PART 4 CHAPTER 12

GMDSS AND INTERNAL COMMUNICATION

JANUARY 2001

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DET NORSKE VERITAS

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CHANGES IN THE RULES

General.

The present edition of the rules includes additions and amendments decided by the Board as of December 2000 and June 2001, and supersedes the July 1999 edition of the same chapter.

The rule changes come into force on 1 January 2002.

This chapter is valid until superseded by a revised chapter. Supplements will not be issued except for an updated list of minor amendments and corrections presented in Pt.0 Ch.1 Sec.3. Pt.0 Ch.1 is normally revised in January and July each year.

Revised chapters will be forwarded to all subscribers to the rules. Buyers of reprints are advised to check the updated list of rule chapters printed Pt.0 Ch.1 Sec.1 to ensure that the chapter is current.

Main changes

- General
  - The New Machinery Project called for restructuring of the machinery chapters in Pt.4. As a result of this restructuring, Ch.9 has been renumbered to read Ch.12.

Corrections and clarifications

In addition to the above stated changes, some detected errors have been corrected, and some clarifications have been made in the existing rule text.

Comments to the rules may be sent by e-mail to rules@dnv.com
For subscription orders or information about subscription terms, please use distribution@dnv.com
Comprehensive information about DNV and the Society's services is found at the Web site http://www.dnv.com

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SECTION 1
GMDSS (GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM)

A. General Requirements

A 100 Rule application

101 The requirements in this section are in compliance with the International Convention for the Safety of Life at Sea (SOLAS) Chapter IV with the latest amendments and Chapter III, Regulation 6 concerning radio life saving appliances.

102 SOLAS text is printed in italics. References to SOLAS regulations are given, where applicable.

103 Where any regulation refers to "the satisfaction of or approved by the Administration", DNV's interpretations are given in connection with the item in question. IMO interpretations are included with reference.

104 The rules apply to communication equipment and systems for ships in accordance with the International Convention for the Safety of Life at Sea (SOLAS) Chapter IV with the latest amendments (GMDSS). See 105.

105 Regulation 1

1 This chapter applies to all ships to which the present regulations (SOLAS) 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. *

* 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.

3 For the purpose of this chapter:

3.1 the expression ships constructed means «ships the keels of which are laid or which are at a similar stage of construction»;

3.2 the expression a similar stage of construction means the stage at which:

3.2.1 construction identifiable with a specific ship begins; and

3.2.2 assembly of that ship has commenced comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less.

4 Every ship shall comply with regulations 7.1.4 (B301) (NAVTEX) and 7.1.6 (B301) (satellite EPIRB) not later than 1 August 1993.

5 Subject to the provisions of paragraphs 4 and 7, the Administration shall ensure that every ship constructed before 1 February 1995:

5.1 during the period between 1 February 1992 and 1 February 1999;

5.1.1 either complies with all applicable requirements of this chapter; or

5.1.2 complies with all applicable requirements of chapter IV of the International Convention for the Safety of Life at Sea, 1974 in force prior to 1 February 1992; however, passenger ships irrespective of size shall not be granted any exemption from the requirements of regulation 3 of chapter IV of that Convention; and

5.2 after 1 February 1999, complies with all the applicable requirements of this chapter.

6 Every ship constructed on or after 1 February 1995 shall comply with all the applicable requirements of this chapter.

7 Passenger ships constructed before 1 July 1997 shall, as appropriate, comply with the requirements of regulations 6.4, 6.5, 6.6 and 7.5 not later than the date of the first periodic survey after 1 July 1997.

8 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.

A 200 Classification of the GMDSS installation

201 Classification of the GMDSS installation is to contain the following elements:

— approval of design documentation
— functional system testing.

202 The documents given in 203 to 206 are to be submitted for approval.

203 Arrangement drawing

Arrangement and layout drawing of wheelhouse and radio room or radio space. The drawing is to show the physical location of all GMDSS radio communication equipment, including remote controllers and battery banks.

204 Aerial drawing

The drawing is to show the physical location of all aerials for the GMDSS installation and other aerials located near the GMDSS aerials.

205 Cable diagram

Power supply arrangement showing connections to the mains and emergency source and reserve source for all GMDSS equipment. The drawing should include fuses or breakers with ratings, interconnections between units and antenna connections (one line).

206 List of all GMDSS radio equipment with information of make and type or model.

207 The documentation listed in 203 to 206 may be combined; e.g. the equipment list may be included in the arrangement drawing etc. As an alternative to drawings, written documentation may be considered as an equivalent, provided all relevant information is included.

