



## PORTS and MARITIME AFFAIRS

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### Directive No. SOLAS/15

### GMDSS REQUIREMENTS

### FOR RADIO INSTALLATIONS AND OPERATIONS

Issued under the enabling power of the Ministerial Resolution 20/2016

Issue Date: 29 December 2016

## 1 Introduction

(1) With reference to;

- Ports and Maritime Affairs (PMA) resolution no. 8/2016: regarding the implementation of the requirements of the International Convention for the Safety of Life at Sea, 1974 and its amendments
- SOLAS Regulation IV/6: Radio installations
- COMSAR/Circ.32: Harmonization of GMDSS requirements for radio installations on board SOLAS ships, adopted 16 August 2004.
- GMDSS Manual, consolidated edition 2015.
- NCSR 3/14: completion of the detailed review of the global maritime distress and safety system (GMDSS), 11 December 2015
- COMSAR/Circ.17: Recommendation on use of GMDSS equipment for non-safety communications.
- A.694(17): General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids.
- A.606(15): Review and evaluation of the Global Maritime Distress and Safety System (GMDSS)

(2) The PMA requires that vessels are in position of a radio licence in conformity with SOLAS and other applicable IMO publications, issued from time to time.

(3) Equipment requirements for GMDSS vessels vary according to the area (or areas) in which a ship operates. Coastal vessels, for example, only have to carry minimal equipment if they do not operate beyond the range of shore based VHF stations (Sea Area A1). Ships which trade further



from land are required to carry MF equipment in addition to VHF (sea area A2). Ships which operate beyond MF range are required to carry HF and/or Inmarsat equipment in addition to VHF and MF (sea areas A3 and A4).

- (4) The purpose of this directive are:
- (a) provide guidance to ship-owners and operators, port State control officers (PSCOs), Companies and Recognized Organizations (ROs) in respect to GMDSS Requirements for Radio Installations on Board SOLAS Ships under SOLAS chapter IV, Reg. 6.
  - (b) clarify the requirements on these subjects and summarizes the related recommendations that contain many of the details necessary for compliance.

## 2 Definitions

- (1) **Approval or Approved:** Whenever the words "approval" or "approved" are used throughout this directive, they shall mean approval by an entity that has been delegated authority under written agreement to act on behalf of the PMA with respect to Statutory Certification and Services. See Directive No. SOLAS/02 "Type Approval Certificate for Bahraini Ships" for more details.
- (2) **Sea area A1** means an area, which is within range of VHF coast stations with continues Digital Selective Calling (DSC) alerting available (about 20 - 30 Nautical Miles) only,
- (3) **Sea area A2** means an area which is beyond A1, but within range of Medium Frequency (MF) coastal stations with continues DSC alerting available (about 100 to 150 Nautical miles) only.
- (4) **Sea area A3** means an area which is beyond A1, A2, but within coverage of INMARSAT geostationary Satellite in which continuous alerting is available (roughly, area between 70 degree North and 70 degrees South).
- (5) **Sea area A4** means an area which is beyond areas A1, A2 and A3, the remaining sea areas, the most important of which is the sea area around the North pole (the South Pole being mostly land).
- (6) **Bridge-to-bridge communications** means safety communications between ships from the position from which the ships are normally navigated;



- (7) **Digital Selective Calling “DSC”** means being a technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations.
- (8) **Emergency Position Indicating Radiobeacon “EPIRB”** means an capable of transmitting a distress alert either through the COSPAS/SARSAT polar orbiting satellite service operating in the 406 MHz band or through the INMARSAT geostationary satellites operating in the 1.6 MHz band;
- (9) **High Frequency “HF”** means the frequency spectrum between 3000 kHz and 30 MHz
- (10) **INMARSAT** means the Organisation established by the Convention on the International Maritime Satellite Organisation (INMARSAT) adopted on 3rd September 1976;
- (11) **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;
- (12) **Medium Frequency “MF”** means the frequency spectrum between 300 kHz and 3000 kHz;
- (13) **Radar transponder** means a survival craft radar transponder for search and rescue between ships or aircraft and survival craft;
- (14) **Ship station** means a mobile station in the maritime mobile-satellite service located on board a vessel which is not permanently moored, other than a survival craft station;

### 3 Application

Unless expressly provided otherwise, this directive applies to all Bahraini registered ships as follow:

- (1) Ships subject to the SOLAS Regulation IV/6, including mobile offshore units and to cargo ships of 300 GT and upwards.
- (2) Ships subject to the GCC Safety Regulations for Non-Conventional Size Ships (Law No. 11/2014) which is below 300 GT.





