Global Maritime Distress and Safety System (GMDSS)
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BACKGROUND,
APPLICATION,
DEFINITION
GMDSS (Background)

- SOLAS 74
- Ships 1600 TRG Radio Installation
- Ships 300-1600 TRG Radio Installation
PREVIOUS GMDSS

- Based exclusively in the help that a ship could give other one.
- Means of communications of short distance.
- Distress message using Morse Code (or radiotelephone); (500 Khz); and by VHF Channel 16.
- General communications and messages relative to the maritime safety by Morse Code and telephony.
- Dependence of the conditions of atmospheric spread.
CURRENT SYSTEM
Functional requirements

- Transmitting ship-to-shore Distress Alerts by at least two separate and independent means, each using a different radio communication service;
- Receiving shore-to-ship Distress Alerts;
- Transmitting and receiving ship-to-ship Distress Alerts;
- Transmitting and receiving search and rescue co-ordinating communications;
- Transmitting and receiving on-scene communications;
- Transmitting and receiving locating signals;
- Receiving maritime safety information;
- Transmitting and receiving general radiocommunications relating to the management and operation of the vessel;
- Transmitting and receiving bridge-to-bridge communications.
ADVANTAGES RESPECT OF THE PREVIOUS SYSTEM

1.- It provides a worldwide warning system ship-shore, which does not depend on vessels in the vicinity.

2.- Simplifies the radio operations; alerts can be transmitted by “pressing a button”

3.- Assures the redundancy of communications; requires two separate systems to alert function.

4.- Strengthens the search and rescue; operations are coordinated by land centres.
Related Conventions

- International Convention for Safety of Life at Sea, SOLAS,
- ITU Radio Regulations
- STCW
- Ch. II-1 Emergency source of electrical power
- Ch. III Life-saving appliances and arrangements
- Ch. IV Radiocommunications
- Ch. V Radar band “X”

Commercial vessels of 300 Gross Registered Tons (GRT) and above, engaged on international voyages
The GMDSS applies to vessels subject to the SOLAS Convention - that is:

- Commercial vessels of 300 Gross Registered Tons (GRT) and above, engaged on international voyages.
- The GMDSS became mandatory for such vessels as at February 1, 1999.
- Commercial vessels under 300 GRT, or those above 300 GRT engaged on domestic voyages only are subject to the requirements of their Flag State. Some Flag States have incorporated GMDSS requirements into their domestic marine radio legislation - however many have not.
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SEA AREAS
GMDSS Sea Areas

The equipment requirements are defined depending on area of operation of the ship, namely:

**SEA AREA A1**: Within the coverage of coastal stations VHF DSC participating in the system SAR (up to 30 nautical miles);

**SEA AREA A2**: Within the coverage of MF (2 Mhz) coast stations with DSC participating in the SAR system (excluding areas A1) (up to 150 nautical miles);
GMDSS Sea Areas

SEA AREA A3: Within the coverage of the Inmarsat geostationary satellites (excluding sea areas A1 and A2) the globe (excluding the polar regions);

SEA AREA A4: area outside sea area A1, A2 and A3.(Lat.70N-70S)
Radio installations
Radio equipment: General

1.- A VHF radio installation, capable of transmitting, receiving and maintaining a continuous DSC watch on VHF channel 70.

2.- A radar transponder capable of operating in the 9 GHz band.

3.- A receiver capable of receiving international NAVTEX service broadcasts if the ship is engaged on voyages in any area where NAVTEX service is provided.

4.- A radio facility for reception of maritime safety information by the Inmarsat enhanced group calling system.

5.- A satellite emergency position-indicating radio beacon (satellite EPIRB).
Radio equipment: General

- VHF
- VHF-DSC
- NAVTEX (MSI) 518 kHz
- EPIRB
- SART 300-500 TRG 1, + 500 TRG 2
- Two-way VHF radiotelephone apparatus 300-500 TRG 2, + 500 TRG 3
RADIO BEACON COSPAS-SARSAT

- 406 Mhz
- Hydrostatic release.
- MMSI-MID -Global coverage.
- Provides information for Lat. and Long.
- By the 1st of February 2009 the 121.5 MHz distress EPIRB will no longer be detected by satellites.
- COSPAS SARSAT
  406 Mhz and 121.5 Mhz
- INMARSAT 1.6 Ghz
RADAR TRANSPONDER (SART)
Radio Equipment for sea area A2

- All equipment for sea area A1,
  - MF with DSC
  - or
  - MF/HF with DSC
Radio Equipment for sea area A3

All equipment for sea area A1 and A2,

+ MF/HF with DSC

or

INMARSAT con EGC
INMARSAT A radiotelephony, telex, fax y data

INMARSAT B telephony, telex, fax y data (digital)

INMARSAT C two-way communication messages and telex by store-and-forward

INMARSAT F voice communications, Integrated Services Digital Network and a packet data service, where users pay for the data they send, rather than the length of time of the connection.

INMARSAT M digital services for radiotelephony, data and fax
Global Maritime Distress and Safety System (GMDSS)

Functional requirements
**VHF Transceivers**

**WITH DSC**

Test: Link test shore-ship / ship-shore by DSC and radiotelephony.

- the priority of the call - DISTRESS, URGENCY, SAFETY or ROUTINE;
- the address - ie: all ships or a single ship/station;
- the identification of the ship in distress;
- the position of the ship in distress; and
- the nature of the distress

**Portable VHF for use in survival craft**

Test: Link test shore-ship / ship-shore by radiotelephony and/or by another mean on board.

Capability to transmit via Channels
MF/HF INSTALLATION WITH DSC

Test local: Link test shore-ship/ship-shore in DSC and radiotelephony.

Verification messages received by radiotelex.

Verification screen number assigned by the country.
local test: link with satellite test and test alarm

Verification messages received by SafetyNET

Verification number assigned by the country
Narrow-Band Direct-Printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings and Urgent Information to Ships (NAVTEX)

- **Local test:** test run
- Verification of received and stored messages
- **Coast station test:** reception according to local time
RADIO BEACON (EPIRB)

**Local test:** Turn on/Turn off Light

MMSI-vessel’s name- battery expiration date.

Instructions in working language and vessel’s name
Expiration date of hydrostatic release
SEARCH AND RESCUE RADAR TRANSPONDER (SART)

**local test**: turn on-turn off light.

**radar test**: verification in radar screen
Required Publications and Documents

- Radio license
- Radio Operator Certificate
- GMDSS Log Book
- ITU Publications
Global Maritime Distress and Safety System (GMDSS)

Regulation 16 - Radio Personnel
Certification of GMDSS radio personnel

- First-Class Radioelectronic Certificate
- Second-Class Radioelectronic Certificate
- General Operator’s Certificate
- Restricted Operator’s Certificate
- Maintenance of GMDSS Installations On Board Ships
Certification Scope

• Radioelectronic Operator: performance in any vessel.

• General Operator: performance in vessels with duplication of equipment and shore-based maintenance.

• Restricted Operator: performance in ships with solely VHF-DSC
THANK YOU!