itself.

5.2 Equipment should provide an interface for the bridge alert management (BAM) in accordance with resolution MSC.302(87) on *Performance standards for bridge alert management*.

5.3 The equipment should provide an interface to report a ship identifier and location data from a received distress alert, MSI or SAR related information to navigation display system in order to enable a graphical display and possible linking to available target information.

5.4 All interfaces provided for communication with other navigation and communication equipment should comply with the relevant international standards.⁵

6 HUMAN-MACHINE INTERFACE

6.1 Human-machine interface (HMI) should provide all functions necessary to carry out all communication procedures including those required by the GMDSS.

6.2 Visual indications and visual presentations of text and graphics of the system should conform to resolution MSC.191(79).

⁴ Recommendation ITU-R M.493.

⁵ IEC 61162 Series.

PART B – TRANSMITTER

1 FREQUENCIES AND CLASSES OF EMISSION

1.1 For MF only equipment, the radiotelephone and DSC transmitter should be capable of transmitting on all frequencies allocated in the bands between 1 605 kHz and 4 000 kHz, but at least the frequency 2 182 kHz for voice and the DSC frequency 2 187.5 kHz, as well as the DSC frequency 2 177 kHz used for routine calls should be readily accessible to the operator.

1.2 For MF/HF equipment the transmitter should be capable of transmitting on all frequencies allocated to the maritime mobile service in the frequency band 1 605 kHz to 27 500 kHz. As a minimum, the following frequencies should be readily accessible to the operator: the voice frequencies 2 182, 4 125, 6 215, 8 291, 12 290 and 16 420 kHz; and the DSC frequencies 2 187.5, 4 207.5, 6 312, 8 414.5, 12 577 and 16 804.5 kHz and the DSC routine calling frequencies in the 2 MHz, 4 MHz, 6 MHz, 8 MHz, 12 MHz and 16 MHz bands.⁶

1.3 Radiotelephone frequencies are designated in terms of the carrier frequency; DSC frequencies are designated in terms of the assigned (centre) frequency. When DSC signals are transmitted using a transmitter in the J2B mode the (suppressed) carrier frequency should be adjusted so as to have the DSC signal transmitted on the assigned frequency. The selected transmitter frequency should be clearly identifiable on the control panel of the equipment.

1.4 The transmitter should be capable of transmitting upper side band using classes of emission J3E and either J2B or F1B. The modulation should change automatically according to the designation of the frequency selected.

1.4.1 When switching to the pre-set distress frequencies 2 182, 4 125, 6 215, 8 291, 12 290 and 16 420 kHz, the appropriate class of emission in accordance with the Radio Regulations should be selected automatically.⁷

1.4.2 When switching to the assigned (centre) frequencies for DSC specified in paragraphs 1.1 and 1.2 above, classes of emission F1B or J2B should be selected automatically.⁷

1.5 It should be possible for the user to select transmission frequencies independent of any receiver setting. This does not preclude the use of transceivers.

1.6 It should be possible to change the transmitter quickly from operation on any frequency to operation on any other frequency, and in any event within a period not exceeding five seconds. The equipment should not be able to transmit during channel switching operations.

1.7 Means should be provided to automatically control the modulation level to prevent over modulation.

⁶ As defined by the ITU-R Radio Regulations.

⁷ For existing transmitters, during the transition and amortization period, classes of emission may be selected manually.

2 FREQUENCY ACCURACY AND TOLERANCE

The transmitter frequency should be provided with a frequency tolerance (+/- 10 Hz) which ensures reception of the voice and DSC signal.

3 OUTPUT POWER

3.1 During normal modulation, the peak envelope power in the case of J3E emissions, or the mean power in the case of J2B or F1B emissions, should be at least 60 W⁸ at any frequency within the specified frequency range.

3.2 If the rated output power exceeds 400 W⁹ in the MF band, provision should be made for reducing the output to 400 W or less.

4 PERMISSIBLE WARMING-UP PERIOD

The equipment should be capable of operation within one minute after switching on.

5 CONTINUOUS OPERATION

5.1 The transmitter should be capable of continuous voice operation at rated power without causing any reduction in performance or damage to the equipment.

5.2 The transmitter should have a visual indication that the transmitter is activated and should provide a facility integrated in the power amplifier to limit the continuous transmission time to a maximum of five minutes.

6 CONTROLS AND INDICATORS

See Part A 4.2.

7 SAFETY PRECAUTIONS

7.1 The equipment should be so designed and constructed that, when the transmitter is providing power to the antenna, the transmitter is protected against damage resulting from disconnection of the antenna or short-circuiting of antenna terminals. If this protection is provided by means of a safety device, that device should automatically be reset following removal of the antenna open-circuit or short-circuit conditions.

7.2 In case the standing wave ratio (SWR) becomes too high, the power of the transmitter can be automatically reduced without stopping the transmission and an appropriate alert should be initiated.

PART C – RECEIVERS

1 FREQUENCIES AND CLASSES OF EMISSION

1.1 For MF equipment only, the receiver should be capable of being tuned throughout the bands between 1 605 kHz and 4 000 kHz. The frequency for 2 182 kHz for voice and the DSC

⁸ Note should be taken that in some areas of the world a 60 W value may not be adequate to ensure reliable communications. A value greater than 60 W may be required in these areas.

⁹ The Radio Regulations No.52.127 specify a 400 W maximum power for equipment operating in the MF band in region 1.

frequency 2 187.5 kHz as well as the DSC routine frequency 2 177 kHz should be readily accessible to the operator.

1.2 For MF/HF the receiver should be capable of being tuned throughout the bands between 1 605 kHz and 27 500 kHz. As a minimum, the following frequencies should be readily accessible to the operator: the carrier frequencies 2 182, 4 125, 6 215, 8 291, 12 290 and 16 420 kHz for radiotelephony; and the DSC frequencies 2 187.5, 4 207.5, 6 312, 8 414.5, 12 577 and 16 804.5 kHz and the DSC routine frequencies in the 2 MHz, 4 MHz, 6 MHz, 8 MHz, 12 MHz and 16 MHz bands.¹⁰

1.3 Radiotelephone frequencies should be designated in terms of the carrier frequency and DSC frequencies should be designated in terms of the assigned (centre) frequency. The selected receiver frequency should be clearly identifiable on the control panel of the equipment.

1.4 The receiver should be capable of receiving upper sideband signals as appropriate for classes of emission J3E, J2B and F1B.

1.5 The class of emission should be selectable by not more than one control.

1.6 It should be possible for the user to select reception frequencies independent of any transmitter setting. This does not preclude the use of transceivers.

1.7 The receiver should be capable of being tuned to different frequencies quickly and in any event within a period not exceeding five seconds.

2 FREQUENCY TOLERANCE AND ACCURACY

The receiver frequency should be provided with a frequency tolerance (+/- 10 Hz) which ensures reception of the voice and DSC signal.

3 USABLE SENSITIVITY

For classes of emission J3E and F1B the sensitivity of the receiver should be equal to or better than 6 µV e.m.f. at the receiver input for a signal-to-noise and distortion (SINAD) ratio of 20 dB. For DSC an output character error rate of 10⁻² or less should be obtained for a signal-to-noise ratio of 12 dB.

4 RECEIVER OUTPUT

4.1 For the reception of voice signals, the receiver should be suitable for use with a loudspeaker and a telephone handset and should be capable of providing power of at least 2 W to loudspeaker and at least 1 mW to the handset.

4.2 An output should be provided for DSC signals if the corresponding facility is not integrated.

5 PERMISSIBLE WARMING-UP PERIOD

The equipment should be capable of operating within one minute after switching on.

¹⁰ As defined by the ITU-R Radio Regulations.

6 CONTROLS AND INDICATORS

See Part A 4.3.

7 IMMUNITY TO INTERFERENCE

The immunity to interference of the receiver should be such that the wanted signal is not seriously affected by unwanted signals.

PART D – DIGITAL SELECTIVE CALLING FACILITY

1 DSC CAPABILITIES

1.1 The facility should conform to the provisions of the relevant ITU-R Recommendations pertaining to the DSC system.¹¹

1.2 The DSC facility should comprise:

- .1 means to decode and encode DSC messages;
- .2 means necessary for composing the DSC message;
- .3 means to verify the prepared message before it is transmitted;
- .4 means to display, the information contained in a received call in plain language;
- .5 facilities to automatically update the ship's position and the time at which the position was determined from a suitable electronic position-fixing aid which may be an integral part of the equipment. For equipment which does not have an integral position-fixing aid, such facilities should include a suitable interface conforming to the appropriate international standards;¹²
- .6 means for the manual entry of position and the time at which the position information was determined should be provided; and
- .7 means to activate an alert when:
 - .1 no position data is received from the electronic position-fixing aid; or
 - .2 in the case of manual input, the position information is over four hours old.

Any position information not updated for more than 23.5 hours should be erased.

2 DISTRESS MESSAGE STORAGE

2.1 Sufficient capacity should be provided to enable at least 20 received distress messages to be stored in the DSC facility.

2.2 These calls should be marked as read when they are printed or displayed.

¹¹ DSC equipment conforming to Recommendations ITU-R M.493 and ITU-R M.541 should be used to meet this requirement.

¹² IEC 61162.

PART E – FACILITY FOR THE RECEPTION OF MSI

The facility can be an integral part or a separate part of the MF/HF-Radio. It should conform to the *Performance standards for the reception of maritime safety information and search and rescue related information by MF (NAVTEX) and HF (resolution MSC.[...].]*

PART F – AUTOMATIC CONNECTION SYSTEM

The function for automatic connection system may be an integral part or a separate unit of the MF/HF station.