#### 4 Ship Requirements

##### A. Radio Installations, location and control of radio equipment

- (1) Every ship shall be provided with radio installations capable of complying with the functional requirements prescribed by SOLAS 74, Ch. IV (2014 edition as amended) 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:
  - (a) be so located that no harmful interference of mechanical, electrical or other origin affects its proper use, and so as to ensure electromagnetic compatibility and avoidance of harmful interaction with other equipment and systems;
  - (b) be so located as to ensure the greatest possible degree of safety and operational availability;
  - (c) be protected against harmful effects of water, extremes of temperature and other adverse environmental conditions;
  - (d) 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
  - (e) be clearly marked with the ship's name, call sign, MMSI number and any INMARSAT numbers.
- (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. 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. The panel shall clearly and visually indicate whenever any button or buttons have been pressed. Means shall be provided to prevent inadvertent activation of the button or buttons. If the satellite EPIRB is used as the secondary means of distress alerting and is not remotely



activated, it shall be acceptable to have an additional EPIRB installed in the wheelhouse near the conning position.

- (5) In passenger ships, information on the ship's position shall be continuously and automatically provided to all relevant radiocommunication equipment (DSC and INMARSAT) to be included in the initial distress alert when the button or buttons on the distress panel is pressed.
- (6) In Passenger Ships,
- (a) In every passenger ship to which this directive applies a distress panel shall be installed at the conning position.
  - (b) A distress panel shall:
    - i. Contain either:
      - a single button for all radio communication installations on board; or
      - a separate button for each radio communication installation on board, which, when pressed, initiates a distress alert using all radio communication installations required on board for that purpose;
    - ii. Clearly and visually indicate whenever any such button or buttons mentioned in sub-paragraph (a) above have been pressed; and
    - iii. Provide visual and aural indication of any distress alert or alerts received on board and indicate through which radio communication service the distress alert or alerts have been received.
  - (c) Means shall be provided to prevent inadvertent activation of the button or buttons on the distress panel.
  - (d) If the satellite EPIRB is used as the secondary means of initiating a distress alert pursuant to these Regulations and is not capable of being remotely activated, an additional EPIRB shall be installed in the wheelhouse near the conning position.
  - (e) Information on the ship's position shall be continuously and automatically provided to all relevant radio communication equipment (DSC and INMARSAT) to be included in the initial distress alert when the button or buttons on the distress panel is pressed.
  - (f) Each radio transmitter and receiver fitted in accordance with these Regulations shall be provided with a suitable antenna or antennas.



The antennas shall be so constructed and sited as to enable each transmitter and receiver to perform its intended communication function effectively.

## **B. Radio equipment to be provided for all sea areas (General)**

### **(1) Every ship shall be provided with:**

- (a) a VHF radio installation capable of transmitting and receiving on DSC frequency 156.525 MHz (channel 70), and a radiotelephony on the frequencies 156.300 MHz (channel 6), 156.650 MHz (channel 13) and 156.800 MHz (channel 16), located at the navigation bridge.
- (b) a VHF radio installation capable of maintaining a continuous DSC watch on channel 70 which may be separate from, or combined with, that required by paragraph (a) of this paragraph.
- (c) a radar transponder (Search and Rescue locating device) capable of operating in the 9 GHz band or on frequency dedicated for AIS.
- (d) if the ship is at sea in any area in which an international NAVTEX service is provided, a receiver capable of receiving international NAVTEX service broadcasts;
- (e) if the ship is at sea in any area of INMARSAT coverage but in which an international NAVTEX service is not provided, a radio facility for reception of maritime safety information by the INMARSAT enhanced group calling system;
- (f) Subject to the provisions of regulation 8.3 a satellite EPIRB (refer to Resolution A616(15) as amended concerning SAR homing capabilities)

### **(2) Subject to the provisions of Solas Ch. IV, regulation 8.3, a satellite emergency position-indicating radio beacon (satellite EPIRB) which shall be:**

- (a) Capable of transmitting a distress alert through the polar orbiting satellite service operating in the 406 MHz band;
- (b) Installed in an easily accessible position;
- (c) Ready to be manually released and capable of being carried by one person into a survival craft;
- (d) Capable of floating free if the ship sinks and of being automatically activated when afloat;





- (e) Capable of being activated manually.
- (3) Every passenger ship to which this paragraph applies shall be provided with means for two-way on-scene radio communications for search and rescue purposes capable of operating solely on the aeronautical frequencies 121.5 Mhz and 123.1 Mhz from the position from which the ship is normally navigated.

