

## Purpose:

The e-learning module is "GMDSS Operator", which takes into account the latest changes in international regulatory documentation on December 1, 2024.

In particular, the amendments to chapters II-1, III, IV, V of the SOLAS Convention were taken into account, which entered into force on January 1, 2024 (Resolution MSC.496(105), April 28, 2022) and related to the modernization of GMDSS.

## What is an e-learning module?

E-learning module is the electronic textbook on one or more sections. Theoretical materials can be accompanied by drawings, diagrams, photos, animations and videos. There is a test for assessment of knowledge gained at the end of each section.

## Contents:

- Basic concept of the GMDSS
- Possibilities and Provisions of Maritime Mobile and Maritime Mobile-Satellite Service
- GMDSS Communication systems
- GMDSS alerting and announcement Systems
- Emergency communication
- Public communication procedures

## Target groups

Deck - Management  
Deck - Operational

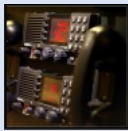
## Ship types

Generic



## Regulations

- Chapter IV STCW Code
- IMO Radio Regulation
- IMO Model Course 1.25 "GMDSS General Operator's Certificate"



**GMDSS GENERAL OPERATOR**  
Version: 11/2024

Section 2: Basic concept of the GMDSS

### Basic concept of the GMDSS.

#### 2.1. General.

In 1988, the Conference of Contracting Governments to the 1974 SOLAS Convention on the Global Maritime Distress and Safety System (GMDSS) Conference adopted amendments to the 1974 SOLAS Convention concerning radiocommunications for the GMDSS, together with several relevant resolutions.

These amendments entered into force on 1 February 1992, and the GMDSS was fully implemented on 1 February 1999 changing the old system that included two major manually operated subsystems:

- The Morse telegraphy system on 500 kHz.
- The radiotelephony system on 2182 kHz and 156.8

The introduction of modern technology including satellite and digital selective calling techniques, enables a distress alert to be transmitted and received automatically over long range with a significantly higher reliability.

Slide: 7/107

Navigation: Back, Next, Return

**GMDSS GENERAL OPERATOR**  
Version: 11/2024

Section 4: GMDSS Communication systems

#### 4.1.1. VHF radio installation.

Shippborne marine VHF radio station is used for radiotelephony communication and digital selective calling (DSC) for a range approximately 30 nm ("Line in sight" distance).

Frequency band 156-174 MHz

Output power must not exceed 25W (Low power 0.1-1W Range ~8nm). Class of emission G3E, G2B.

The SET of VHF station:

- VHF transceiver with a Control pane and handset,
- VHF antenna,
- Built in 70 Ch receivers with own antenna,
- DSC modem,

See lesson on Sailor 4822 switching and Coast station call.

Slide: 151/327

Navigation: Back, Next, Return

**GMDSS GENERAL OPERATOR**  
Version: 11/2024

Section 5: GMDSS starting and announcement Systems

#### 5.1.1. Performance and type-approval standards to the EPIRBs.

If EPIRB installed on or after 1 July 2022, should conform to performance standards not inferior to those specified in the annex to resolution 4.819(19), as amended by resolutions MSC.56(66) and MSC.120(74), and type-approval standards not inferior to those specified in resolution A.696(17).

If EPIRB installed before 1 July 2022, conform to performance standards not inferior to those specified in the annex to resolution 4.819(19), as amended by resolutions MSC.56(66) and MSC.120(74), and type-approval standards not inferior to those specified in resolution A.696(17).

#### GENERAL

The EPIRB should be capable of transmitting a distress alert, including encoded position information from a receiver using a recognised global navigation satellite system (GNSS) with global coverage, to satellites equipped with a search and rescue 406 MHz processor or repeater.

On 4 m depth Hydrostatic Release Unit (HRU) automatically pushes EPIRB out.

The EPIRB is activated after release and contact with sea water.

EPIRB will float to the surface and start to operate automatically.

When leaving the vessel, remove the EPIRB from the enclosure and activate it manually.

Slide: 246/327

Navigation: Back, Next, Return

**GMDSS GENERAL OPERATOR**  
Version: 11/2024

Section 3: Possibilities and Provisions of Maritime Mobile and Maritime Mobile-Satellite Service

#### Coverage area of Inmarsat system.

Each satellite's global beam covers approximately one-third of the Earth's surface apart from the poles.

Overall, global beam coverage extends from latitudes of 76°N to 76°S, regardless of longitude.

Satellites cover coverage areas, which correspond to the four ocean regions:

- Atlantic Ocean Region-East (AOR-E);
- Atlantic Ocean Region-West (AOR-W);
- Indian Ocean Region (IOR);
- Pacific Ocean Region (POR).

In 2018, Inmarsat transferred 3rd generation services (including Inmarsat-C) to I-4 satellites, and as a result, coverage areas have changed. Details on Inmarsat.com

Slide: 88/327

Navigation: Back, Next, Return

**GMDSS GENERAL OPERATOR**  
Version: 11/2024

Section 3: Possibilities and Provisions of Maritime Mobile and Maritime Mobile-Satellite Service

#### 3.5.6. Iridium RMSS in GMDSS.

The Iridium satellite constellation comprises 66 satellites in 11 near-polar orbits (Fig.1) and covers 100% of the planet.

The Iridium constellation is in Low-Earth Orbit (LEO), approximately 780 km above the Earth, providing stronger signal and faster connections through smaller antennas with lower power requirements.

Additionally, low orbit allows Iridium satellites to coverage at the poles, ensuring coverage in remote high-latitude regions (Fig.2). Iridium LEO network uses L-band frequencies (1.2 GHz). In space, each satellite is cross-linked to up to 4 others (Fig.3), providing advantages in reliability and resiliency.

These cross-links provide network optimization, ensuring that data can be transmitted at the fastest possible speeds.

#### Iridium GMDSS Services (IGS)

IGS offers the following Iridium® GMDSS Safety Services:

Slide: 86/327

Navigation: Back, Next, Return

**GMDSS GENERAL OPERATOR**  
Version: 02/2023

Test tasks

**COMMENT**

The maritime community has developed a special billing procedure for communication service for maritime customers. And special currency denominations are used for invoicing and settlements:

- Special Drawing Rights (SDR);
- Goldfrank (GF).

**Test of question:**

In what currency international radio communication should be charged?

Select all correct answers:

- Euro.
- SDR.
- GoldFrank.
- USD.

Attempts: 1

Slide: 313/327

Navigation: Back, Next, Return