1 THE TRANSMITTER

The system should be able to send a DSC call¹³ on DSC routine calling frequencies¹⁴ in all or selected bands either by the user or by a predefined automatic algorithm. The call sent out should provide a provisional transmit frequency.¹⁴

2 THE RECEIVER

2.1 A dedicated receiver which may be the same receiver as that one used as DSC watch receiver to monitor the DSC distress frequencies or an additional receiver should scan the DSC routine calling frequencies.¹⁴

2.2 The scanning process should only stop when a scanning receiver is employed to watch more than one DSC channel, all selected channels should be scanned within two seconds and the dwell time on each channel should be adequate to allow detection of the dot pattern which precedes each DSC call. The scan should only stop on detection of a 100 baud dot pattern.

2.3 The system should be able when receiving a DSC call¹³ requesting a connection to confirm if the proposed frequency/channel is available. In case the proposed frequency/channel is not available, or the noise level is not adequate, the system should propose an appropriate frequency/channel in the band with the lowest noise by using a defined DSC call and using the transmitter defined in Part F, section 1.

2.4 If the requested frequency is confirmed the system should switch automatically to the confirmed frequency.

¹³ In accordance with ITU-R M.493 and ITU-R M.541.

¹⁴ As defined by the ITU-R Radio Regulations.

ANNEX 21

DRAFT MSC RESOLUTION

PERFORMANCE STANDARDS FOR INMARSAT-C SHIP EARTH STATIONS CAPABLE OF TRANSMITTING AND RECEIVING DIRECT-PRINTING COMMUNICATIONS

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.807(19), by which the Assembly, at its nineteenth session, adopted the *Performance standards for Inmarsat-C ship earth stations capable of transmitting and receiving direct-printing communications*, which was subsequently amended by resolution MSC.68(68), annex 4,

RECALLING FURTHER resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.[...],

NOTING, in particular, regulations IV/8.1.4, 9.1.3.3, 9.4.2, 10.1.1 and 10.1.4.3 of the Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require, respectively, that ships be provided with recognized mobile satellite service ship earth station capable of transmitting and receiving direct-printing communications and that such ship earth stations shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to revise the performance standards for Inmarsat-C ship earth stations operating through the geostationary Inmarsat satellite system to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED, at its [105th] session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS the revised *Performance standards for Inmarsat-C ship earth stations capable of transmitting and receiving direct-printing communications*, set out in the annex to the present resolution;

2 NOTES that the Inmarsat-C design and installation guidelines is similar to the present performance standards for Inmarsat-C ship earth stations and to the general requirements for shipborne radio equipment set out in resolution A.694(17);

3 RECOMMENDS Governments to ensure that every Inmarsat-C ship earth station which forms part of the GMDSS:

- .1 if installed on or after [1 January 2024] conforms to performance standards not inferior to those specified in the annex to the present resolution; and
- .2 if installed before [1 January 2024] conforms to performance standards not inferior to those specified in the annex to resolution A.807(19), as amended, or conforms to performance standards not inferior to those specified in the annex to the present resolution,

which are in accordance with the Inmarsat design and installation guidelines;

4 INVITES Inmarsat to ensure that any amendments to the Inmarsat-C design and installation guidelines are agreed with the Organization prior to their adoption.

ANNEX

PERFORMANCE STANDARDS FOR INMARSAT-C SHIP EARTH STATIONS CAPABLE OF TRANSMITTING AND RECEIVING DIRECT-PRINTING COMMUNICATIONS

1 INTRODUCTION

1.1 The Inmarsat-C ship earth station installation provided to meet a requirement for a ship earth station in SOLAS regulations IV/8.1.4, 9.1.3.3, 9.4.2, 10.1.1 or 10.1.4.3 should comply with the general requirements set out in resolutions A.694(17). It should be capable of transmitting and receiving automated telegraphy communications in compliance with the relevant ITU-R recommendation on direct-printing telegraphy. In addition, the Inmarsat-C ship earth station should conform to the following minimum requirements.

1.2 The performance of any enhanced group call facility provided by the ship earth station should be in accordance with the performance standards for enhanced group call equipment set out in resolutions A.664(16) for equipment installed before 1 July 2012, MSC.306(87) for equipment installed on or after 1 July 2012 and before 1 July 2019, MSC.431(98) for equipment installed on or after 1 July 2019 and with the following minimum performance requirements.

2 TECHNICAL REQUIREMENTS

2.1 The ship earth station should be type-approved by Inmarsat for connection to and operation in the Inmarsat GMDSS satellite service, and should comply with its technical requirements for Inmarsat-C ship earth stations.

2.2 In addition to the above, the Inmarsat-C receiver should be capable of operating in the presence of an interfering signal with the following characteristics: A wideband signal of bandwidth 5 MHz, occupying the band 1 512-1 517 MHz, at a power level of -30 dBm measured at the receiver input.

3 OPERATION

3.1 No control external to the equipment should be available for alteration of the ship station identity.

3.2 It should be possible to initiate and make distress calls from the position from which the ship is normally navigated and from at least one other position designated for distress alerting.

3.3 A distress alert should be activated only by means of a dedicated distress button. This button should not be any key of an ITU-T digital input panel or an ISO keyboard associated with the equipment and should be physically separated from functional buttons/keys used for normal operation. This button should be a single button for no other purpose than to initiate a distress alert.

3.4 The dedicated distress button should:

- .1 be clearly identified, red in colour and marked "DISTRESS". Where a non-transparent protective lid or cover is used, it should also be marked "DISTRESS"; and

- .2 be protected against inadvertent operation. The required protection of the distress button should consist of a spring-loaded lid or cover permanently attached to the equipment by, for example, hinges. It should not be necessary for the user to remove additional seals or to break the lid or cover in order to operate the distress button. The operation of the distress button should generate a visible and audible indication. The distress button should be kept pressed for at least three seconds. A flashing light and an intermittent acoustic signal should start immediately. After the three seconds, the transmission of the distress alert is initiated and the indication should become steady and the acoustic signal should stop.

3.5 The distress alert initiation should require at least two independent actions. Lifting of the protective lid or cover is considered as the first action. Pressing the distress button as specified above is considered as the second independent action.

3.6 The equipment should indicate the status of the distress alert transmission.

3.7 It should be possible to interrupt and initiate distress messages at any time. It should be possible to interrupt repetitive transmissions of distress messages. Such operation should not interrupt the transmission of a distress alert or distress message in progress but should prevent repetitive transmissions of a distress message.

3.8 To enable updating of the position:

- .1 the status of the position update should be visible to the operator (e.g. offline, manual or automatic);
- .2 if position data is being updated automatically, a caution should be raised if no update has been performed for a period of 10 minutes. The caution should be removed by receiving new position data;
- .3 if an integral electronic position-fixing aid is not provided, the equipment should have an interface conforming to the appropriate international standard;*
- .4 the equipment should have facilities for manually entering the ship's position and the time of the position fix;
- .5 if the ship's manually-set position is older than four hours, a caution should be raised. The caution should be removed by inputting or receiving new position data; and
- .6 if the ship's position is older than 24 hours, the position is clearly identified with date and time of the fix in UTC for distress alerting purposes.

4 RADIO FREQUENCY HAZARDS

In order to permit a warning of potential radiation hazards to be displayed in appropriate locations, a label should be attached to the radome indicating the distances external to the radome at which radiation levels of 100 W/m², 25 W/m² and 10 W/m² exist. However, the distances which are within a radome need not be indicated.

* Refer to IEC 61162.

5 POWER SUPPLY

5.1 The ship earth station should normally be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the ship earth station and all equipment necessary for its normal functioning, including the antenna tracking system, where provided, from an alternative source of energy.

5.2 Changing from one source of supply to another or any interruption of up to 60 seconds duration of the supply of electrical energy should not require the equipment to be manually re-initialized and should not result in loss of received messages stored in the memory.

6 ANTENNA SITING

6.1 Where an omnidirectional antenna is used it should, if practicable, be sited in such a position that no obstacle likely to degrade significantly the performance of the equipment appears in the fore and aft directions down to -5° and in the port and starboard directions down to -15° . For omnidirectional antennas, objects, especially those within 1 m of the antenna, which cause a shadow sector of greater than 2° , are likely to degrade significantly the performance of the equipment.

6.2 Where a stabilized directive antenna is used it should, if practicable, be sited in such a position that no obstacle likely to degrade significantly the performance of the equipment appears in any azimuth down to -5° . For directive antennas with a gain of approximately 20 dB, objects, especially those within 10 m of the antenna, which cause a shadow sector of greater than 6° are likely to degrade significantly the performance of the equipment.

ANNEX 22

DRAFT MSC RESOLUTION

GUIDELINES FOR THE AVOIDANCE OF FALSE DISTRESS ALERTS

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.814(19), by which the Assembly, at its nineteenth session, adopted *Guidelines for the avoidance of false distress alerts*,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.[...],

RECOGNIZING the need to revise and update the *Guidelines for the avoidance of false distress alerts* in order to ensure the proper operation of radiocommunication services which are part of the Global Maritime Distress and Safety System (GMDSS),

HAVING CONSIDERED, at its [105th] session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

- 1 ADOPTS the revised *Guidelines for the avoidance of false distress alerts*, set out in the annex to the present resolution;
- 2 URGES Governments to bring these Guidelines to the attention of all concerned;
- 3 DETERMINES that this resolution supersedes resolution A.814(19), as from [1 January 2024];
- 4 INVITES the Assembly to endorse the action taken by the Maritime Safety Committee.