**C. Additional radio equipment to be provided for Sea area A1 ships**

- (1) In addition to meeting the requirements of SOLAS Ch. IV, regulation 7, every A1 area ship shall be provided with a radio installation capable of initiating the transmission of ship-to-shore distress alerts by operation from the position from which the ship is normally navigated, operating either:
  - (a) on VHF using DSC;
  - (b) Through the polar orbiting-satellite service on 406 MHz (this requirement may be fulfilled by the satellite EPIRB).
  - (c) if the ship is at sea within coverage of MF coast stations equipped with DSC, on MF using DSC;
  - (d) on HF using DSC; or
  - (e) through the INMARSAT geostationary satellite service;
- (2) The VHF radio installation, required by SOLS Ch. IV, regulation 7.1.1 shall also be capable of transmitting and receiving general radiocommunications using radiotelephony.
- (3) Area A1 ships may, in lieu of being provided with the satellite EPIRB required by SOLS Ch. IV, regulation 7.1.6, be provided with an EPIRB which shall be
  - (a) 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, installed in an easily accessible position, ready to be manually released and capable of being carried by one person into a survival craft;
  - (b) capable of floating free if the ship sinks;
  - (c) Capable of being activated manually and automatically when afloat.



**D. Additional radio equipment to be provided for Sea area A1 and A2 ships**

(1) In addition to carrying the equipment listed in paragraph C, every ship engaged on voyages **beyond sea area A1, but remaining within sea area A2**, shall be provided with:

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

- i. 2,187.5 kHz using DSC; and
- ii. 2,182 kHz using radiotelephony;

(b) a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz; such installation may be separate from, or combined with, that required by paragraph (a)(i) of this paragraph; and

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

- i. through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by SOLAS Ch. IV, regulation 7.1.6 if it is installed close to, or capable of remote activation from, the position from which the ship is normally navigated;
- ii. on HF using DSC; or
- iii. through the INMARSAT geostationary satellite service; this requirement may be fulfilled by:
  - the equipment specified in paragraph (3)(b) of this paragraph; or
  - The satellite EPIRB, required by SOLAS Ch. IV, regulation 7.1.6 as amended if it is installed close to, or capable of remote activation from, the position from which the ship is normally navigated.

(2) Means shall be provided to initiate transmission of distress alerts by the radio installations specified in paragraphs (1)(a) and (1)(c) of this paragraph from the bridge (wheel House).

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





- (a) 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 to the equipment required by paragraph (1)(a) of this regulation; or
- (b) an INMARSAT ship earth station.

**E. Additional radio equipment to be provided for Sea area A1 and A2 and A3 ships**

In addition to meeting the requirements of SOLAS Ch. IV, regulation 7, every area A3 ship shall be provided with either the following equipment:

**(1) Option A**

- (a) an INMARSAT ship earth station
- (b) an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies;
  - i) 2,187.5 kHz using DSC; and
  - ii) 2,182 kHz using radiotelephony;
- (c) 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 paragraph (b)(i) of this directive; and
- (d) Means of initiating the transmission of ship-to-shore distress alerts by a radio service operating either;
  - i) through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 7.1.6 if it is installed close to, or capable of remote activation from, the position from which the ship is normally navigated;
  - ii) on HF using DSC; or
  - iii) through the INMARSAT geostationary satellite service, either by an additional ship earth station or by the satellite EPIRB required by regulation 17.1.6 if it is installed close to, or capable of remote activation from, the position from which the ship is normally navigated.