A 300 Type approval

301 All components which are parts of the GMDSS installation are to be type approved.

Guidance note:

Type approval carried out by a recognised institution based on the latest performance standards will be considered as equivalent to DNV type approval.

==end==of==Guidance==note==

302 The environmental conditions specified in IEC publication 945 apply.

A 400 Alterations and additions

401 When an alteration or addition to the type approved component or sub-system, or the certified GMDSS system, is proposed, plans are to be submitted for approval. An inspection by a surveyor is to verify that compliance with these rules is maintained.

402 When mandatory or optional alterations are prescribed by the network organisation (INMARSAT, COSPAS-SAR-SAT), the quality assurance system recommended by the network organisation may be accepted to cover the approval and inspection requirements of 401. A detailed description of the technical modifications are to be submitted.
403 When mandatory alterations are prescribed by the network organisation (INMARSAT, COSPAS-SARSAT) these are considered as requirements from DNV to maintain type approval.

A 500 Terms, definitions and abbreviations

501 Regulation IV/2

The rules in this chapter are based on the assumption that personnel using the equipment have general qualifications, in accordance with IMO Resolution A.703(17), Annex 3, and specific knowledge of the equipment.

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

1.1 Bridge-to-bridge communications means safety communications between ships from the position from which the ships are normally navigated.

1.2 Continuous watch means that the radio 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.

1.3 Digital selective calling (DSC) means a technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations, and complying with the relevant recommendations of the ITU Radiocommunication Sector (ITU-R).

1.4 Direct-printing telegraphy means automated telegraphy techniques which comply with the relevant recommendations of the ITU Radiocommunication Sector (ITU-R).

1.5 General radiocommunications means operational and public correspondence traffic, other than distress, urgency and safety messages, conducted by radio.

1.6 INMARSAT means the Organization established by the Convention on the International Mobile Satellite Organization (INMARSAT) adopted on 3 September 1976.

1.7 International NAVTEX Service means the co-ordinated broadcast and automatic reception on 518 kHz of maritime safety information by means of narrow-band direct printing telegraphy using the English language.

* Reference is made to the NAVTEX manual approved by the Organization.

1.8 Locating means the finding of ships, aircraft, units or persons in distress.

1.9 Maritime safety information (MSI) means navigational and meteorological warnings, meteorological forecasts and other urgent safety related messages broadcast to ships.

1.10 Polar orbiting satellite service means a service which is based on polar orbiting satellites which receive and relay distress alerts from satellite EPIRBs and which provides their position.

1.11 Radio Regulations means the Radio Regulations annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention which is in force at any time.

1.12 Sea area A1 means an area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government.

1.13 Sea area A2 means an area, excluding sea area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government.

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

1.14 Sea area A3 means an area, excluding sea areas A1 and A2, within the coverage of an INMARSAT geostationary satellite in which continuous alerting is available.

1.15 Sea area A4 means an area outside 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 shall have the meanings as defined in those Regulations.

A 600 Exemptions

601 Regulation IV/3

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 (B300 to B700) provided:

1.1 such ships comply with the functional requirements of regulation 4 (B100); and

1.2 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:

2.1 if the conditions affecting safety are such as to render the full application of regulations 7 to 11 (B300 to B700) unreasonable or unnecessary;

2.2 in exceptional circumstances, for a single voyage outside the sea area or sea areas for which the ship is equipped; or

2.3 prior to 1 January 1999, when the ship will be taken permanently out of service within two years of a date prescribed by regulation 1 (A105) for the application of a requirement of this chapter.

3 Each Administration shall submit to the Organization, as soon as possible after the first of January in each year, a report showing all exemptions granted under paragraphs 1 and 2 during the previous calendar year and giving the reasons for granting such exemptions.

602 The Society will take into consideration the same items as mentioned in 601 to evaluate exemptions.

B. Ship Requirements

B 100 Functional requirements

101 Regulation IV/4

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

1 Every ship, while at sea, shall be capable:

1.1 except as provided in regulations 8.1.1 (401) and 10.1.4.3 (461), of transmitting ship-to-ship distress alerts by at least two separate and independent means, each using a different radiocommunications service; Equipment provided under the requirement of regulation 15.7 (1101).

Duplication of equipment will be accepted to cover this requirement.

1.2 of receiving shore-to-ship distress alerts;

1.3 of transmitting and receiving ship-to-ship distress alerts;

1.4 of transmitting and receiving search and rescue co-ordinating communications;

1.5 of transmitting and receiving on-scene communications;

1.6 of transmitting and, as required by regulation V/12(g) and (h), receiving signals for locating;*

* Reference is made to IMO resolution A.614(15) on carriage of radar operating in the frequency band 9,300-9,500 MHz.