ANNEX

GUIDELINES FOR THE AVOIDANCE OF FALSE DISTRESS ALERTS

- 1 Administrations should:
 - .1 inform shipowners and seafarers about the implications of the rising number of false distress alerts;
 - .2 take steps to enable ships properly to register all GMDSS equipment, and ensure that this registration data is readily available to rescue coordination centres (RCCs);
 - .3 consider establishing and using national enforcement measures to prosecute those who:
 - .1 inadvertently transmit a false distress alert without proper cancellation, or who fail to respond to a distress alert due to misuse or negligence;
 - .2 repeatedly transmit false distress alerts; and
 - .3 deliberately transmit false distress alerts;
 - .4 use the International Telecommunication Union violation reporting process for false distress alerts, or for failure to respond to a distress alert relayed from shore to ship;
 - .5 ensure that all relevant ship personnel know how GMDSS equipment operates, the importance of avoiding false distress alerts, the steps to be taken to prevent the transmission of such false distress alerts, and the procedures to be followed when a false distress alert has been transmitted;
 - .6 inform type approval authorities of false distress alert problems, in order to draw their attention to the testing and alerting functions of radio equipment during the type approval process;
 - .7 urge companies installing radio equipment to ensure that relevant ship personnel are made familiar with the operation of the installed equipment;
 - .8 investigate the cause when a specific model of GMDSS equipment repeatedly transmits unwanted distress alerts, and inform the appropriate organizations accordingly;
 - .9 ensure that surveyors and inspectors are informed about GMDSS equipment, and particularly about how to operate and test it without transmitting a false distress alert; and
 - .10 require that GMDSS radio operators be appropriately certificated.
- 2 Manufacturers, suppliers and installers should:
 - .1 design equipment for distress alerting so that:

- .1 it will not be possible to transmit a distress alert unintentionally;
 - .2 the panel for emergency operation is separated from the one for normal operation and is partially fitted with a cover, and the switches on the panel are clearly classified by colouring; and
 - .3 there are standardized arrangements of operation panels and operational procedures;
- .2 design test features so that the testing of GMDSS equipment will not result in the transmission of false distress alerts;
 - .3 ensure that any distress alert activation is indicated visually or acoustically, or both, and shows that the equipment is transmitting a distress alert until manually deactivated;
 - .4 ensure that the EPIRB position on board, installations (including the release and activation mechanisms) and handling procedures preclude unwanted activation (designing the EPIRB so that when it is out of its bracket it must also be immersed in water to activate automatically, and so that, when operated manually, a two-step activation action is required);
 - .5 provide clear and precise operational instructions that are easy to understand (maintenance and operational instructions should be separated, and should be written both in English and in any other language deemed necessary);
 - .6 ensure that, when any GMDSS equipment has been installed, the necessary instructions are given to ship personnel, drawing specific attention to operational procedures (a record should be kept that such instructions have been given); and
 - .7 ensure that supply and installation personnel understand how the GMDSS works, and the consequences of transmitting a false distress alert.
- 3 Trainers and educators should:
- .1 ensure that maritime education centres are informed about false distress alert problems and their implications for SAR, the GMDSS, etc., and procedures to be followed if a false distress alert is transmitted, and include them in their teaching programmes;
 - .2 obtain and use actual case histories as examples;
 - .3 emphasize the need to avoid false distress alerts; and
 - .4 ensure that no inadvertent transmission of a false distress alert occurs when training on GMDSS equipment.
- 4 Companies, masters and seafarers should, as appropriate:
- .1 ensure that all GMDSS-certificated personnel responsible for sending a distress alert have been instructed about, and are competent to operate, the particular radio equipment on the ship;

- .2 ensure that the person or persons responsible for communications during distress incidents give the necessary instructions and information to all crew members on how to use GMDSS equipment to send a distress alert;
- .3 ensure that, as part of each "abandon ship" drill, instruction is given on how emergency equipment should be used to provide GMDSS functions;
- .4 ensure that GMDSS equipment testing is only undertaken under the supervision of the person responsible for communications during distress incidents;
- .5 ensure that GMDSS equipment testing or drills are never allowed to cause false distress alerts;
- .6 ensure that encoded identities of EPIRBs, which are used by SAR personnel responding to emergencies, are properly registered in a database accessible 24 hours a day or automatically provided to SAR authorities (masters should confirm that their EPIRBs have been registered with such a database, to help SAR services identify the ship in the event of distress and rapidly obtain other information which will enable them to respond appropriately);
- .7 ensure that EPIRB, DSC and ship earth station registration data is immediately updated if there is any change in information relating to the ship such as owner, name or flag, and that the necessary action is taken to re-programme the ship's new data in the GMDSS equipment concerned;
- .8 ensure that, for new ships, positions for installing EPIRBs are considered at the earliest stage of ship design and construction;
- .9 ensure that EPIRBs are carefully installed in accordance with manufacturers' instructions and using qualified personnel (sometimes EPIRBs are damaged or broken due to improper handling or installation. They must be installed in a location that will enable them to float free and automatically activate if the ship sinks. Care must be taken to ensure that they are not tampered with or accidentally activated. If the coding has to be changed or the batteries serviced, manufacturers' requirements must be strictly followed. There have been cases where EPIRB lanyards were attached to the ship so that the EPIRB could not float free; lanyards are only to be used by survivors for securing the EPIRB to a survival craft or person in water);
- .10 ensure that EPIRBs are not activated if assistance is already immediately available (EPIRBs are intended to call for assistance if the ship is unable to obtain help by other means, and to provide position information and homing signals for SAR units);
- .11 ensure that, if a distress alert has been accidentally transmitted, the ship makes every reasonable attempt to communicate with the RCC by any means to cancel the false distress alert using the procedures given in ITU World Radiocommunication Conference Resolution 349, as contained in the latest edition of the ITU-R Maritime Manual on *Operational procedures for cancelling false distress alerts in the Global Maritime Distress and Safety System*;

- .12 ensure that, if possible, after emergency use, the EPIRB is retrieved and deactivated; and
- .13 ensure that when an EPIRB is damaged and needs to be disposed of, if a ship is sold for scrap, or if for any other reason an EPIRB will no longer be used, the EPIRB is made inoperable, either by removing its battery and, if possible, returning it to the manufacturer, or by demolishing it.

Note: If the EPIRB is returned to the manufacturer, it should be wrapped in tin foil to prevent transmission of signals during shipment.

ANNEX 23

DRAFT MSC RESOLUTION

**PERFORMANCE STANDARDS FOR SURVIVAL CRAFT PORTABLE TWO-WAY VHF
RADIOTELEPHONE APPARATUS**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.762(18), by which the Assembly, at its eighteenth session, adopted the *Performance standards for survival craft two-way VHF radiotelephone apparatus*, and resolution 809(19), by which the Assembly, at its nineteenth session, adopted the *Recommendation on Performance standards for survival craft two-way VHF radiotelephone apparatus*, consisting of the *Recommendation on Performance standards for survival craft portable two-way VHF radiotelephone apparatus*, which was subsequently revised by resolution MSC.149(77), and the *Recommendation on Performance standards for two-way VHF radiotelephone apparatus for fixed installation in survival craft*,

RECALLING FURTHER resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.[...],

NOTING, in particular, regulations IV/7.2.2, 7.3.2 and 14.1 of the Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which requires that ships be provided with survival craft two-way VHF radiotelephone apparatus and that such apparatus shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to improve the previously adopted, by resolution MSC.149(77), performance standards for survival craft portable two-way VHF radiotelephone apparatus,

HAVING CONSIDERED at its [105th] session a proposal on the revision of the annex to resolution MSC.149(77) made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS the revised *Performance standards for survival craft portable two-way VHF radiotelephone apparatus*, set out in the annex to the present resolution;

2 RECOMMENDS Governments to ensure that survival craft portable two-way VHF radiotelephone apparatus:

.1 if installed on or after [1 January 2024], conform to performance standards not inferior to those specified in the annex to the present resolution;

- .2 if installed on or after 1 July 2005 but not later than [1 January 2024], conform to performance standards not inferior to those specified in the annex to resolution MSC.149(77);
- .3 if installed on or after 23 November 1996 but not later than 1 July 2005, conform to performance standards not inferior to those specified in annex 1 to resolution A.809(19); and
- .4 if installed before 23 November 1996, conform to performance standards not inferior to those specified in annex 1 to resolution A.762(18).

ANNEX

PERFORMANCE STANDARDS FOR SURVIVAL CRAFT PORTABLE TWO-WAY VHF RADIOTELEPHONE APPARATUS

1 INTRODUCTION

The survival craft portable two-way VHF radiotelephone, in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 GENERAL

2.1 The equipment should be portable and capable of being used for on-scene communication between survival craft, between survival craft and ship and between survival craft and rescue unit. It may also be used for onboard communications when capable of operating on appropriate frequencies.

2.2 The equipment should comprise at least:

- .1 an integral transmitter/receiver including antenna and battery;
- .2 an integral control unit including a press-to-transmit switch; and
- .3 an internal microphone and loudspeaker.

2.3 The equipment should:

- .1 be capable of being operated by unskilled personnel;
- .2 be capable of being operated by personnel wearing gloves as specified for immersion suits in SOLAS regulation III/32.3;
- .3 be capable of single-handed operation except for channel selection;
- .4 withstand drops on to a hard surface from a height of 1 m;
- .5 be watertight to a depth of 1 m for at least five minutes;
- .6 maintain watertightness when subjected to a thermal shock of 45°C under conditions of immersion;
- .7 not be unduly affected by seawater, or oil, or both;
- .8 have no sharp projections which could damage survival craft;
- .9 be of small size and light weight;
- 10 be capable of operating in the ambient noise level likely to be encountered on board ships or in survival craft;

- .11 have provisions for its attachment to the clothing of the user and also be provided with a wrist or neck strap. For safety reasons, the strap should include a suitable weak link to prevent the bearer from being ensnared;
- .12 be resistant to deterioration by prolonged exposure to sunlight; and
- .13 be either of a highly visible yellow/orange colour or marked with a surrounding yellow/orange marking strip.

3 CLASS OF EMISSION, FREQUENCY BANDS AND CHANNELS

3.1 The two-way radiotelephone should be capable of operation on the frequency 156.800 MHz (VHF channel 16) and on at least one additional channel.

