GMDSS COASTAL RADIO

Global Maritime Distress and Safety System

The Danphone GMDSS Coastal Radio Solution is a complete, flexible and scalable IP-based radio communication system, primarily for coast stations, ports, and off-shore installations. It is designed specifically to comply with ITU, IMO and international maritime specifications.

The Danphone GMDSS Coastal Radio System provides a reliable fail-safe solution.

DANPHONE

WE ENSURE SAFE MARITIME COMMUNICATION WORLDWIDE

THE HISTORY OF GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM

GMDSS (Global Maritime Distress and Safety System) is an internationally agreed-upon set of safety procedures, communication equipment and protocols used to increase safety at sea and make it easier to send aid to ships in distress.

The Global Maritime Distress and Safety System is the technical, operational and administrative structure for maritime distress and safety communications worldwide. It was established in 1988 by the International Maritime Organization (IMO), which adopted a revised text of Chapter IV of the International Convention for the Safety of Life at Sea, 1974, (SOLAS) - dealing with Radio Communications - and was implemented globally between 1992 and 1997. It consists of certain protocols, equipment and communication systems all with the purpose of improving the chances of saving lives in distress situations.

GMDSS defines the radio communications equipment that ships are required to carry, how this equipment shall be maintained and how it is used and provides the context within, which governments should establish the appropriate shore-based facilities to support GMDSS communications. In 1999 The SOLAS convention instructed all ocean-going passenger ships and cargo ships over 300 gross tonnage to be equipped with radio equipment that conforms to international standards as set out in the set of standards. The shore based GMDSS stations are not only monitoring the distress channels but also responsible for broadcasting Maritime Safety Information (MSI).

GMDSS is based on satellite and terrestrial radio communication. GMDSS officially replaced Morse code in 1988.

GMDSS IN BRIEF

The GMDSS consists of Digital Selective Calling (DSC), VHF, MF/HF, Satellite Communication, NAVTEX, Emergency Position Indicating Radio beacon (EPIRB) and Search and Rescue Transponders (SART).

DSC is considered the automated watch on distress channels running on VHF, MF/HF radios. The satellite communication is based on satellite network that reaches up to sea area A3. Emergency Position Indicating Radio beacon's (EPIRB) and Search and Research transponders (SART) are sending out distress and locating signals under emergencies. EPIRB's are small portable devices using the global COSPAS-SARSAT Satellite System and sending signals on the 406MHz frequency, whereas the SART devices are portable radar transponders operating on the radar "X" and "S" frequency bands. The Search and Rescue transponders can stay afloat, when a ship has sunk and are also used on life boats. EPIRB automatically send distress signals, when coming in contact with water.

AREA OF GMDSS EXPERTICE

The essential part of GMDSS is the coast station located on shore. The main purpose of the coast station is to monitor and coordinate the maritime traffic and radio communication. In some cases, the coast stations are also required to send out maritime safety information (MSI) to ships, for example meteorological forecasts, navigation information and piracy warnings via NAVTEX. The tasks of the individual coast stations are regulated by the authorities in each country, but they are always based on GMDSS.

To meet these different requirements Danphone offers a solution with modular design, built around leading commercial off-the-shelf products, allowing great flexibility to make customized designs. With our in-house software specialists, we can modify the standard-based software to interface with existing systems for easy upgrade.

SEA AREAS

The GMDSS operates over 4 sea areas of coverage from shore to ship: A1, A2, A3, A4.

Sea area A1 is covered by VHF radio enabling Digital Selective Calling (DSC) and Radio Telephone (RT).

Determined range of approximately 20-30 nautical miles.

Sea area A2 is covered by MF radio also enabling DSC and RT.