1.7 of transmitting and receiving ** maritime safety information;

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

1.8 of transmitting and receiving general radiocommunications and from shore-based radio systems or networks subject to regulations 15.8 (1101); and
1.9 of transmitting and receiving bridge-to-bridge communications.

B 200 Radio installations

201 Regulation IV/6

1 Every ship shall be provided with radio installations capable of complying with the functional requirements prescribed by regulation 4 (101) throughout its intended voyage and, unless exempted under regulation 3 (A601), complying with the requirements of regulation 7 (301) 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 (401 to 701).

2 Every radio installation shall:

1.1.1 DSC on the frequency 156.525 MHz (channel 70). It shall be possible to initiate the transmission of distress alerts on channel 70 from the position from which the ship is normally navigated;*

1.1.2 radiotelephony on the frequencies 156.300 MHz (channel 6), 156.650 MHz (channel 13) and 156.800 MHz (channel 16);

1.2 a radio installation capable of maintaining a continuous DSC watch on VHF channel 70 which may be separate from, or combined with, that required by subparagraph 1.1.1;*

* Certain ships may be exempted from this requirement (see regulation 9.4 (S01)).

The requirement of 1.2 is to be maintained during operation of the VHF telephony facilities on other frequencies.

1.3 a radar transponder capable of operating in the 9 GHz band, which:

1.3.1 shall be so stowed that it can be easily utilized; and

1.3.2 may be one of those required by regulation III/6.2.2 for a survival craft;

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;

1.5 a radio facility for reception of maritime safety information by the INMARSAT enhanced group calling system** if the ship is engaged on voyages in any area of INMARSAT coverage but in which an international NAVTEX service is not provided. However, ships engaged exclusively on voyages in areas where an HF direct-printing telegraphy maritime safety information service is provided and fitted with equipment capable of receiving such service, may be exempt from this requirement.*

* Refer to resolution A.701(17) concerning carriage of INMARSAT enhanced group call SafetyNET receivers under the GMDSS, adopted by IMO.

** Reference is made to the Recommendation on promulgation of maritime safety information, adopted by IMO in res. A.705(17).

1.6 subject to the provisions of regulation 8.3 (401), a satellite emergency position-indicating radio beacon (satellite EPIRB ****) which shall be:

**** Refer to IMO res. A.616(15) concerning search and rescue homing capability.

1.6.1 capable of transmitting a distress alert either through the polar orbiting satellite service operating in the 406 MHz band or, if the ship is engaged only on voyages within INMARSAT coverage, through the INMARSAT geostationary satellite service operating in the 1.6 GHz band; ****

 Subject to the availability of appropriate receiving and processing ground facilities for each ocean region covered by INMARSAT satellites.

1.6.2 installed in an easily accessible position;

1.6.3 ready to be manually released and capable of being carried by one person into a survival craft;

1.6.4 capable of floating free if the ship sinks and of being automatically activated when afloat; and

1.6.5 capable of being activated manually.

2 Until 1 February 1999 or until such other date as may be determined by the Maritime Safety Committee, every ship shall, in addition, be fitted with a radio installation consisting of a radiotelephone distress frequency watch receiver capable of operating on 2,182 kHz.

3 Until 1 January 1999, every ship shall, unless the ship is engaged on voyages in sea area A1 only, be fitted with a device for generating the radiotelephone alarm signal on the frequency 2,182 kHz. ******

****** Refer to IMO res. A.421(XI) concerning operational standards for radiotelephone alarm signal generators.
4. The Administration may exempt ships constructed on or after 1 February 1997 from the requirements prescribed by paragraphs 2 and 3.

5. 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.

B 400 Radio equipment - Sea area A1

401 Regulation IV/8

1. In addition to meeting the requirements of regulation 7 (301), 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:

1.1 an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies: 2,182 kHz using radiotelephony; and

1.1.1 2,187.5 kHz using DSC; and

1.1.2 2,182 kHz using radiotelephony; and

1.2 through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 7.1.6 (301), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated; or

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

1.4 on HF using DSC; or

1.5 through the INMARSAT geostationary satellite service; this requirement may be fulfilled by:

1.5.1 an INMARSAT ship earth station; or

1.5.2 the satellite EPIRB, required by regulation 7.1.6 (301), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated.

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

2. The VHF radio installation, required by regulation 7.1.1 (301), 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 (301), an EPIRB which shall be:

3.1 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;

3.2 installed in an easily accessible position;

3.3 ready to be manually released and capable of being carried by one person into a survival craft;

3.4 capable of floating free if the ship sinks and being automatically activated when afloat; and

3.5 capable of being activated manually.