3.2 All channels fitted should be for single-frequency voice communication only.

3.3 The class of emission should comply with Recommendation ITU-RM.489-2.

4 CONTROLS AND INDICATORS

4.1 An on/off switch should be provided with a positive visual indication that the radiotelephone is switched on.

4.2 The receiver should be provided with a manual volume control by which the audio output may be varied.

4.3 A squelch (mute) control and a channel selection switch should be provided.

4.4 Channel selection should be easily performed and the channels should be clearly discernible.

4.5 Channel indication should be in accordance with appendix 18 of the Radio Regulations.

4.6 It should be possible to determine that channel 16 has been selected in all ambient light conditions.

5 PERMISSIBLE WARMING-UP PERIOD

The equipment should be operational within five seconds of switching on.

6 SAFETY PRECAUTIONS

The equipment should not be damaged by the effects of open-circuiting or short-circuiting the antenna.

7 TRANSMITTER POWER

The effective radiated power should be a minimum of 0.25 W. Where the effective radiated power exceeds 1 W, a power reduction switch to reduce the power to 1 W or less is required. When this equipment provides for onboard communications, the output power should not exceed 1 W on these frequencies.

8 RECEIVER PARAMETERS

8.1 The sensitivity of the receiver should be equal to or better than 2 μ V e.m.f. for a SINAD ratio of 12 dB at the output.

8.2 The immunity to interference of the receiver should be such that the wanted signal is not seriously affected by unwanted signals.

9 ANTENNA

The antenna should be vertically polarized and, as far as practicable, be omnidirectional in the horizontal plane. The antenna should be suitable for efficient radiation and reception of signals at the operating frequency.

10 RECEIVER OUTPUT

10.1 The audio output should be sufficient to be heard in the ambient noise level likely to be encountered on board ships or in a survival craft.

10.2 In the transmit condition, the output of the receiver should be muted.

11 ENVIRONMENTAL CONDITIONS

The equipment should be so designed as to operate over the temperature range -20°C to $+55^{\circ}\text{C}$. It should not be damaged in stowage throughout the temperature range -30°C to $+70^{\circ}\text{C}$.

12 POWER SUPPLY

12.1 The source of energy should be integrated in the equipment and may be replaceable by the user. In addition, provision may be made to operate the equipment using an external source of electrical energy.

12.2 Equipment for which the source of energy is intended to be user-replaceable should be provided with a dedicated primary battery for use in the event of a distress situation. This battery should be equipped with a non-replaceable seal to indicate that it has not been used.

12.3 Equipment for which the source of energy is intended to be non-user-replaceable should be provided with a primary battery. The portable two-way radiotelephone equipment should be fitted with a non-replaceable seal to indicate that it has not been used.

12.4 The primary battery should have sufficient capacity to ensure 8-hour operation at its highest rated power with a duty cycle of 1:9. This duty cycle is defined as 6-second transmission, 6-second reception above squelch opening level and 48-second reception below squelch opening level.

12.5 Primary batteries should have a shelf life of at least two years, and if identified to be user-replaceable should be of a colour or marking as defined in 2.3.13.

12.6 Batteries not intended for use in the event of a distress situation should be of a colour or marking such that they cannot be confused with batteries intended for such use.

13 LABELLING AND MARKING

13.1 In addition to the general requirements specified in resolution A.694(17), the following should be clearly indicated on the exterior of the equipment:

- .1 brief operating instructions;
- .2 expiry date for the primary batteries; and
- .3 original equipment manufacturer.

13.2 The expiry date of the primary battery should use the date of manufacture of the cells within the battery as its starting point and be calculated as follows:

expiry date = date of manufacture + shelf life,

where:

- .1 the shelf life is the period after which a battery that has not yet been used (i.e. seal unbroken) can still be installed and meet its rated "service life". This is determined by the original equipment manufacturer, taking into consideration the losses incurred during storage at the ambient environmental conditions defined in IEC 60945; and
- .2 the service life is the period for which the battery is operational after its use has been initiated by switching on the radio in accordance with 12.4.

13.3 The original equipment manufacturer should, in original and indelible print, clearly mark the date of manufacture and expiry date such that it is visible on the exterior of the equipment. The label and its printed data should meet the relevant environmental clauses of IEC 60945, "Table 3. Durability and resistance to environmental conditions for portable equipment".

13.4 The battery should also display a warning that a broken non-replaceable seal will cause the indicated expiry date to be void.

ANNEX 24

DRAFT MSC RESOLUTION

**AMENDMENTS TO THE PERFORMANCE STANDARDS
FOR RADIOCOMMUNICATION EQUIPMENT (RESOLUTION MSC.80(70))**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO that, at its seventieth session, it adopted *Performance standards for radiocommunication equipment* (resolution MSC.80(70)), consisting of the *Recommendation on Performance standards for on-scene (aeronautical) portable two-way VHF radiotelephone apparatus* and the *Recommendation on Performance standards for on-scene (aeronautical) two-way VHF radiotelephone apparatus for fixed installations*,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.[...],

NOTING, in particular, regulation IV/7.6 of the Convention, which requires every passenger ship to carry means for two-way on-scene radiocommunications for search and rescue purposes using aeronautical frequencies 121.5 MHz and 123.1 MHz,

RECOGNIZING the need to amend resolution MSC.80(70) in order to ensure the proper operation of radiocommunication services which are part of the Global Maritime Distress and Safety System (GMDSS),

HAVING CONSIDERED, at its [105th] session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS amendments to the *Recommendation on Performance standards for on-scene (aeronautical) portable two-way VHF radiotelephone apparatus* and the *Recommendation on Performance standards for on-scene (aeronautical) two-way VHF radiotelephone apparatus for fixed installations*, set out in annexes 1 and 2, respectively, to the present resolution;

2 RECOMMENDS Governments to ensure that on-scene (aeronautical) two-way VHF radiotelephone apparatus for use in search and rescue operations:

- .1 if installed on or after [1 January 2024], conform to performance standards not inferior to those specified in the annexes to MSC.80(70), as amended by the present resolution; and
- .2 if installed before [1 January 2024], conform to the performance standards not inferior to those specified in the annexes to resolution MSC.80(70).

ANNEX 1

AMENDMENTS TO THE RECOMMENDATION ON PERFORMANCE STANDARDS FOR ON-SCENE (AERONAUTICAL) PORTABLE TWO-WAY VHF RADIOTELEPHONE APPARATUS (RESOLUTION MSC.80(70), ANNEX 1)

- 1 Paragraph 2.3.6 is replaced by the following:
 - "6 have a colour which distinguishes it from the portable equipment specified in resolution MSC.149(77)."
- 2 Paragraph 2.4 is replaced by the following:
 - "2.4 Unless otherwise stated, the equipment should comply with the applicable requirements of volume III, part II, chapter 2 of annex 10 to the ICAO Convention."

ANNEX 2

AMENDMENTS TO RECOMMENDATION ON PERFORMANCE STANDARDS FOR ON-SCENE (AERONAUTICAL) TWO-WAY VHF RADIOTELEPHONE APPARATUS FOR FIXED INSTALLATIONS (RESOLUTION MSC.80(70), ANNEX 2)

Paragraph 2.4 is replaced by the following:

"2.4 Unless otherwise stated, the equipment should comply with the applicable requirements of volume III, part II, chapter 2 of annex 10 to the ICAO Convention."

ANNEX 25

DRAFT MSC RESOLUTION

**PERFORMANCE STANDARDS FOR A SHIPBORNE
INTEGRATED COMMUNICATION SYSTEM (ICS) WHEN USED IN THE GLOBAL
MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.811(19), by which the Assembly, at its nineteenth session, adopted the *Recommendation on Performance standards for a shipborne integrated radiocommunication system (IRCS) when used in the GMDSS*,

RECALLING FURTHER resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.[...]

NOTING, in particular, regulations IV/6 and 14 of the Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require, respectively, that every ship shall be provided with radio installations and that all the equipment in these installations shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to take into account the human element in identifying measures to increase the effectiveness and efficiency of the human performance by designing equipment that is more suited to the operators who use it,

RECOGNIZING ALSO that increased effectiveness and efficiency in the use of GMDSS equipment would be achieved by integrating the radiocommunication equipment into a shipborne integrated communication system, thereby providing simpler procedures for operators,

RECOGNIZING FURTHER the need to prepare performance standards for such a shipborne integrated communication system to ensure that the functional requirements of regulation IV/4 of the Convention are met,

HAVING CONSIDERED, at its [105th] session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS the *Performance standards for a shipborne integrated communication system (ICS) when used in the Global Maritime Distress and Safety System (GMDSS)* set out in the annex to the present resolution;

2 RECOMMENDS Governments to ensure that a shipborne integrated communication system (ICS) when used in the GMDSS:

- .1 if installed on or after [1 January 2024], conforms to performance standards not inferior to those specified in the annex to the present resolution; and
- .2 if installed before [1 January 2024], conforms to performance standards not inferior to those specified in the annex to resolution A.811(19) or conforms to performance standards not inferior to those specified in the annex to the present resolution.

ANNEX

PERFORMANCE STANDARDS FOR A SHIPBORNE INTEGRATED COMMUNICATION SYSTEM (ICS) WHEN USED IN THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

1 INTRODUCTION

1.1 An integrated communication system (ICS) combines, processes and evaluates data and signals from connected radiocommunication equipment and installations used as sensors and sources, providing outputs to, and accepting inputs from the operator's position.

1.2 A "COM-HMI" (communications processing with human-machine interface) provides functions to an ICS with the capability to initiate distress alerts.

1.3 A "remote COM-HMI" (remote communications processing with human-machine interface) provides limited functions to an ICS. If this "remote COM-HMI" is only intended for general communication, then it is not required to provide the capability to initiate distress alerts.