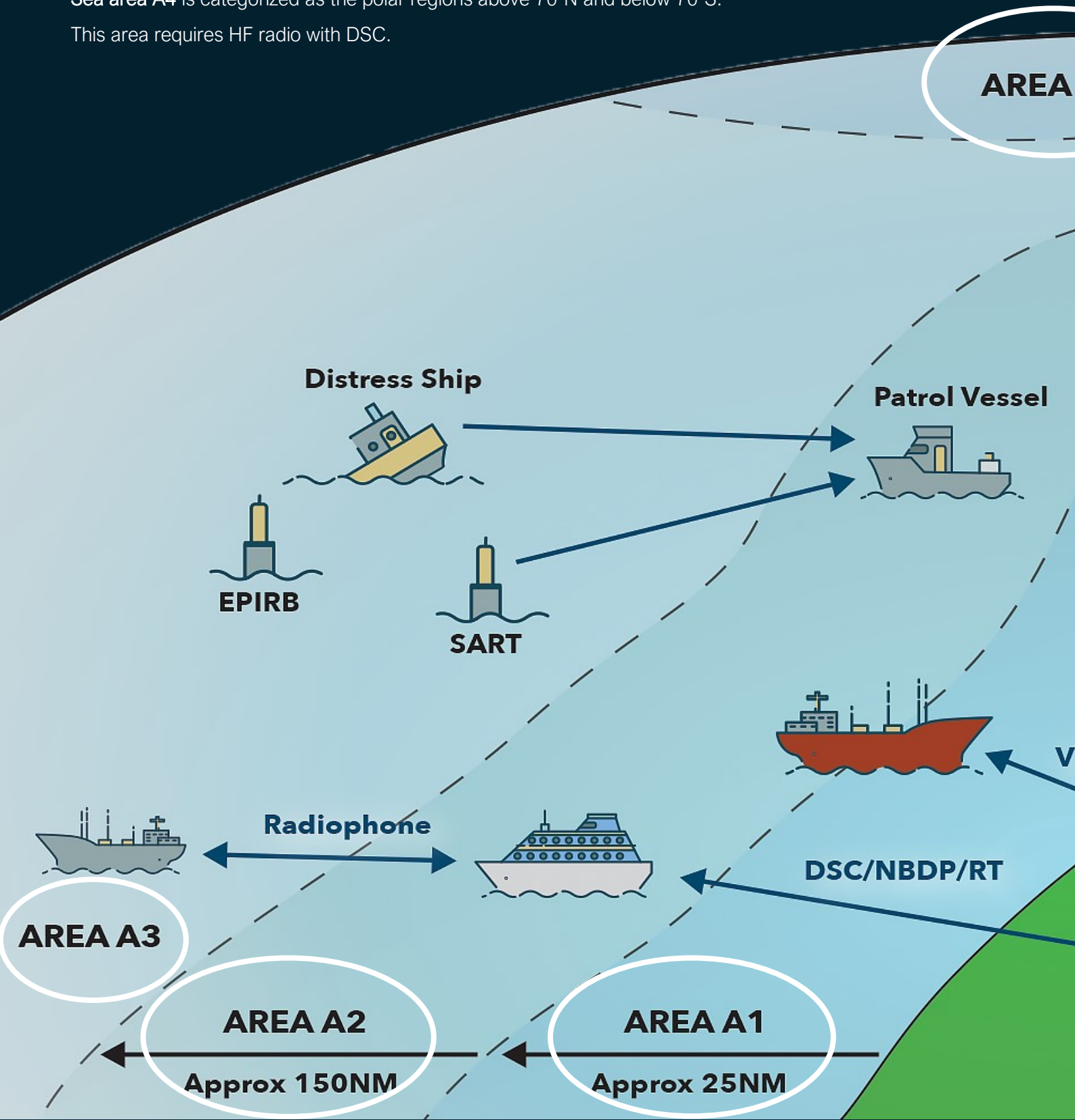
Determined range of up to 150 nautical miles.