B 500 Radio equipment - Sea areas A1 and A2

501 Regulation IV/9

1. In addition to meeting the requirements of regulation 7 (301), every ship engaged on voyages beyond sea area A1, but remaining within sea area A2, shall be provided with:

1.1 an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies:

1.1.1 2,187.5 kHz using DSC; and

1.1.2 2,182 kHz using radiotelephony; and

1.2 a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz which may be separate from, or combined with, that required by subparagraph .1.1; and

1.3 means of initiating the transmission of ship-to-shore distress alerts by a radio service other than MF operating either:

1.3.1 through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 7.1.6 (301), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated; or

1.3.2 on HF using DSC; or

1.3.3 through the INMARSAT geostationary satellite service; this requirement may be fulfilled by:

1.3.3.1 the equipment specified in paragraph 3.2; or

1.3.3.2 the satellite EPIRB, required by regulation 7.1.6 (301), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated.

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 ship shall, in addition, be capable of transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy by either:

3.1 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

3.2 an INMARSAT 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 7.1.1.1 and 7.1.2 (301) 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.

B 600 Radio equipment - Sea areas A1, A2 and A3

601 Regulation IV/10

1. In addition to meeting the requirements of regulation 7 (301), every ship engaged on voyages beyond sea area A1 and A2, but remaining within sea area A3, shall, if it does not comply with the requirements of paragraph 2, be provided with:

1.1 an INMARSAT ship earth station capable of:

1.1.1 transmitting and receiving distress and safety communications using direct-printing telegraphy;

1.1.2 initiating and receiving distress priority calls;

1.1.3 maintaining watch for shore-to-ship distress alerts, including those directed to specifically defined geographical areas;

1.1.4 transmitting and receiving general radiocommunications, using either radiotelephony or direct-printing telegraphy; and

1.2 an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies:

1.2.1 2,187.5 kHz using DSC; and

1.2.2 2,182 kHz using radiotelephony; and

1.3 a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz which may be separate from or

1.4 means of initiating the transmission of ship-to-shore distress alerts by a radio service operating either:

1.4.1 through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 7.1.6 (301), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated; or

1.4.2 on HF using DSC; or

1.4.3 through the INMARSAT geostationary satellite service, by an additional ship earth station or by the satellite EPIRB required by regulation 7.1.6 (301), either by installing the satellite
EPIRB close to, or by remote activation from, the position from which the ship is normally navigated;

2 In addition to meeting the requirements of regulation 7 (301), 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:

2.1 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;

2.1.1 using DSC;

2.1.2 using radiotelephony; and

2.1.3 using direct-printing telegraphy; and

2.2 equipment capable of maintaining DSC watch on 2,187.5 kHz and at least one of the distress and safety DSC frequencies 4,207.5 kHz, 6,132 kHz, 12,577 kHz or 16,804.5 kHz; at any time, it shall be possible to select any of these DSC distress and safety frequencies. This equipment may be separate from, or combined with, the equipment required by subparagraph 2.1 and 2.3;

2.3 means of initiating the transmission of ship-to-shore distress alerts by a radiocommunication service other than HF operating either:

2.3.1 through the INMARSAT geostationary satellite service; this requirement may be fulfilled by the addition of this capability in the equipment required by subparagraph 2.1; and

2.3.2 through the INMARSAT geostationary satellite service; this requirement may be fulfilled by:

2.3.2.1 an INMARSAT ship earth station; or

2.3.2.2 the satellite EPIRB, required by regulation 7.1.6 ((301), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated; or

2.4 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 subparagraph 2.1. and

3 It shall be possible to initiate transmission of distress alerts by the radio installations specified in subparagraphs 1.1, 1.2, 1.4, 2.1 and 2.3 from 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 A1 and A2, from the requirements of regulations 7.1.1.1 and 7.1.2 (301) 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.

B 800 Watches

801 Regulation IV/12

1 Every ship, while at sea, shall maintain a continuous watch:

1.1 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;

1.2 on the distress and safety DSC frequency 2,187.5 kHz, if the ship, in accordance with the requirements of regulation 9.1.2 or 10.1.3, is fitted with a MF radio installation;

1.3 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, 6,132 kHz, 12,577 kHz or 16,804.5 kHz, appropriate to the time of day and the geographical position of the ship, if the ship, in accordance with the requirements of regulation 10.2.2 or 11.1, is fitted with an MF/HF radio installation. This watch may be kept by means of a scanning receiver;

1.4 for satellite shore-to-ship distress alerts, if the ship, in accordance with the requirements of regulation 10.1.1, is fitted with an INMARSAT ship earth station.

