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Guidance no. 9173 of 25 April 2002 issued by the Danish Maritime Authority

Guidance on GMDSS in S ships, ships for special purposes (ships worthy of preservation, sport fishing vessels, etc.)

Introduction

The Global Maritime Distress and Safety System (GMDSS) was adopted by the International Maritime Organization (IMO) in 1988. The provisions on GMDSS were incorporated in the International Convention for the Safety of Life at Sea (SOLAS), chapter IV on radiocommunications as well as in chapter III on life-saving appliances.

The system breaks with previous provisions on Morse telegraphy and radio telephony and is based on the use of advanced technical equipment on board ships, on coast radio stations and in satellite systems. Both geostationary satellites above equator and polar orbiting satellites form part of the system. The purpose of the system is to ensure that search and rescue (SAR) authorities and ships in the vicinity of a ship in distress are alerted quickly so that they can assist in a co-ordinated action. It must, among other things, be possible to alert land by means of two separate and independent methods. Via the system, it must furthermore be possible to transmit and receive maritime safety information (MSI), such as meteorological warnings, navigational warnings, etc., as well as general communication.

Main GMDSS principles

As mentioned in the introduction, GMDSS breaks with the previous provisions on radio communication in ships, including especially as regards distress and safety communication. As a general rule, all ships, regardless of size, shall in principle be fitted with radio equipment depending on the ship's area of navigation and the radio systems available in the ship's trade area.

Sea areas

Sea areas are divided into four different types, namely:

Sea area A1:

An area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available.

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.

Sea area A3:

an area, excluding sea areas A1 and A2, within the coverage of an Inmarsat geostationary satellite in which continuous alerting is available.

Sea area A4:

An area, excluding sea areas A1 and A2, within the coverage of an Inmarsat geostationary satellite in which continuous alerting is available.

Systems

GMDSS covers different radio systems. Digital selective call (DSC) equipment shall be connected to the already known VHF MF (medium wave) and HF (short wave) telephone equipment, which causes calls to be made via the keyboard on the DSC equipment rather than, as previously, via calls with speech in the radio equipment's microphone. DSC has been built into the newest radio equipment. In addition, Inmarsat satellite terminals for telephony, telex and data are included, including e-mail. In addition, the so-called Emergency Position Indicating Radio Beacons (EPIRBs), Search and Rescue Transponders (SARTs), NAVTEX receivers and portable VHF systems are included. EPIRBs shall be installed outdoors with a hydrostatic release so that they are automatically released and transmit an alert to satellites if the ship sinks. SARTs shall be used in, among other things, liferafts and the signal on 9 GHz is seen as a number of dots on the radar screens (3 cm) of surrounding ships and hereby indicates the direction to the SART. NAVTEX receivers shall be used for automatic reception on 518 kHz of navigational warnings, etc. and warnings of gales and breezes.

Distress alert

In the float-free EPIRB, an alert is given automatically if the ship sinks. DSC equipment requires a distinct alert by activation of a red button (distress). It shall be possible to activate the alert from the conning position. When the red button is activated, the ship's identification and position will automatically be submitted and activate an alert in the DSC equipment on the coast radio station and all other ships in the area. The information on the identification, position, etc. of the ship in distress will be shown on the display of the DSC equipment so that it is possible to launch rescue operations. This way of alerting is an improvement in relation to the previous method with a mayday call on a distress frequency, which presupposed that ships and coast radio stations kept a constant listening watch on the distress frequency.

The DSC calling method thereby means improved safety for ships and the crews on board.

Distress communication after alerting

The distress communication as such, which follows the introductory distress alerting by DSC on MF DSC frequency 2187.5 kHz and/or VHF channel 70, takes place in GMDSS with speech on the distress frequency 2182 kHz and/or VHF channel 16 in the same way as previously. This enables the coast radio station and all ships in the area to follow and take part in the communication and provide the necessary assistance. Lyngby Radio keeps a listening watch on VHF channel 16, but the manual listening watch on the distress frequency 2182 kHz will cease from 1 June 2002.

Timetable

Ships with a trade area outside VHF reach shall change to GMDSS by 1 February 2002 at the latest. Lyngby Radio covers on VHF inner Danish waters and the Baltic Sea and the North Sea to about 25 nautical miles from the coast. Ships with a trade area within VHF reach may postpone acquisition of the equipment until 1 February 2003.

Equipment requirements

The provisions on GMDSS for S ships are stipulated in chapter IV of technical regulation no. 15 of 20 November 2000 on ships for special purposes (ships worthy of preservation, sport fishing vessels, etc.) issued by the Danish Maritime Authority.

The technical regulation applies to ships that have been declared worthy for preservation by the Danish Ship Preservation Trust, except however recreational craft worthy of preservation. Furthermore, the technical regulation applies to existing ships used as training ships, socio-educational projects, school camp ships, sport fishing vessels, club vessels or the like for special purposes not consisting in transport of passengers as such (vessel service and the like).