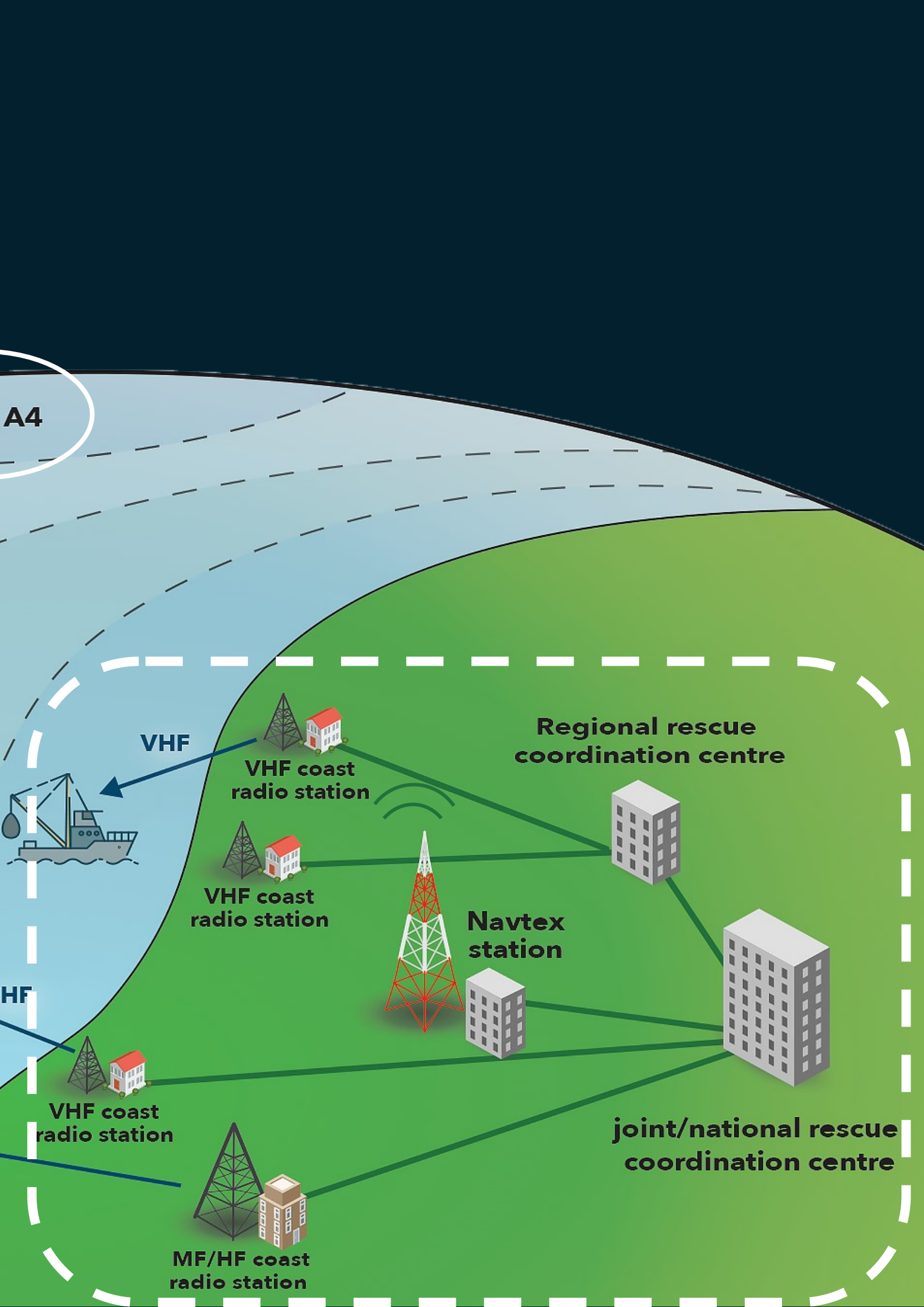
Sea area A3 is covered by HF radio and Inmarsat geostationary satellite enabling DSC and satellite.

communication 70°N and 70°S.

Sea area A4 is categorized as the polar regions above 70°N and below 70°S.

This area requires HF radio with DSC.




A4
VHF
VHF coast
radio station
Regional rescue
coordination centre
VHF coast
radio station
Navtex
station
HF
VHF coast
radio station
joint/national rescue
coordination centre
MF/HF coast
radio station

THE COMPLETE **SOLUTION**

Danphone has developed, manufactured and installed advanced radio communication systems and complete solutions since 1990. We are experts within the maritime communication technology, specializing in VHF, MF/HF, DSC, AIS and NAVTEX.

Danphone's GMDSS Communication System provides the complete solution incorporating both hardware and software.

THE DANPHONE GMDSS SOLUTION

Danphone's GMDSS Coastal Radio Solution is a complete, flexible, IP-based radio communication system primarily for coast stations, ports and off-shore installations.