2 Every ship, while at sea, shall maintain a radio watch for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the ship is navigating.

3 Until 1 February 1999 or until such other date as may be determined by the Maritime Safety Committee, every ship while at sea shall 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 Until 1 February 1999 or until such other date as may be determined by the Maritime Safety Committee, every ship required to carry a radiotelephone watch receiver shall maintain, while at sea, a continuous watch on the radiotelephone distress frequency 2,182 kHz. This watch shall be kept at the position from which the ship is normally navigated.

B 900 Sources of energy

901 Regulation IV/13

1 There shall be available at all times, while the ship is at sea, a source of electrical energy sufficient to operate the radio installations and to charge any batteries used as part of a reserve source or sources of energy for the radio installations.

2 A reserve source or sources of energy shall be provided on every ship, to supply radio installations, for the purpose of conducting distress and safety radiocommunications, 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 (301) 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 (301), the MF/HF radio installation required by regulation 10.2.1 or 11.1 (601 or 701), or the INMARSAT ship earth station required by regulation 10.1.1 and any of the additional loads mentioned in paragraphs 4, 5 and 8 for a period of at least:

2.1 one hour, on ships constructed on or after 1 February 1995;

2.2 one hour, on ships constructed before 1 February 1995, if the emergency source of electrical power complies fully with all relevant requirements of regulation II-1/42 or 43 (Pt.5 Ch.2 Sec.2 D, and Pt.4 Ch.8 Sec.2 C) including the requirements to supply the radio installations; and

2.3 six hours, on ships constructed before 1 February 1995, if the emergency source of electrical power is not provided or does not comply fully with all relevant requirements of regulation II-1/42 or 43 (Pt.5 Ch.2 Sec.2 D and Pt.4 Ch.8 Sec.2 C) including the requirements to supply the radio installations.*

* 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 and safety communications: 1/2 of the current consumption necessary for transmission + the current consumption necessary for reception + current consumption of any additional loads.
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, 2.2 or 2.3, the VHF radio installation and:

4.1 all other radio installations which can be connected to the reserve source or sources of energy at the same time; or

4.2 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.

If the maintenance requirement is ensured by duplication of equipment as described in 1101, both the basic and duplicated equipment is to be included in the determination of electrical load for the reserve source of energy unless simultaneously supplied by both basic and duplicated equipment from reserve source of energy is inhibited. An arrangement provided for the purpose of inhibiting simultaneously supply of both basic and duplicated equipment is to be in compliance with IMO Resolution A.702(17).

5 The reserve source or sources of energy may be used to supply the electrical lighting required by regulation 6.2.4 (accumulator battery or batteries):

6.1 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

6.2 the capacity of the battery or batteries shall be checked, using an appropriate method*, at intervals not exceeding 12 months, when the ship is not at sea.

* 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 hours). 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.

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

7.1 the highest degree of service;

7.2 a reasonable lifetime;

7.3 reasonable safety;

7.4 that battery temperatures remain within the manufacturer's specifications whether under charge or idle; and

7.5 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 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.

B 1000 Performance standards

1001 Regulation IV/14

1 All equipment to which this chapter applies shall be of a type approved by the Administration. Subject to paragraph 2, such equipment shall conform to appropriate performance standards not inferior to those adopted by the Organization.*

2 Equipment installed prior to the dates of application by prescribed regulation 1 (Sec.1 A105) may be exempted from full compliance with the appropriate performance standards at the discretion of the Administration, provided that the equipment is compatible with equipment complying with the performance standards, having due regard to the criteria which the Organization may adopt in connection with such standards.

* Refer to the following resolutions adopted by the Assembly of the Organization:

1) Resolution A.525(13): Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships.

2) Resolution A.698(17): General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids.


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


12) Resolution A.812(19): Performance standards for float-free satellite emergency position-indicating radio beacons operating through the geostationary Inmarsat satellite system on 1.6 GHz.


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

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

B 1100 Maintenance requirements

1101 Regulation IV/15

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

2 Where applicable, equipment shall be so constructed and installed that it is readily accessible for inspection and on-board maintenance purposes.

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

* Refer to the Recommendation on general requirements for shipborne radio equipment forming part of the global maritime distress and safety system and for electronic navigational aids adopted by the Organization by resolution
A.694(17) and to resolution A.813(19) on general requirements for electromagnetic compatibility (EMC) for all electrical and electronic ship's equipment.

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 (101) and to meet the recommended performance standards of such equipment.

6 On ships engaged on voyages in sea areas A1 and 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 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.*

GMDSS installations for A3 and A4 is to ensure availability of communication services by means of system redundancy.