1.4 The ICS should provide the necessary communication capability for permanently installed equipment¹ for the sea areas documented in the ship safety certificate as required by SOLAS chapter IV. Two independent COM-HMIs should be included in the ICS. Such COM-HMIs should include control and monitoring of the equipment and installations provided by the ICS for the GMDSS which are also suitable for general radiocommunications and may optionally be part of an integrated navigation system (INS).

1.5 The ICS should provide at least two independent physical items of radio equipment as sensors and sources, each providing at least one GMDSS function.

1.6 The ICS, in addition to meeting the general requirements set out in resolution A.694(17), should comply with the requirements for the presentation of information on shipborne displays set out in resolution MSC.191(79) and with the following performance standards.

SENSOR/SOURCE MODULE

2 Position-updating for the ICS

2.1 The ICS should provide facilities to automatically update the ship's position and the time at which the position was determined from a suitable electronic position-fixing aid. This may be an integral part of the equipment. For an ICS which does not have an integral position-fixing aid, such facilities should include a suitable interface conforming to the appropriate international standard.² In this case, the position from an INS consistent common reference point (CCRP) should be preferred if provided.

2.2 The COM-HMI should include:

- .1 means for manual entry of position information and time at which the position was determined; and

¹ EPIRB, locating devices and handheld devices are not part of the ICS.

² Refer to publication IEC 61162 series.

- .2 means to activate a caution, when:
 - .1 no position data is received from electronic position-fixing aid; or
 - .2 in case of manual input, the position information is over four hours old.

2.3 Any position information not updated for more than 23.5 hours should be erased.

OPERATIONAL/FUNCTIONAL MODULE

3 GENERAL

3.1 The ICS should provide the necessary communication capability for permanently installed equipment³ for the sea areas documented in the ship safety certificate as required by SOLAS chapter IV. No radiocommunication equipment or installation integrated in the ICS should impair the availability or use of any required function integrated into the ICS. Administrations may accept the ICS as substitute for stand-alone communication equipment as required in SOLAS chapter IV.

3.2 All required functions of the equipment integrated into the ICS should conform to the appropriate provisions of the performance standards for the equipment concerned. COM-HMIs can be implemented as dedicated devices or as applications on separate and independent screens beside other applications.

3.3 The ICS should:

- .1 comprise at least two dedicated workstations each including a COM-HMI connected to all GMDSS radiocommunication sensors and sources included in the ICS over a network or connecting system;
- .2 provide a full backup functionality for all COM-HMIs integrated in the ICS;
- .3 include detecting facilities such that failure of any part of the ICS activates a BAM alert;
- .4 if part of an INS is providing the capability to engage in communication presented in combination with graphical presentation of geographic information, provide this on a separate presentation to avoid clutter; and
- .5 be designed according to a "fail-safe" principle. The documentation of the ICS should include failure analysis at ICS functional level ensuring that failure of one part of the ICS does not affect the functionality of other parts, except for those functions directly dependent on the defective part.

4 OPERATIONAL REQUIREMENTS OF THE COM-HMI

4.1 The COM-HMIs included in the ICS should:

- .1 have a consistent and identical layout of the included applications and their functions (use of different screen sizes is allowed);

³ EPIRB, locating and handheld devices are not part of the ICS.

- .2 have consistent access to the included applications (e.g. VHF, MF/HF, SAT-COM) and their functions;
- .3 be capable of being operated independently of each other COM-HMI included in the ICS; and
- .4 be capable of allowing simultaneous operation of at least two GMDSS radiocommunication sensors and sources from different COM-HMIs.

4.2 Only one COM-HMI should be in control of configuration of a "non-shareable function" (e.g. VHF-Voice) at any time, and only one COM-HMI should be assigned to accept control commands of a "non-shareable function" at any time.

4.3 A COM-HMI may be in control of all functions of the ICS or may be in control of selected individual functions of the ICS.

4.4 The ICS should ensure that no internal communication link is interrupted by communication access of another COM-HMI.

4.5 The bridge team should have a visual indication of which COM-HMI is in control of which functions. Means should be available on the COM-HMI to take over control of individual functions on that COM-HMI.

4.6 The COM-HMI may be integrated as a separate device or be part of an HMI of a navigation system which may be a separate task within an INS.

4.7 Integration of the VHF radiotelephone required for navigational safety should only be permitted if it does not prevent compliance with SOLAS regulation IV/6.3.

4.8 Remote COM-HMIs intended only for general radiocommunications may not have access to the distress alerting functions; nor should they impair or slow down the distress alerting and alert functions. The COM-HMIs accessing the GMDSS sensors and sources should have priority access over remote COM-HMI.

4.9 Additional sensors and sources not required for the GMDSS should neither impair nor slow down the distress alerting and alert functions.

4.10 The COM-HMI should provide an integrated protection against unintended activation of transmitters.

4.11 When an automatic identification system (AIS) is integrated or interconnected, the ICS should be capable of:

- .1 displaying received notices using the same rules as for maritime safety information (MSI) and search and rescue (SAR) related information;
- .2 sending and receiving broadcast and addressed AIS safety-related messages; and
- .3 enabling correlation of distress information received by DSC with available received AIS ship information and displaying the results on the COM-HMI.⁴

⁴ Refer to publication IEC 61162 series.

4.12 Remote COM-HMI:

- .1 Optionally, an ICS may support remote COM-HMI(s). Such a remote COM-HMI is an external equipment that is interfaced to the ICS.
- .2 The remote COM-HMI(s) may support all other communication functionality included in the ICS or a subset of the communication functionality included in the ICS.⁵
- .3 A COM-HMI within the ICS itself should automatically take priority in the case of a detected failure of the interface or data connection between the remote COM-HMI and the ICS. In such a case:
 - .1 the ICS should automatically move "control & use" of a communication function from the remote COM-HMI to a COM-HMI within the ICS; and
 - .2 the remote COM-HMI should indicate the interface failure state and the COM-HMI taking control should be clearly indicated to the user.

5 COM-HMI PERFORMING GMDSS FUNCTIONS

5.1 Initiation of a distress alert

5.1.1 A COM-HMI performing GMDSS functions should be capable of transmitting distress alerts. The distress alert should only be initiated by means of a dedicated physical button for each COM-HMI; the button should not be used for any other purpose. The COM-HMI should support the option to select individual sources and sensors for transmission of the distress alert or transmit on all sources and sensors simultaneously.

5.1.2 The dedicated distress button should be clearly identified; and be red in colour and marked "DISTRESS". Where a non-transparent protective lid or cover is used, it should also be marked "DISTRESS".

5.1.3 The dedicated distress button should be protected against inadvertent operation. The required protection of the distress button should consist of a spring-loaded lid or cover permanently attached to the equipment by, for example, hinges. It should not be necessary for the user to remove additional seals or to break the lid or cover in order to operate the distress button.

5.1.4 The operation of the distress button should generate a visible and audible indication. The distress button should be kept pressed for at least three seconds. A flashing light and an intermittent acoustic signal should start immediately. After the three seconds, the transmission of the distress alert is initiated and the indication should become steady. It should be clearly indicated when a distress button is active.

5.1.5 The distress alert initiation should require at least two independent actions. The lifting of the protective lid or cover is considered as the first action. Pressing the distress button as specified above is considered as the second independent action.

⁵ Note: Communication functionality is subdivided into "control & use" and "monitoring". "Control & use" means activation of communication or equipment and setup of parameters, etc. for that equipment. "Monitoring" means passive viewing of the communication and the equipment status.

5.1.6 The equipment should indicate the status of the distress alert transmission.

5.1.7 It should be possible to interrupt and initiate distress alerts at any time and to interrupt repetitive transmissions of distress messages. Such operation should not interrupt the transmission of a distress alert or distress message in progress but should prevent repetitive transmissions of a distress message.

5.1.8 Each distress button should have its own independent interconnection to the ICS.

5.2 Presentation of distress information

5.2.1 The COM-HMI should provide means to display a transmitted own-ship distress alert. The information should include the GMDSS subsystem(s) on which the alert was transmitted, the date and time the alert was transmitted, and all distress acknowledgement information received. If MF/HF is used, the information should also include the frequency/frequencies on which the alert was sent.

5.2.2 Means should be provided in the COM-HMI for displaying, for GMDSS, a received distress alert, distress alert relay, and distress acknowledgement information, with an indication of the receiving communication system.

5.3 Maritime safety information and search and rescue related information

5.3.1 The COM-HMI should fulfil the requirements for the dedicated display option as described in the related equipment performance standards for MSI and SAR related information.

5.3.2 The COM-HMI should indicate on which system the message was received, e.g. NAVTEX.

5.3.3 Where integration or interconnection with AIS is provided, maritime safety information should be provided and displayed.

6 COMMON STORAGE MEDIA

6.1 The ICS should provide a common storage media for display and optional printing of MSI and other messages received from GMDSS components included in the ICS. The stored messages should be non-editable within the ICS.

6.2 The common storage media should comply with the following:

- .1 a non-volatile storage medium with sufficient capacity for applicable communication subsystems as specified in individual performance standards for a period of three months; when the memory is full, the oldest messages should be overwritten by new messages;
- .2 messages older than three months should be erased automatically, unless annotated by the end user for long time storage;
- .3 stored electronic information should be viewable on COM-HMIs and may be viewable on remote COM-HMIs;
- .4 stored electronic information should be accessible on an interface for physical printing or for storage on a removable storage device;

- .5 stored electronic information should be accessible on a suitable interface conforming to the appropriate international standard;⁶
- .6 means should be provided for the end user to remove messages which are processed or no longer valid;
- .7 annotations relating to the time of reception and from which system the message was received should remain available for three months; and
- .8 an alert of priority "caution" should be raised when the storage capacity for the three-month period is close to the capacity of the storage media.