FLEXIBLE & SECURE COMMUNICATION

The solution is designed specifically to comply with ITU, IMO and international maritime specifications. Our GMDSS coast stations for VHF and MF/HF are delivered in compliance with relevant IMO and ITU specifications, including DSC, voice and data logging, and interface with landline telephones.

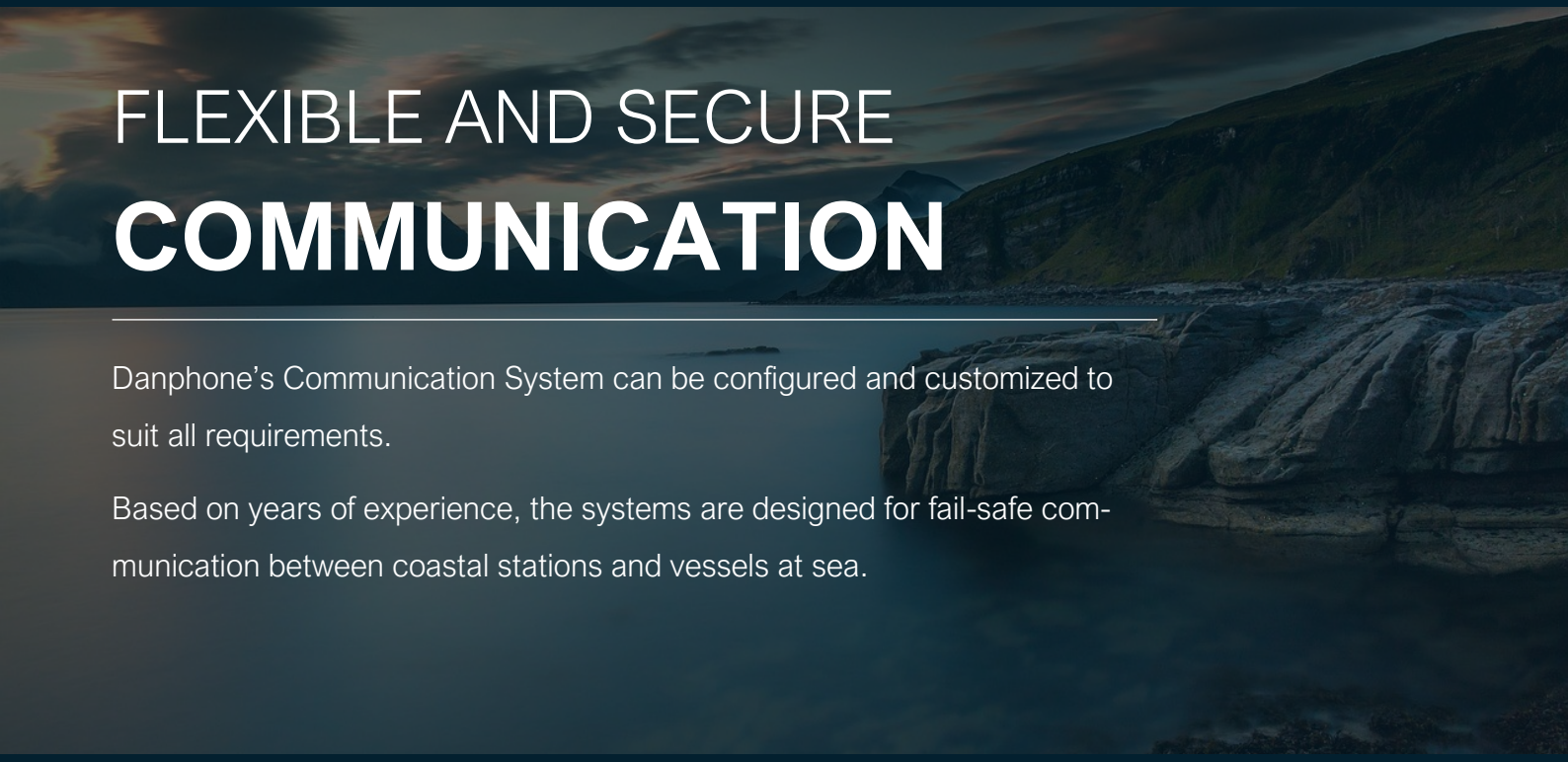
Both hardware and software are developed in-house and based upon more than 25 years' experience. Our research and development team is continuously keeping our solutions compliant with international standards and requirements as well as ensuring fully integrated systems.