* Refer to Resolution A.702(17) concerning radio maintenance guidelines for the global maritime distress and safety system related to sea areas A3 and A4, adopted by IMO.

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 (101), malfunction of the equipment for providing the general radio-communications required by regulation 4.8 shall not be considered as making a ship unseaworthy or as a reason for delaying the ship in ports where repair facilities are not readily available, provided the ship is capable of performing all distress and safety functions.

B 1300 Radio life saving appliances

1301 Regulation III/6.2

2.1 Two-way VHF radiotelephone apparatus

2.1.1 At least three two-way VHF radiotelephone apparatus shall be provided on every passenger ship and on every cargo ship of 500 gross tonnage and upwards. At least two two-way VHF radiotelephone apparatus shall be provided on every cargo ship of 300 gross tonnage and upward but less than 500 gross tonnage. Such apparatus shall conform to performance standards not inferior to those adopted by the Organisation. If a fixed two-way VHF radiotelephone apparatus is fitted in a survival craft it shall conform to performance standards not inferior to those adopted by the Organisation.*

2.1.2 Two-way VHF radiotelephone apparatus provided on board ships prior to 1 February 1992 and not complying fully with the performance standards adopted by the Organisation may be accepted by the Administration until 1 February 1999 provided the Administration is satisfied that they are compatible with approved two-way VHF radiotelephone apparatus.

2.2 Radar Transponders

At least one radar transponder shall be carried on each side of every passenger ship and of every cargo ship of 500 gross tonnage and upward. At least one radar transponder shall be carried on every cargo ship of 300 gross tonnage and upward but less than 500 gross tonnage. Such radar transponders shall conform to performance standards not inferior to those adopted by the Organisation.** The radar transponders shall be stowed in such locations that they can be rapidly placed in any survival craft other than the liferaft of liferafts required by regulation III/31.1.4 (Pt.3 Ch.6 Sec.3 A100) On ships carrying at least two radar transponders and equipped with free-fall lifeboats one of the radar transponders shall be stowed in a free-fall lifeboat and the other located in the immediate vicinity of the navigation bridge so that it can be utilised on board and ready for transfer to any of the other survival craft.

* Refer to IMO res. A.809(19).

** Refer to IMO res. A.802(19).
SECTION 2
INTERNAL COMMUNICATION

A. General Requirements

A 100 Application

101 This section contains all requirements pertaining to public address systems, systems for two-way voice communication, and general alarm systems including relevant SOLAS regulations with the latest amendments.

102 If any part of this section contains requirements which appear to be inconsistent with SOLAS, then the interpretation based on SOLAS takes precedence.

103 The requirements of B applies to all ships for the assignment of main class and are in compliance with SOLAS. SOLAS text is printed in italics.

104 The requirements of C apply to ships for the assignment of service notations and additional class notations.

A 200 Classification

201 Classification of the intercom systems consists of the following main elements:

— approval of design documentation
— approval test of application software (ATOS) if computer
— certification if computer based and if requested
— onboard survey and testing.

A 300 Design documentation

301 Plans, particulars and/or system descriptions are to be submitted with the objective of:

— ensuring that requirements concerning intercom systems
— ensuring all applicable requirements will be complied
— ensuring reliability through verification of technical and
— environmental specifications.

302 The documentation is to contain the information necessary to verify compliance with the requirements in this section and with environmental parameters as described in Pt.4 Ch.9 Sec.5 B. Generally the documentation should be kept as brief as possible, and may be divided in the following main elements:

1) Functional requirements.
2) Location requirements.
3) Power supply requirements and cabling.
4) Environmental requirements.

Guidance note:

Item 1 may be covered by a short description of the system(s). Item 2 may be covered by tables/descriptions giving the necessary information regarding locations of components, types, power outputs, dB levels etc. Alternatively, drawings showing the physical location of components may be submitted.

Item 3 may be covered with a short description or a one-line general arrangement drawing.

Item 4 (and 1) will be considered as complied with if the system is type approved. If the system(s) are not type approved, a case by case approval may be carried out based on submitted documentation, data sheets/instruction books, or equivalent.

303 In addition to documentation approved by the Society, manuals and drawings providing operational and technical information for service and maintenance purposes are to be delivered on board.

A 400 ATOS or certification at the manufacturer

401 Before installation, the systems are to be tested in order to ensure compliance with the rules, in regard to functionality. Comments made in connection with approval of the documentation are to be clarified.

A 500 Onboard survey or functional testing

501 When completed, the systems are to be tested in order to ensure compliance with the rules in regard to functionality. Furthermore, it is to be verified that the approved documentation is consistent with the final installation.