The equipment required has been determined by the Danish Maritime Authority after consultation of a number of organisations.

In most cases, new radio equipment shall be required. However, the newest traditional VHF and MF equipment may be reused and connected to separate DSC equipment. If new equipment is acquired, the old equipment may be brought ashore. This also applies to the so-called 2182 watch receiver, which will become superfluous. The requirements for the individual sea areas are evident from the table below:

Sea area	VHF-DSC	MF-DSC	HF-DSC	Inmarsat-C	EPIRB float-free	SART	Portable VHF	NAVTEX
A1	1				1 ¹⁾	1	1	1 ¹⁾
A2	1	1			1	1	1	1
A3	1	1		1 ²⁾	1	1	1	1

1) Requirements for EPIRB and NAVTEX receiver do not apply in trade areas in sheltered waters of class D, cf. chapter 1 of Notice D from the Danish Maritime Authority (see annex 1).

2) Instead of an Inmarsat-C terminal the requirement can be met by an HF-DSC and an Inmarsat EGC receiver.

Approved equipment

Radio equipment installed on board shall comply with a great number of specifications and standards and shall, in this way, be approved for the purpose.

In general, distinction is made between two types of approval:

1. Radio equipment approved by so-called "Notified bodies" in accordance with the EU marine equipment directive shall be conformity marked (wheel-marked). Equipment carrying the wheel mark is approved for installation in SOLAS ships and consequently complies with the IMO requirements.
2. Radio equipment complying with the EU Directive on radio and telecommunications terminal equipment (R&TTE Directive), including a number of requirements related to maritime safety), shall be CE-marked.

Equipment carrying the wheel mark and/or the CE mark may be installed in S ships.

Sources of energy

The radio installation shall be connected to the ship's main source of energy as well as by means of an automatic switch-over to a separate radio battery, which shall have a capacity of at least 6 hours. There shall be an alarm which is activated when the radio battery is no longer fully charged for one reason or another.

Antennas

Antennas shall be located as high and free of other objects as possible. Antennas are available both as wire antennas and as whip antennas. For VHF radio systems only one antenna is required for both transmission and reception as well as a filter preventing the transmission frequency from being led to the receiver. The VHF antenna is an omnidirectional whip antenna which should be located asymmetrically from other antennas and goods by at least 1 metre (half wave length). In certain VHF-DSC radio systems, an extra reception antenna shall be required in order to keep a constant DSC watch on VHF channel 70 (DSC distress channel).

Good earthing is necessary. In steel ships, the hull as such is used as an earth connection, while in wooden ships a metal plate is located on the outside of the ship. In VHF radio systems, earthing is not necessary.

Installation and surveys

It is important that the equipment is installed in accordance with the provisions of the technical regulation and the manufacturer's instructions to be sure that it always functions as intended. Specific antennas are part of the equipment. DSC and Inmarsat equipment shall be connected to the vessel's navigation equipment (GPS) for automatic updating of the ship's position if this equipment is available on board. If a GPS is not connected to the radio equipment, the ship's position shall be entered manually at least every four hours.

The equipment shall be installed so that it is easily accessible for inspection and maintenance on board. Technical documentation and user instructions shall be available for all equipment. Furthermore, relevant spare parts and tools for maintaining the equipment shall be available.

Portable VHF systems shall be located in the wheelhouse together with the spare batteries, ready to be brought along in an emergency. The SART shall also be located in the wheelhouse, ready to be brought along in an emergency.

The float-free EPIRB shall be installed outdoors, as freely as possible, so that it can float free of the ship if it sinks and be activated automatically when afloat.

When the equipment has been installed, the Danish Maritime Authority shall be contacted immediately for a survey. The Danish Maritime Authority's regional office in Svendborg shall be contacted by telephone +45 62 21 06 88 or by fax +45 62 20 16 88.

Operation

A GMDSS radio certificate shall be required for operation of the radio equipment. Persons without a certificate may operate the equipment under the supervision of a person holding a certificate. One of the navigators holding a certificate shall have been designated by the master beforehand to take care of the communication in an emergency.

A test shall be passed to acquire a certificate. The Danish Maritime Authority issues three different GMDSS radio certificates:

- A General Operator Certificate in GMDSS (GOC)
- A Restricted Operator Certificate in GMDSS (ROC)
- A LRC (Long Range Certificate)

Radio course are offered by navigation and skipper training institutions as well as a number of other private and public schools.

In addition, the National IT and Telecom Agency issues a VHF certificate after having passed a test primarily aimed at yachtsmen. This certificate is called a Short Range Certificate (SRC).

Please observe that the SRC does not meet the requirements of the Danish Maritime Authority for the acquisition of a certificate of competency, where an ROC is the minimum requirement.

The certificate requirements in S ships are as follows:

A1 sea area: at least two persons holding at least ROC

A2 sea area: at least one person holding GOC and a person holding at least ROC

A 3 sea area: at least two persons holding GOC

