Webinar
Understanding GMDSS, now and in the future
• Connectivity
• Bridge Equipment
• Digital Solutions
• Cyber Security
CONNECTIVITY

The true **value** of connectivity lies in the **possibilities** it offers.
The right connectivity solution, whatever your needs
Why choose Tototheo as your connectivity partner?

- Inmarsat GX VAR-Strategic Alliance Partner
- Inmarsat Tier 1 Distribution Partner L-Band Services
- Flexible VSAT plans
- Iridium Tier 1 Partner
- Iridium GMDSS Service Partner (coming soon)
- Recognized Accounting Authority (AAIC = CY05)
- LRIT Certification & Testing Specialist
- Inmarsat Point of Service Activation (PSA)
NAVCOM Equipment and Services

An ever-moving industry needs a global reach with a personal touch.
CLASS & PERIODICAL SURVEYS

Tototheo Maritime ensures your vessels comply with all applicable regulations by taking over the administration and completion of GMDSS Radio Surveys, (S)VDR Annual Performance Test, Gyro overhauling and other regular surveys or maintenance required.
BRIDGE EQUIPMENT

When it comes to value added, we tick all the boxes.

- Direct partnership with well established manufacturers
- Global delivery and service network
- Pre-sales and after-sales consultancy and support
- Remote troubleshooting
- Onboard installation, repairs, maintenance
- Highly skilled engineers
VHF, MF/HF, INM-C

FBB, Certus, VSAT GX
The Global Maritime Distress and Safety System (GMDSS)
Before, Now and in the Future

Before
The ships sailing in international and coastal waters during the 18th century, were depended on morse code, using tones or lights to send distress signals during an emergency.

Now
IMO adopted the Global Maritime Distress Safety System, which revolutionized the way distress, urgency and safety information was transmitted, coordinated and managed on a worldwide basis. Additionally, it provided standards and recommendations for radio communication equipment and how this should interact with other land and at sea radio communication equipment.

Future
IMO is working on a Modernization plan of the GMDSS. The aim of this modernization plan is to use modern communication systems in the GMDSS (such as FBB), while removing the requirement to keep carrying obsolete systems.
The Titanic disaster was greeted with shock and outrage at the huge loss of life and the regulatory and operational failures that had led to it. Public inquiries led to major improvements in maritime safety.

One of their most important legacies was the establishment in 1914 of the International Convention for the Safety of Life at Sea (SOLAS), which still governs maritime safety today.
Who is making the rules?
The maritime regulatory environment

International Maritime Organization (IMO)

MSC

International Eletrotechnical Commission (IEC)

Conventions

Resolutions

Test Standards

Type approval

Type approval

Type approval

Other nations
SOLAS - Safety Of Life At Sea

SOLAS is the international convention on ships safety

The convention is handled by IMO - The International Maritime Organization

SOLAS directs the demands for the Safety and Rescue equipment on board ships
IMO – the International Maritime Organization – is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine pollution by ships.
GMDSS is the International Radio Safety system under SOLAS

GMDSS implementation started in 1992

GMDSS defines the mandatory requirements for ships communication and alarming – Defined by where the ship is navigating
A ship must always be able to contact a GMDSS coastal station – No matter where it is

No ship must sink without automatically transmitting a distress alarm
Technology Background
GMDSS Communication

A ship must always be able to contact a coastal station – No matter where it is.
Different radio frequencies cover different distances - This is the reason for the definition of sea areas

**VHF range 50-60 km (25W) – Line of Sight**

- VHF 30 – 300 MHz (155 – 162 MHz)

**MF range approx 400 km - Follows the curve of the earth**

- MF (Medium frequencies) 300 – 3000 KHz (1.6 – 4.0 MHz)
- HF (High Frequencies) 3 – 30 MHz (4 – 30 MHz)

**HF Range is World Wide – Is reflected in the atmosphere**

VHF coverage is in principle line of sight from antenna to antenna.

Range during daytime

Range during night

F2-lag

F1-lag

E-lag

D-lag

Troposphere
GMDSS Communication
Inmarsat C

World-wide coverage map

Limit of global beam coverage for Inmarsat A, B, C, D, E, M

- Pacific Ocean Region
- Atlantic Ocean Region-West
- Atlantic Ocean Region-East
- Indian Ocean Region
- Inmarsat-phone Coverage
- Land Earth Station
Mandatory Equipment

The mandatory equipment on board follows the Sea Areas

- **Sea Area A1**: Covered by a coastal station with VHF DSC GMDSS service
- **Sea Area A2**: Outside A1. Covered by a coastal station with MF DSC GMDSS service
- **Sea Area A3**: Outside A1 and A2. Within Inmarsat (Inmarsat-C) coverage
- **Sea Area A4**: Outside A1, A2 and A3. Covered by a coastal stations with HF DSC and Radio telex GMDSS service
Sea areas
# GMDSS packages