502 Final approval of the systems takes place following the survey, when comments and recommendations, if any, have been complied with.

A 600 Terms, definitions and abbreviations

601 The terms intercom and internal communications, when used generally, apply to the following:

— public address systems
— general alarm systems
— two-way voice communication systems such as

— telephone systems
— talk back systems.

602 Where the Code is referred to in the text, this means the International Life-Saving Appliance (LSA) Code adopted by IMO by res. MSC.48(66).

B. Ship Requirements - Main Class

B 100 Two way voice communication

101 A means of communication shall be provided between the navigation bridge and the steering gear compartment.

(Regulation II-1/29.10)

102 At least two independent means shall be provided for communicating orders from the navigation bridge to the position in the machinery space or in the control room from which the speed and direction of thrust of the propellers are normally controlled; one of these shall be an engine-room telegraph which provides visual indication of the orders and responses both in the machinery spaces and on the navigation bridge.

(Regulation II-1/37.2)

103 Appropriate means of communication shall be provided from the navigation bridge and the engine-room to any other position from which the speed or direction of thrust of the propellers may be controlled.

(Regulation II-1/37.2)

104 An emergency means comprised of either fixed or portable equipment or both shall be provided for two-way communications between emergency control stations, muster and embarkation stations and strategic positions on board.

(Regulation III/6.4.1)

Guidance note:

Strategic positions are the bridge and engine control room.

---end-of---Guidance---note---
105 Ships of 150 gross tonnage and upwards shall be fitted with adequate means of communication between the standard compass position and the normal navigation control position to the satisfaction of the Administration.

(Regulation V/12(b))

Guidance note:
This provision is considered as complied with if portable VHF/UHF's are available on board.

---end-of---Guidance---note---

106 Ships with emergency steering positions shall at least be provided with a telephone or other means of communication for relaying heading information to such positions.

(Regulation V/12(f))

B 200 Public address system/General alarm

201 A general emergency alarm system complying with the requirements of paragraph 7.2.1. of the Code shall be provided and shall be used for summoning the passengers and crew to muster stations and to initiate the actions included in the muster list. The system shall be supplemented by either a public address system complying with the requirements of paragraph 7.2.2. of the Code or other suitable means of communication. Entertainment sound systems shall automatically be turned off when the general emergency alarm system is activated.

(Regulation III/6.4.2)

Guidance note:
For cargo ships, alternatives to a public address system may be accepted, provided that the alternative system provides an equivalent safety level.

---end-of---Guidance---note---

202 On passenger ships the general emergency alarm system shall be audible on all open decks.

(Regulation III/6.4.3)

203 On ships fitted with a marine evacuation system communication between the embarkation station and the platform or the survival craft shall be ensured.

(Regulation III/6.4.4)

204 Public address systems on passenger ships

In addition to the requirements of regulation II-2/40.5 (Pt.5 Ch.2 Sec.2 1105) or regulation II-2/41-2, as appropriate, and of paragraph III/6.4.2, all passenger ships shall be fitted with a public address system.

(Regulation III/6.5.1)

205 The public address system shall be clearly audible above the ambient noise in all spaces, prescribed by paragraph 7.2.2.1 of the Code, and shall be provided with an override function controlled from one location on the navigation bridge and such other places on board as the Administration deems necessary, so that all emergency messages will be broadcast if any loudspeaker in the spaces concerned has been switched off, its volume has been turned down or the public address system is used for other purposes.

(Regulation III/6.5.2)

206 On passenger ships constructed on or after 1 July 1997:
1 the public address system shall have at least two loops which shall be sufficiently separated throughout their length and have two separate and independent amplifiers; and
2 the public address system and its performance standards shall be approved by the Administration having regard to the recommendations adopted by the Organisation.

* Refer to performance standards for public address systems contained in MSC/Circ.808.

(Regulation III/6.5.3)

Guidance note:
The effect of one failure should be minimised as far as possible. All areas of each fire zone should be served by two loops and supplied by independent amplifiers so that announcements in all areas are audible in the case of failure of one loop or amplifier. Amplifiers should be physically separated, and if only two amplifiers are used for the complete system, they should not be located in the same fire zone.

---end-of---Guidance---note---

207 The public address system shall be connected to the emergency source of electrical power required by regulation II-422.2.2 (Pt.5 Ch.2 Sec.2 D203).

(Regulation III/6.5.4)

208 Ships constructed before 1 July 1997 which are already fitted with the public address system approved by the Administration which complies substantially with those required by sections 5.2 (205) and 5.4 (207) and paragraph 7.2.2.1 of the Code are not required to change their system.