7 SOFTWARE AND FIRMWARE MAINTENANCE

7.1 Adequate software and firmware maintenance arrangements should be supported by the ICS manufacturer in accordance with MSC.1/Circ.1389.

7.2 Means should be provided to replace or install updates to software/firmware in the ICS.

7.3 Appropriate means against cyber risks should be provided in accordance with the *Guidelines on maritime cyber risk management* (MSC-FAL.1/Circ.3).

8 MALFUNCTIONS AND RESTORATION

8.1 ICS system failure

8.1.1 In case of failure of all of the COM-HMIs, it should be possible to continue executing the following tasks:

- .1 to initiate and transmit a distress alert and conduct distress communications (transmit and receive) by bypass or alternative means on VHF and one of the main systems as relevant for the ships operational sea area as documented in the ship safety radio certificate;
- .2 making available received MSI, SAR related and other information from a common storage device; and
- .3 making accessible a printing or presentation capability if required by the individual IMO performance standards.

8.1.2 A failure of one part should not affect the functionality of other parts except for those processes and functions directly dependent upon the information from the defective part.

8.1.3 No single fault should impair the operation of more than one radiocommunication sensor or more than one COM-HMI at any time. For cases where duplication is required (sea areas A3 and A4) then no single failure should render both the primary and duplicated systems inoperative at the same time.

⁶ Refer to publication IEC 61162 series.

8.2 Recovery from failure

Upon recovery of functionality after system failure, the COM-HMI should be provided with necessary information from the ICS to enable the COM-HMI to continue operation of the following as if no malfunction has occurred:

- .1 distress alerting;
- .2 distress and safety communication; and
- .3 reception of MSI and SAR related information on at least one service.

9 ACCURACY AND PERFORMANCE

9.1 The ICS processing should ensure that the mandatory information required to be provided by the subsystems meets the requirement for accuracy and content as specified in any performance standards of the Organization for the related individual subsystem integrated.

9.2 The ICS should ensure that same source of essential sensor information is distributed to the relevant parts of the system.

9.3 The ICS should ensure that all HMIs of the ICS should be consistent in the presentation of information.

10 INTEGRITY MONITORING

The ICS should support integrity and function monitoring by providing:

- .1 indication of availability, status and mode of operation of subsystems within the ICS network; and
- .2 validity of subsystem and sensor information within the ICS network.

11 ICS IN COMBINATION WITH ALERT MANAGEMENT

11.1 The ICS with its COM-HMIs should conform with alert management handling and provide relevant interfaces compliant with the requirements of resolution MSC.302(87) on *Adoption of performance standards for bridge alert management* for Modules A and C as applicable.

11.2 The alert management requirements of individual equipment standards remain applicable.

INTERFACING MODULE

12 POWER SUPPLY

12.1 Power supply arrangements

12.1.1 The ICS should have a power supply arrangement which ensures that it is not possible for an operator to inadvertently switch off any part of the ICS.

12.1.2 The ICS should include two independent power supply units, each supplied from the main source of electrical power, emergency source of electrical power (if available), and the

reserve source of power. For cases where duplication is required (sea areas A3 and A4) one power supply unit should supply the primary systems and the second power supply unit should supply the duplicated systems.

12.2 Power supply failure

In the event of failure of, or switching between the main and emergency sources of electrical power, then the reserve power source should automatically and without interruption continue the supply of power to the ICS based on uninterruptible power supplies (UPS), as described in COMSAR/Circ.32, as revised.

13 EQUIPMENT AND NETWORK INTERFACES

13.1 Network interfaces

The interfaces to other networks and devices should conform to the appropriate international standard and be cybersecurity protected.

13.2 Interfaces to external equipment

13.2.1 The ICS should be capable of transmitting and receiving data using the relevant sentences specified in the appropriate international standard for communication to external equipment.

13.2.2 Where VHF communications is included in the ICS, the audio from the VHF is required to be connected to the VDR.

13.3 Integrated Navigation System (INS)/Global Navigation Satellite System (GNSS) interface

If external input is used, the consistent common reference system point (CCRS) from the INS should have priority.

14 DOCUMENTATION

14.1 Software/firmware version

14.1.1 The ICS itself and the equipment integrated in the ICS should provide means to display on demand the current software/firmware version in use.

14.1.2 The manufacturer should provide publicly available information regarding the ICS application software and firmware versions, compliance status and regulatory approvals for the listed configurations/versions. The procedures for this should be part of the recognized quality system of the manufacturer.

ANNEX 26

DRAFT MSC CIRCULAR

**PARTICIPATION OF NON-SOLAS SHIPS IN THE GLOBAL
MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS) AND GUIDANCE ON THE
DEVELOPMENT OF TRAINING MATERIALS FOR GMDSS OPERATORS ON
NON-SOLAS SHIPS**

1 The Maritime Safety Committee, at its [105th] session ([...]), having considered a proposal by the Sub-Committee on Navigation, Radiocommunications and Search and Rescue (NCSR), at its eighth session (19 to 23 April 2021), approved the revised:

- .1 *Guidelines for the participation of non-SOLAS ships in the GMDSS; and*
- .2 *Guidance on the development of training materials for GMDSS operators on non-SOLAS ships,*

as set out in annexes 1 and 2, respectively.

2 This circular is intended to assist Administrations with developing national measures aimed at facilitating participation of ships in the GMDSS and ships to which chapter IV of the 1974 SOLAS Convention and chapter IV of the 1978 STCW Convention do not apply (herein in the annex referred to as "non-SOLAS ships").

3 Member Governments are invited to apply the Guidelines set out in annex 1 to non-SOLAS ships insofar as they deem them reasonable and practicable.

4 Member Governments are also invited to take into consideration the Guidance set out in annex 2 when developing training materials for GMDSS operators on non-SOLAS ships.

5 This circular supersedes MSC/Circ.803, as from [1 January 2024].

ANNEX 1

GUIDELINES FOR THE PARTICIPATION OF NON-SOLAS SHIPS IN THE GMDSS

1 Every ship while at sea should maintain, when practicable, a continuous listening watch, which shall be kept at the position from which the ship is normally navigated on:

- .1 VHF channel 16; and
- .2 appropriate frequency or frequencies for urgency and safety communications for the area in which the ship is navigating.

2 The following functional requirements of the GMDSS are considered appropriate to allow effective participation of non-SOLAS ships in the GMDSS with respect to distress and safety communications to:

- .1 provide safety for own ship:
 - .1 transmitting ship-to-shore distress alerting;
 - .2 transmitting ship-to-ship distress alerting;
 - .3 transmitting and receiving on-scene communications including appropriate SAR coordinating communications;
 - .4 receiving navigational and meteorological warnings and urgent information;
 - .5 transmitting and receiving communications relating to the navigation, movements and needs of ships;
 - .6 transmitting and receiving urgency and safety radiocommunications; and
 - .7 transmitting locating signals;
- .2 assist other ships in distress:
 - .1 receiving shore-to-ship distress alert relays;
 - .2 receiving ship-to-ship distress alerting; and
 - .3 receiving urgency and safety radiocommunications.

3 If a non-SOLAS ship carries VHF DSC or MF/HF DSC equipment with a radiotelephone capability operating on GMDSS frequencies or a ship earth station (SES) of a recognized mobile satellite service, such equipment can be utilized to perform most of the functions described above.

4 The use of cellular telephones is not recommended as an alternative to GMDSS distress and safety communications. Geographical coverage limitations and availability of cellular communications infrastructure could prevent an RCC or nearby ships being alerted to a distress or safety situation. Also, RCCs will be unable to call ships in the vicinity of a casualty.

5 It should further be made clear that the use of the amateur radio service is not recommended as an alternative to GMDSS distress and safety communications. Furthermore, the use of equipment for the amateur radio service, despite being comparatively cheap and able to perform some voice and data communications, is subject to acceptance by the Administration in order to protect the service.

6 It is recommended that non-SOLAS ships should carry an EPIRB with a built-in GNSS receiver, which is floating free or can be manually activated. Every type of EPIRB should be certified by Cospas-Sarsat.

7 It is further recommended that non-SOLAS ships should carry VHF DSC equipment for general radiotelephone communications and for non-SOLAS ships operating beyond the range of VHF coast stations, MF/HF DSC or SES equipment. This will ensure that radio systems are installed and operational appropriate to areas of operation for the ship.¹

8 In performing the functional requirement of transmitting locating signals either a search and rescue transponder (radar SART) operating on radar frequencies in the band 9.2-9.5 GHz or an AIS search and rescue transmitter (AIS-SART) will be the main means to fulfil this requirement in the GMDSS.

9 Provision should be made for the reception of navigational warnings and, meteorological forecasts and warnings and urgent safety information, depending on the sea area in which the non-SOLAS ship is sailing¹ and the services available in that area, e.g. NAVTEX, enhanced group call (EGC) and radiotelephony broadcasts.

10 Non-SOLAS ships operating in high sea areas are invited to participate in the World Meteorological Organization (WMO) Voluntary Observing Ships (VOS) Scheme in order to provide vital real-time feedback on ocean weather conditions to weather forecasters to improve the quality of the forecasts and warnings issued within the GMDSS.

11 Ship identities (MMSI, call sign, EPIRB hexadecimal identity and recognized mobile satellite service identity, etc.) for non-SOLAS ships should be reported to ITU by the Member Government, as appropriate, and maintained in a registration database available on a 24-hour basis.

12 New VHF radio equipment installed on:

- .1 seagoing ships to which the 1974 SOLAS Convention does not apply but which are required to carry such equipment under national legislation should have facilities capable of transmitting and receiving DSC-calls on VHF channel 70; and
- .2 seagoing ships not under national legislation should be encouraged to have facilities capable for transmitting and receiving DSC-calls on VHF channel 70.