<table>
<thead>
<tr>
<th>Product/Sea area</th>
<th>Sea Area A1</th>
<th>Sea Area A2</th>
<th>Sea Area A3 TLX/Inm-C</th>
<th>Sea Area A3 Inm-C/Inm-C</th>
<th>Sea Area A4</th>
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<td>VHF DSC Class A</td>
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1 All ships over 300 GRT in international trade, and for most nations Fishing vessels above 24 m
* Local variations may apply
SAILOR Legacy
SAILOR Radio Legacy

SAILOR Maritime Radio - since the 60's

SOLAS Radiostation CW

GMDSS equipment System 2000

GMDSS equipment SAILOR 6000 Series

SAILOR Future
SAILOR Radio and GMDSS products

<table>
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<tr>
<th>Full SAILOR SOLAS/ GMDSS offering</th>
<th>SAILOR 6110 mini-C GMDSS</th>
<th>SAILOR GMDSS Console</th>
<th>SAILOR 6222 VHF DSC Class A GMDSS</th>
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<td>SAILOR 6110 Mini-C</td>
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<td>SAILOR System 6000 MF/HF (150W, 250W and 500W)</td>
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<td>SAILOR 6222 VHF DSC Class A</td>
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<td>SAILOR 6080/81 Power Supply</td>
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<td>SAILOR SP3520/40; Portable VHF GMDSS / ATEX</td>
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<td>SAILOR EPIRB, Radar SART and AIS SART</td>
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<th>SAILOR Work Tool offering</th>
<th>SAILOR 6080/81 Power Supply</th>
<th>SAILOR 4065 EPIRB</th>
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<td>SAILOR 6248 VHF</td>
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<td>SAILOR 6210 VHF</td>
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<tr>
<td>SAILOR SP35XX Portable VHF/UHF (Incl. ATEX)</td>
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Type approvals

We have you covered
New Regulation IMO - SOLAS

Next generation GMDSS from 2024
Modernized GMDSS

From 1 January 2024 a new modernized GMDSS will be in force.
Up to then incremental steps will be taken.

This presentation reflects our personal understanding and interpretation of ongoing work.
Next Generation GMDSS – What will happen?

Inmarsat C GMDSS monopoly broken

- FleetBroadband approved for GMDSS
- Iridium approved for GMDSS
Modinization of GMDSS

Competition & Timing

- **Completed and approved**
- **In force**

**Updates to circulars, resolutions and performance standards**

- **2019**
- **2020**
- **2021**
- **2022**
- **2023**
- **2024**

- New satellite services MSC 436(99)
- FleetBroadband MEAS Late Q3 2021
- Inmarsat I6, F1 Late 2021
- Inmarsat I6, F2 2022
- Global FleetBroadband GMDSS
- BCX approved for GMDSS exp. 2022/23
- SFX approved for GMDSS exp. 2022/23
- Iridium A3 in Polar regions

**Inmarsat**

- 2019
- 2020
- 2021
- 2022
- 2023
- 2024

- Iridium Network approved Jan20
- Inmarsat I6, F1 Late 2021
- Inmarsat I6, F2 2022
- Global FleetBroadband GMDSS
- BCX approved for GMDSS exp. 2022/23
- SFX approved for GMDSS exp. 2022/23
- Iridium A3 in Polar regions
Modernized GMDSS

When using Inmarsat based set up, things continue as we know them today (Sat-C or Fleet Broadband)

When using Iridium, Sea Area A3 will be true global (Sea areas A3 and A4 will be merged)

Finally when using a regional satellite service, A3 will be limited to the coverage area for that service
Modernized GMDSS

A1 as we know today
- Within coverage of a VHF DSC coast station

A2 as we know today
- Outside A1 and within coverage of a MF DSC coast station

A3 new
- Sea area A3 means an area, excluding sea areas A1 and A2, within the coverage of a **recognized mobile-satellite communication service** supported by the ship earth station carried on board in which continuous alerting is available.
  - This means that the coverage area of the satellite system used defines Area A3 for that ship

A4 the definition is as we know today, - outside A1, A2, and A3
- The meaning is different, and no longer limited to polar areas
- Carriage requirements are the same, - HF is still a part of the requirement
Modernized GMDSS
Sea Area A3 SAILOR solutions

Cobham SATCOM will continue to offer full GMDSS solutions including the new Satellite constellations going forward
Thank you!

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🌐 www.tototheo.com