**(2) OR Option B**

- (a) 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, using DSC, radiotelephony and direct-printing telegraphy

- (b) An MF/HF DSC watchkeeping receiver 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.
- (c) Means of initiating the transmission of ship-to-shore Distress Alerts by a radiocommunication service other than HF, either:
- i. through the polar orbiting satellite service on 406 MHz EPIRB, installed close to, or capable of remote activation from, the position from which the ship is normally navigated; or
  - ii. through the INMARSAT geostationary satellite service; this requirement may be fulfilled by:
    - an INMARSAT ship earth station; or
    - the satellite EPIRB, required by SOLAS Ch. IV, regulation 7.1.6 if it is installed close to, or capable of remote activation from, the position from which the ship is normally navigated; and
    - in addition, means of transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy shall be provided 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 and 27,500 kHz; this requirement may be fulfilled by the addition of this capability in the equipment required by paragraph (a) above.
- (d) Means shall be provided to initiate transmissions of distress alerts from the position from which the ship is normally navigated by the radio installations specified in paragraphs (a), (b) and (d) of Option A and (a) and (c) of Option B of this Paragraph.

**F. Additional radio equipment to be provided for Sea area A1 and A2 and A3 and 4 ships**

In addition to meeting the requirements of SOLAS Ch. IV, regulation 7, every area A4 ship shall be provided with the radio installations and



equipment specified in Option B in SOLAS Ch. IV, regulation 10.2, except that the equipment required by (c)(ii) of Option B shall not be accepted as an alternative to that required by paragraph (c)(i) of Option B, which shall always be provided. Such ships shall in addition comply with the requirements of SOLAS Ch. IV, regulation 10.3.

**NB:**

See Annex 1 for a tabulated form of required equipment to be carried on board according to the sea area of operation.

**5 Radio watches and radio personal**

- (1) Every ship while at sea shall maintain a continuous watch in accordance with SOLAS Ch. IV, Regulation 12.
- (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) A GMDSS radio watch shall be maintained by a qualified GMDSS operator in accordance with the STCW setting as applicable to the type of fitting on board each ship.
- (4) On area A1 ships, the person qualified as mentioned in paragraph (3) above shall hold at least a GMDSS restricted operator's certificate issued in accordance with the relevant STCW section.
- (5) On area A2, area A3 and area A4 ships the person qualified as mentioned in paragraph (3) above shall hold at least a GMDSS general operator's certificate issued in accordance with relevant STCW section.

**6 Revision History**

Revision No. 1 of the present Directive is the first revision.

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Undersecretary for Ports and Maritime Affairs

29<sup>th</sup> December 2016





## ANNEX 1

## GMDSS Equipment Requirements for SOLAS Ships in International Trade

#	Equipment	A1	A2	A3 Inmarsat solution	A3 HF solution	A4
1	VHF with DSC	x	x	x	x	x
2	DSC watch receiver channel 70	x	x	x	x	x
3	MF telephony with MF DSC		x	x		
4	DSC watch receiver MF 2187,5 kHz		x	x		
5	Inmarsat ship earth station with EGC receiver			x		
6	MF/HF telephony with DSC and NBDP				x	x
7	DSC watch receiver MF/HF				x	x
8	Duplicated VHF with DSC			x	x	x
9	Duplicated Inmarsat SES			x	x	
10	Duplicated MF/HF telephony with DSC and NBDP					x
11	NAVTEX receiver 518 kHz	x	x	x	x	x
12	EGC receiver	x <sup>1</sup>	x <sup>1</sup>		x	x
13	Float-free satellite EPIRB	x	x	x	x	x <sup>4</sup>
14	Radar transponder (SART)	x <sup>2</sup>	x <sup>2</sup>	x <sup>2</sup>	x <sup>2</sup>	x <sup>2</sup>
16	Hand held GMDSS VHF transceivers	x <sup>3</sup>	x <sup>3</sup>	x <sup>3</sup>	x <sup>3</sup>	x <sup>3</sup>
For passenger ships the following applies from 01.07.97						
17	Distress panel" (SOLAS regulations IV/6.4 and 6.6)	x	x	x	x	x
18	Automatic updating of position to all relevant radiocommunication equipment regulation IV/6.5. This also applies for cargo ships from 01.07.02 (chapter IV, new regulation 18)	x	x	x	x	x
19	Two-way-on-scene radiocommunication on 121,5 and 123,1 MHz from the navigating bridge. (SOLAS regulation IV/7.5)	x	x	x	x	x

- 1) Outside NAVTEX coverage area.
- 2) Cargo ships between 300 and 500 gt.: 1 set.  
Cargo ships of 500 gt. and upwards and passenger ships: 2 sets.
- 3) Cargo ships between 300 and 500 gt.: 2 sets.  
Cargo ships of 500 gt. and upwards and passenger ships: 3 sets.
- 4) Inmarsat E-EPIRB cannot be utilized in sea area A4.