(Regulation III/6.5.5)

B 300 Electrical requirements

301 The emergency source of electrical power shall operate all internal communication equipment as required in an emergency for a period of minimum 18 hours (cargo ships).

Guidance note:
The above requirement does not prevent the use of self-contained communication systems, such as sound powered telephones or other battery operated communication systems, provided the capacity of the energy source is sufficient to operate the system for 18 hours (cargo ships).

---end-of---Guidance---note---

302 Conductors are to have a minimum cross section of 0.5 mm² for communication cables and 1.5 mm² for power cables.

303 Cables should be routed clear of galleys, machinery spaces and their casings and other high fire risk areas, except for supplying equipment in those spaces.

304 Communication cables are to be earthed at one end only.

305 Communication equipment located or used in areas where flammable gases may be present are to be certified intrinsically safe.

C. Ship Requirements - Additional Class

C 100 Fishing vessels

101 If the 'tween-deck is fitted with side openings, a means of communication between the bridge and the doors in the vessel's side and stern is to be provided. If this is not the case, then TV monitoring is to be provided.

C 200 Oil production and storage vessels

201 A two-way voice communication system is to be provided, making it possible to call all areas likely to be regularly manned from the control stations, navigation bridge and engine room(s).

Guidance note:
Control stations are those spaces in which the radio, main navigating equipment, central fire detection or control systems, gas detection system, central internal communication equipment, emergency shut-down system, or emergency source of power are located.

---end-of---Guidance---note---

202 At least four simultaneous voice connections are to be possible giving priority to the control stations and the navigation bridge.

203 The required intercom systems are to be capable of being supplied from the emergency source of power, for a period of at least 24 hours.
A monitored UPS is to be provided for all safety systems, including communication and general alarm systems.

Periodically unattended machinery space

For ships above 500 gross tonnage a reliable means of vocal communication shall be provided between the main machinery control room or the propulsion machinery control position as appropriate, the navigation bridge and engineer officers’ accommodation.

Regulation II-1/50

At least 4 simultaneous voice connections are to be possible, alternatively the connection between the bridge and the engine rooms is to have priority above other connections.

The means of vocal communication is to function during black-out.

Dynamic positioning systems

A two-way voice communication facility is to be provided between the DP-system control centre and the navigation bridge, ECR and relevant operation control centres.

The internal communication system is to operate independently of the vessel’s main power system.

Nautical safety

Batteryless telephone systems

To secure internal communications independent of an electrical power supply, a batteryless telephone system shall be provided for two-way communication between the wheelhouse and the:

— engine control room
— steering gear room
— captain’s living quarters
— chief engineer’s living quarters
— radio room (when located outside of the bridge area).

In the steering gear room, facilities shall be provided to avoid noise interference when using the batteryless telephone.

Automatic telephone systems

The automatic telephone network is to provide two-way communication between the bridge, all workstations and all relevant spaces, and is to function during black-out. The wheelhouse is to be fitted with 2 independent user extensions. Incoming calls on adjacent telephones are to be distinguishable by lights and/or different ring tones. The telephone network is to be designed with a minimum capacity for 2 simultaneous calls. The telephones in the wheelhouse and engine control room are to have priority function over any other extension.

A reference list of extensions is to be permanently posted within reach of each telephone.

Public address systems

The public address (PA) system is to enable point-to-point loud hailing intercom between the bridge and all relevant areas, and is to function during black-out.

The PA control module is to be suitable for flush panel mounting in workstation consoles. Outdoor substations shall be mounted in a watertight housings.

Each substation is to be equipped with an activation light to indicate communication readiness. The talk-back speaker systems are to have a volume control.

The amplifier units are to be protected against failure in the intercom network or in the substation equipment.

Guidance note:

a) The PA control module, including microphone and talk-back devices, is to be located in the wheelhouse.

b) The following areas are recommended to be fitted with a PA talk-back substation:

— bridge wings
— forecastle deck
— aft mooring station
— midship mooring station
— steering gear room
— engine control room
— cargo control room
— cabins (speaker only)
— offices and lounges (speaker only)

UHF System

To assist in safety and navigation, the bridge is to be provided with at least 4 portable UHF transceivers operating in the 457 to 467 MHz band.

The equipment is to include microphone, loudspeaker and chargeable batteries, with a capacity to operate the equipment continuously for at least 5 hours.

Continuous operation means sequences of 1 minute transmissions followed by 9 minutes reception, without signals at the receiver input.

A battery charger having sufficient capacity to re-charge all UHF transceivers simultaneously shall be installed in an easily accessible location within the wheelhouse.

Guidance note:
The charger unit or units should as a minimum have slots for 4 UHF transceivers and be capable of re-charging the 4 UHF transceivers.