INTUITIVE USER INTERFACE & SIMPLE MANAGEMENT

The Complete Solution has a software suite to encompass all management, system and operator functions and processes from intuitive user interface focusing on easy operation and simple integrated management.

Incorporating VHF and MF/HF base stations, remote-control via touch screen computers and Danphone's renowned Network Management System, the GMDSS Communication System can be configured and customized to suit all requirements. From a simple single-radio setup to a complex national system with multiple operator and radio sites installed at various remote locations, this communication system provides the complete solution.

One operator can administer several radios simultaneously with Danphone's Voice User Interface and cover a large graphical area of responsibility as well as the ability to monitor and control each individual radio. Duplication of critical units ensure failsafe solutions and minimising single point of failure.



FLEXIBLE AND SECURE
COMMUNICATION

Danphone's Communication System can be configured and customized to suit all requirements.

Based on years of experience, the systems are designed for fail-safe communication between coastal stations and vessels at sea.

COMPLIANT AND DEPENDABLE DESIGN

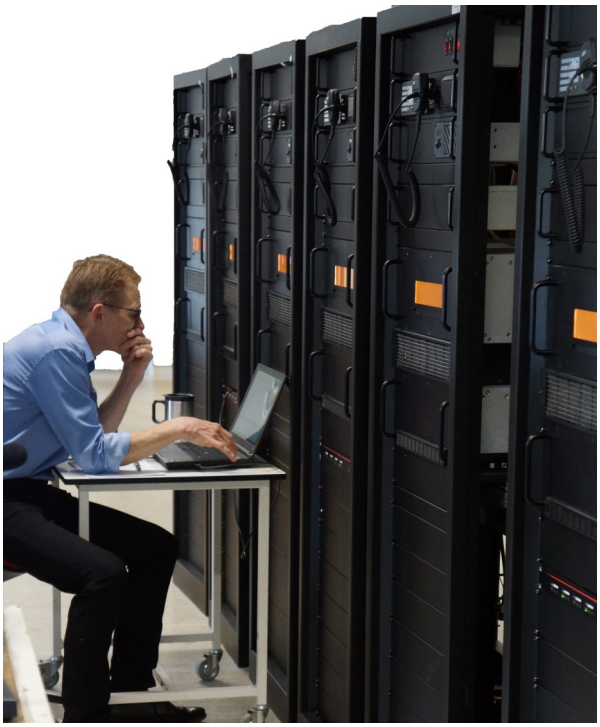
Danphone´s Communication System has been specifically designed with GMDSS in mind and thus complies to the relevant international requirements and recommendation including the need for reliable 24/7 operation.

Incorporating VHF base station radios with adjustable transmission power up to 75 Watt, MF/HF radios up to 1 kW, remote-control via touch screen computers and Danphone's renowned Network Management System, the Danphone Communication System can be configured and customised to suit all requirements.

FLEXIBLE SOLUTIONS

CUSTOMIZED AND COMMERCIAL OF-THE-SHELF

From a simple single-radio setup to a complex national system with multiple operator and radio sites installed at various remote locations, Danphone's GMDSS communication system provides the complete solution. Danphone's Voice User Interface secures coverage of a large graphical area of responsibility by operating several radios simultaneously. Integration with 3rd party sensors such as Voice/data recorders and PABX. Duplication of critical units ensure failsafe solutions, minimising single point of failure.



MF/HF 1 kW transmitter rack.