¹ "Sea area A1": an area within the radiotelephone coverage of at least one VHF coast station in which continuous digital selective calling (DSC) alerting is available, as may be defined by a Contracting Government;

"Sea area A2": 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;

"Sea area A3": an area, excluding sea areas A1 and A2, within the coverage of a recognized mobile satellite service supported by the ship earth station carried on board, in which continuous alerting is available; and

"Sea area A4": an area outside of sea areas A1, A2 and A3.

13 To ensure protection of the GMDSS, radio equipment should be tested and certified. The equipment should be compliant with resolution A.694(17), the relevant performance standards of the Organization, the Radio Regulations, Recommendations ITU-R M.493 and ITU-R M.541 and further relevant ITU-R Recommendations as applicable for non-compulsory fittings to ensure the necessary communications reliability under all operational conditions, health and safety, and EMC. For simple operation, such DSC equipment should be limited to the functionality as defined in Recommendation ITU-R M.493 in the form of a closed list.

14 Personnel operating such equipment should be adequately trained and certified to operate equipment efficiently, in accordance with ITU Resolution 343 (Rev.WRC-12), taking into account annex 2 of this Circular, so that they can operate the equipment efficiently also in case of an emergency.

ANNEX 2

GUIDANCE ON THE DEVELOPMENT OF TRAINING MATERIALS FOR GMDSS OPERATORS ON NON-SOLAS SHIPS

1 The following guidance for the development of training materials for GMDSS operations is offered to:

- .1 promote the development and availability of GMDSS training materials for operators on ships not subject to SOLAS or other IMO Conventions based on GMDSS (non-SOLAS Convention) certificates described in the Radio Regulations;
- .2 encourage operators to use these materials to become familiar with the GMDSS, proper operation of the relevant subsystems and means to avoid inadvertent activation of distress alerts; and
- .3 encourage the use of existing materials developed for training operators aboard GMDSS ships as well as computer-based training aids where available.

Manufacturers

2 In general, the manufacturer of radio equipment is best suited to develop effective general operating instructions for its own equipment. These are usually contained in an operating manual or technical manual packaged with the equipment. Professional communicators using this equipment for the first time need only a few hints to attain skill in using the new equipment; however, other users may need to study the manual carefully and still may not attain skill until having practised with the equipment, or having been shown how to operate the radio by another mariner who has experience with that equipment. Manufacturers should ensure that manuals prepared for GMDSS subsystem equipment have sufficient information to permit non-professional communication users to be able to operate the equipment effectively and to avoid inadvertent activation of distress alerts.

Sales and service facilities

3 Manufacturers' representatives should, as necessary, help to provide the user with basic instruction. One way is to have the customer view a video showing proper operation of the equipment which should be developed by the manufacturer. Another is to have a mock-up or actual installation available for the customer to use with supervision. Both of these could give the potential GMDSS user sufficient familiarity and confidence with using the equipment to avoid misuse.

Voluntary organizations

4 Sailing clubs, coastguard auxiliary and other maritime volunteer organizations in cooperation with competent authorities should develop seminars on the GMDSS subsystems as part of regularly scheduled events. These should highlight the general concepts of the GMDSS and the importance to maritime safety of proper operation. They could also highlight examples of misuses and focus on do's and don'ts for ensuring their safety while at sea.

Regulatory authorities

5 Authorities responsible for maritime safety, search and rescue and licensing of the GMDSS radio subsystems should strongly advocate the following measures in order to preserve the integrity of the GMDSS and enhance its effectiveness in meeting the safety needs of non-Convention ships:

- .1 promote the development of short, affordable and easy to understand training materials, including videos, posters, short manuals and information on detailed GMDSS training materials;
- .2 ensure, insofar as possible, that every operator of the GMDSS subsystems has adequate training and skills for the proper use of the equipment by advocating suitable training, including competency testing, prior to use of the equipment;
- .3 advocate that continuous watch be maintained on the GMDSS subsystems while under way; and
- .4 advocate that two-way GMDSS subsystems capable of transmitting an automatic alert including position ensure that the position is current by using an integral or connected electronic position-fixing equipment or manually updating the position at frequent intervals.

Equipment applicable to non-SOLAS ships and pleasure craft on domestic coastal voyages

EPIRBs

6 EPIRB means an emergency position-indicating radio beacon operating in the frequency band 406.0-406.1 MHz capable of transmitting a distress alert via satellite to a rescue coordination centre (RCC), and transmitting signals for on-scene locating. A minimal description of what happens when this device is activated should be covered as well as some common failures which have been noted, e.g. improper use of lanyards. Training should include proper installation for floating free (in cases where non-float-free units are installed, it must be pointed out that accessibility and ease of removal are critical) and measures to avoid false alerts. It should also emphasize that the EPIRB is the system of last resort and should

only be activated when all other systems fail or if directed by an RCC. Caution should be explained that in some countries users are encouraged to activate an EPIRB for any distress and in parallel with the use of other distress systems.

7 Testing procedures should be covered and, finally, the importance of registering the beacon should be emphasized. The Cospas-Sarsat satellite system operating on 406 MHz is the system which is approved for use in the GMDSS.

VHF DSC

8 Correct calling procedures to nearby ships and to coast guard or other rescue authorities should be explained. Cautions should be explained and correct procedures emphasized relating to acknowledgement of alerts from other ships. The importance should also be emphasized of having the ship's identification registered with the responsible authorities and having its GNSS receiver integrated in the DSC equipment so that an accurate position is part of any distress or safety call.

9 Administrations should consider requiring a minimum DSC capability for all VHF radios as part of their type approval and type acceptance requirements. As DSC shore installations are available in many parts of the world,² this system has been widely implemented by non-Convention ships. Moreover, this is one of the vital systems for ship-to-ship alerting. Therefore, since many ships will either need to call another ship or be called to assist another ship, it is critical that they be familiar with the use of this system. Topics to cover should be basic operation of the VHF radio and how DSC acts as an automated watch. The importance of maintaining the watch (keeping the radio on and tuned to channels 16 and 70) should be emphasized. While VHF channel 70 is used for distress, urgency and safety alerting by DSC, VHF channel 16 is used as the complementary radiotelephony channel following the initial alert.

NAVTEX

10 This system is designed to provide marine safety broadcasts and distress information relevant to a limited area, generally less than 300 nm from the NAVTEX coast station. Messages are numbered and repeated for several subsequent broadcast periods. Stations maintain a coordinated broadcast schedule and broadcast priority information such as distress information on an urgent basis. The receiver will ignore repetitions of broadcasts which it has already copied. The receiver is also designed to sound an alarm upon receipt of an urgent transmission. This is perhaps the most useful and affordable of all the GMDSS subsystems to non-SOLAS ships. Users must be taught how to avoid receiving duplications of old messages, how to limit the area of concern and the importance of keeping the receiver turned on. They must be familiar with basic information on how the system works, its intended function and proper operation to take maximum advantage of this system.

NAVDAT

11 NAVDAT is a digital broadcasting system designed to operate in the 500 kHz and HF frequency bands, making it possible to broadcast digital files from shore to ships. These digital files can be texts, images, graphs, data, etc. Graphical information can be provided to navigators in order to facilitate the interpretation and the further integration of digital information into the electronic chart display and information system (ECDIS). The NAVDAT system is intended to be able to broadcast in general broadcast mode (to all ships), in selective broadcast mode (to ships located in a specific area, or for groups of ships according to the ship position,

² To identify the shore installations available check the IMO GMDSS Manual.

MMSI or group identification) and for a dedicated message (according to ship MMSI). All three broadcast modes are capable of sensitive data encryption.

Equipment applicable to non-SOLAS ships and pleasure craft operating on deep sea voyages

Satellite ship earth station (SES) operating a satellite service that may or may not be recognized as part of GMDSS

12 Many non-SOLAS ships are voluntarily fitting ship earth station (SES) using a recognized mobile satellite service. In some areas alternative mobile-satellite systems are offering services to non-Convention ships using the GMDSS frequencies although on a limited and restricted basis. Users of these systems must know how best to use them for effective and efficient communication including during distress incidents. As a minimum, users should know how GMDSS services are provided to meet marine safety information dissemination requirements, distress alerting and communication in the ship-to-shore and shore-to-ship directions. Many small commercial ships and, to a greater extent, pleasure yachts, are fitting satellite communication equipment including SES using a recognized mobile satellite service. Users of this equipment should understand the limitations of its use for distress and safety and be encouraged to follow up any distress alert message with additional information, particularly information concerning the severity of the situation, best known location, number of persons on board, visual description and shore contact person. Ships fitting SES using a recognized mobile satellite service can receive enhanced group call (EGC) broadcasts and limit the receipt of this type of information to relevant sea areas of immediate concern.

Voice communication over satellite systems

13 Users of recognized mobile satellite services with voice capability may need only a minimum of training and practice to become proficient as these systems are nearly equivalent to the shoreside public telephone systems. After initial log on, the user simply dials a telephone number. In distress situations, a priority mode is available which rings through directly to the rescue authority associated with the coast earth station. When the call is answered a voice communication is established. Topics to cover are the basic operation, distress alerting and communication procedures and cautions against inadvertent activation of the priority mode to prevent false alerts.

HF and MF DSC

14 Although small commercial and pleasure craft will probably not need these systems except in rare cases, a DSC-equipped MF/HF radiotelephone is essential if an MF/HF radio is to be used for distress and safety purpose. Nonetheless, some basic operational instructions should be available including how these are to be used for distress alerting (ship-to-shore), establishing a voice circuit, and receiving notifications of distress situations in their immediate vicinity. The frequencies for distress alerting and distress voice traffic should be covered as well as the necessity to guard the distress alerting channel in the 8 MHz band.

ANNEX 27

DRAFT MSC CIRCULAR

GUIDANCE FOR THE RECEPTION OF MARITIME SAFETY INFORMATION AND SEARCH AND RESCUE RELATED INFORMATION AS REQUIRED IN THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

1 The Maritime Safety Committee, at its [105th] session [(...)], approved the *Guidance for the reception of maritime safety information and search and rescue related information as required in the Global Maritime Distress and Safety System (GMDSS)* as set out in the annex, prepared by the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR), at its eighth session (19 to 23 April 2021).

2 In considering the amendments to the 1974 SOLAS Convention adopted by resolution MSC.[...], in particular regulation IV/7.1.4 concerning the requirement for every ship to be provided with receiver(s) capable of receiving maritime safety information (MSI) and search and rescue (SAR) related information throughout the entire voyage in which the ship is engaged and noting that the four-year cycle for the entry into force of SOLAS amendments may not be capable of keeping pace with technological advancements, the Committee agreed to issue the *Guidance for the reception of maritime safety information and search and rescue related information as required in the Global Maritime Distress and Safety System (GMDSS)*.

3 This circular provides guidance on the recognized MSI and SAR related information broadcast services and the equipment which should be installed on board ships to meet the requirements of SOLAS chapter IV while enabling the flexibility to incorporate new technologies as they become recognized by the Organization.

4 The Committee agreed that the guidance in the annex should become applicable as from [1 January 2024] in conjunction with the entry into force of the related SOLAS amendments.

5 Contracting Governments and the relevant international organizations are invited to bring the Guidance to the attention of all parties concerned.

ANNEX

GUIDANCE FOR THE RECEPTION OF MARITIME SAFETY INFORMATION AND SEARCH AND RESCUE RELATED INFORMATION AS REQUIRED IN THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

MSI and SAR related information broadcast services

1 Depending on where the ship operates, the following services can be used for the reception of maritime safety information (MSI) and search and rescue (SAR) related information as part of the GMDSS:

- .1 International NAVTEX Service,¹ which provides the coordinated broadcast and automatic reception on 518 kHz of MSI and SAR related information by means of narrow-band direct-printing telegraphy using the English language;
- .2 High frequency narrow-band direct-printing (HF NBDP) using radio telegraphy as defined in Recommendation ITU-R M.688, as amended; and
- .3 International Enhanced Group Call (EGC) service provided by a recognized mobile satellite service:
 - .1 International SafetyNET services,² which provides the coordinated broadcast and automatic reception of MSI and SAR related information via the Inmarsat enhanced group call system, using the English language; and
 - .2 International Iridium SafetyCast service,³ which provides the coordinated broadcast and automatic reception of MSI and SAR related information via the enhanced group call system, using the English language.

2 The individual MSI and SAR related information broadcast services in the GMDSS are interdependent. Information that is broadcast via NAVTEX is not necessarily duplicated over an international EGC service or HF NBDP.

3 SAR authorities may broadcast SAR related information over the services described in paragraph 1, as required.

Guidance to meet obligations of SOLAS chapter IV

4 In order to meet the requirements in SOLAS regulation IV/7.1.4, ships should be provided with equipment appropriate for the entire voyage in which the ship is engaged, as follows:

¹ Refer to revised NAVTEX Manual (MSC.1/Circ.1403/Rev.1).

² Refer to International SafetyNET Services Manual (MSC.1/Circ.1364/Rev.2).

³ Refer to Interim Iridium SafetyCast Service Manual (MSC.1/Circ.1613).

- .1 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; and
- .2 if the ship is engaged in voyages in which an international NAVTEX service is not provided:
 - .1 a receiver capable of receiving HF NBDP service when a ship is engaged in voyages where such service is provided; or
 - .2 receiver(s) capable of receiving broadcasts from an international EGC service identified in paragraph 1.3 which provide a service for the operating areas.

5 The GMDSS Master Plan module in GISIS provides necessary information to identify the coverage area and necessary details for MSI and SAR related information broadcast services related to each NAVAREA and METAREA. The GMDSS Master Plan module⁴ is accessible to all registered Public Account holders.⁵

⁴ Refer to GMDSS.1/Circ.23.

⁵ Any member of the public who is registered with an IMO Web account.

ANNEX 28

**RESOLUTION MSC.493(104)
(adopted on 7 October 2021)**

**AMENDMENTS TO THE PERFORMANCE STANDARDS FOR SHIPBORNE SIMPLIFIED
VOYAGE DATA RECORDERS (S-VDRs) (RESOLUTION MSC.163(78), AS AMENDED)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

RECALLING FURTHER the *Performance standards for shipborne simplified voyage data recorders (S-VDRs)* adopted by resolution MSC.163(78), as amended by resolution MSC.214(81),

TAKING INTO ACCOUNT the *Performance standards for float-free emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz*, adopted by resolution MSC.471(101), which are applicable to float-free EPIRBs operating in the frequency band 406.0-406.1 MHz which form part of the Global Maritime Distress and Safety System (GMDSS), installed on or after 1 July 2022,

RECOGNIZING the need to amend resolution MSC.163(78), as amended, with respect to float-free recording medium to effect consequential amendments related to the adoption of resolution MSC.471(101),

HAVING CONSIDERED, at its 104th session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue, at its eighth session,

1 ADOPTS the *Amendments to the Performance standards for shipborne simplified voyage data recorders (S-VDRs)*, set out in the annex to the present resolution;

2 RECOMMENDS Governments to ensure that S-VDRs:

- .1 if installed on or after 1 July 2022, conform to performance standards not inferior to those specified in the annex to resolution MSC.163(78), as amended by resolution MSC.214(81) and the present resolution;
- .2 if installed on or after 1 June 2008, but before 1 July 2022, conform to performance standards not inferior to those specified in the annex to resolution MSC.163(78), as amended by resolution MSC.214(81); and
- .3 if installed before 1 June 2008, conform to performance standards not inferior to those specified in the annex to resolution MSC.163(78).

ANNEX

AMENDMENTS TO THE PERFORMANCE STANDARDS FOR SHIPBORNE SIMPLIFIED VOYAGE DATA RECORDERS (S-VDRs)

- 1 In paragraph 3.2:
 - .1 resolutions A.810(19) and A.812(19) are deleted from the list; and
 - .2 the following resolution is added to the list:

"- MSC.471(101) Performance standards for float-free emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz"

- 2 Paragraph 5.1.3.3 is replaced by the following:

"5.1.3.3 The float-free type protective capsule should:

 - .1 be fitted with means to facilitate grappling and recovery;
 - .2 be so constructed as to comply with the requirements specified in resolution MSC.471(101) and to minimize risk of damage during recovery operations; and
 - .3 the device should be capable of transmitting an initial satellite distress alerting signal and further locating and homing signals over a period of not less than seven days/168 hours."

ANNEX 29

**RESOLUTION MSC.494(104)
(adopted on 7 October 2021)**

**AMENDMENTS TO THE PERFORMANCE STANDARDS FOR SHIPBORNE VOYAGE
DATA RECORDERS (VDRs) (RESOLUTION MSC.333(90))**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto, shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECALLING FURTHER that, by resolution A.861(20), the Assembly, at its twentieth session, adopted the *Performance standards for shipborne voyage data recorders (VDRs)*, which were amended by resolution MSC.214(81),

RECALLING the revised *Performance standards for shipborne voyage data recorders (VDRs)*, adopted by resolution MSC.333(90), which are applicable to VDRs installed on or after 1 July 2014,

TAKING INTO ACCOUNT the *Performance standards for float-free emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz*, adopted by resolution MSC.471(101), which are applicable to float-free EPIRBs operating in the frequency band 406.0-406.1 MHz which form part of the Global Maritime Distress and Safety System (GMDSS), installed on or after 1 July 2022,

RECOGNIZING the need to amend resolution MSC.333(90) with respect to float-free recording medium to effect consequential amendments related to the adoption of resolution MSC.471(101),

HAVING CONSIDERED, at its 104th session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue, at its eighth session,

1 ADOPTS the *Amendments to the Performance standards for shipborne voyage data recorders (VDRs)*, set out in the annex to the present resolution;

2 RECOMMENDS Governments to ensure that VDRs:

- .1 if installed on or after 1 July 2022, conform to performance standards not inferior to those specified in the annex to resolution MSC.333(90), as amended by the present resolution;
- .2 if installed on or after 1 July 2014 and before 1 July 2022, conform to performance standards not inferior to those specified in the annex to resolution MSC.333(90);

- .3 if installed on or after 1 June 2008, but before 1 July 2014, conform to performance standards not inferior to those specified in the annex to resolution A.861(20), as amended by resolution MSC.214(81); and
- .4 if installed before 1 June 2008, conform to performance standards not inferior to those specified in the annex to resolution A.861(20).

ANNEX

AMENDMENTS TO THE PERFORMANCE STANDARDS FOR SHIPBORNE VOYAGE DATA RECORDERS (VDRs)

- 1 In paragraph 3.1:
 - .1 resolution A.810(19) is deleted from the list; and
 - .2 the following resolution is added to the list:

"- MSC.471(101) Performance standards for float-free emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz"

- 2 Section 5.2.2 is replaced by the following:

"5.2.2 Float-free recording medium

The float-free recording medium should be installed in a float-free capsule which should meet all of the following requirements:

 - .1 be fitted with means to facilitate grappling and recovery;
 - .2 maintain the recorded data for a period of at least six months following termination of recording;
 - .3 be so constructed as to comply with the requirements specified in resolution MSC.471(101) and to minimize risk of damage during recovery operations;
 - .4 be capable of transmitting an initial satellite distress alerting signal and further locating and homing signals over a period of not less than seven days/168 hours; and
 - .5 be capable of being accessed following an incident but secure against a physical or electronically manipulated change or deletion of recorded data."