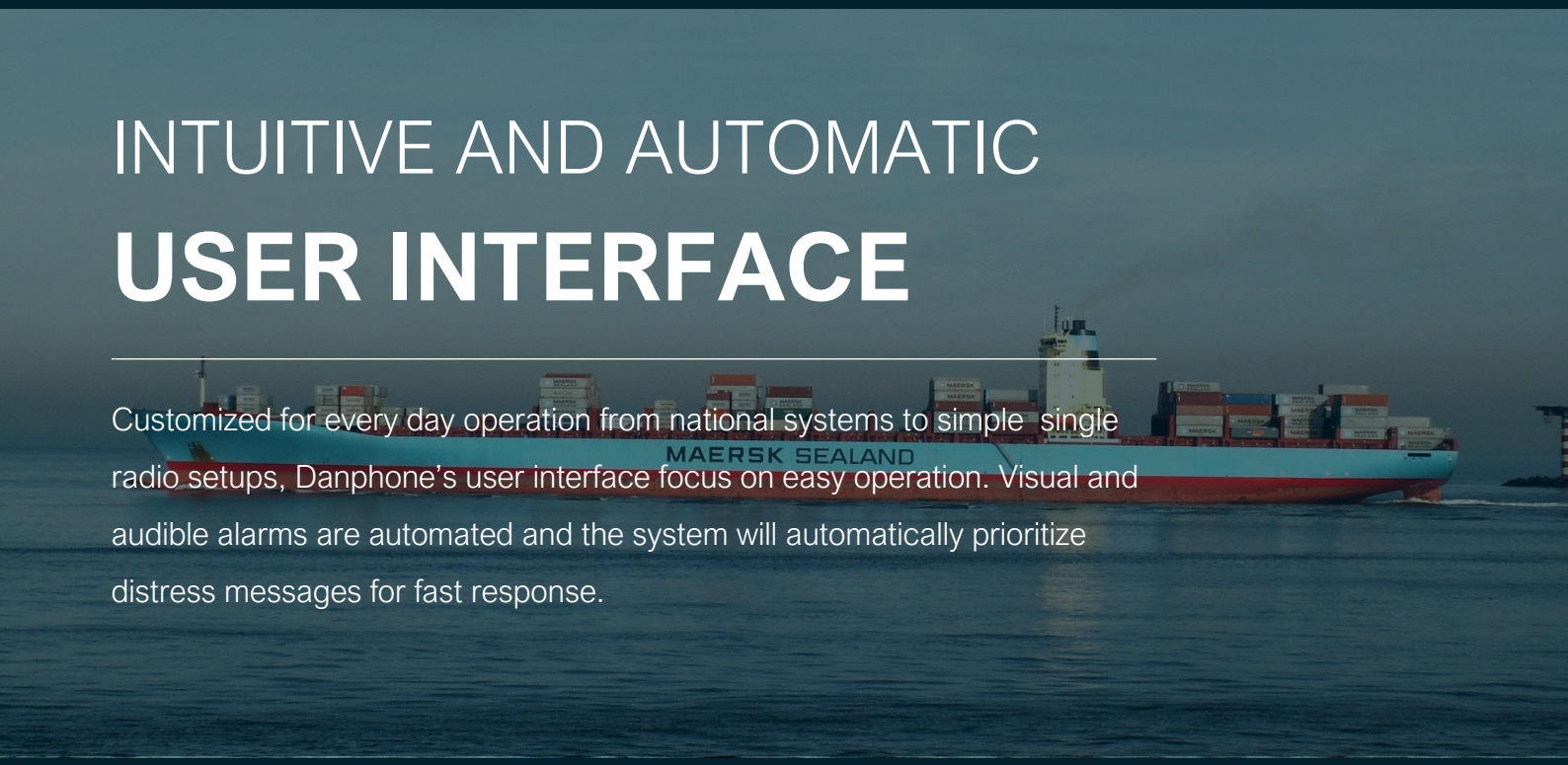
COMPLIANCY

Our research and development team is continuously keeping our solutions compliant with international standards and requirements. We ensure full compliance to IMO and ITU specifications, including for example EMC, DSC, radio regulations etc.

INTERNATIONAL MARITIME ORGANIZATION

KEY FEATURES

- Fully GMDSS compliant
- Easy and intuitive touch screen operation
- VHF and MF/HF for voice communications and DSC
- Flexible and scalable secure communication system
- IP network infrastructure & Voice over IP
- Multiple radio sites, control centers and operator positions
- Remote controlled radios via LAN
- Designed for 24/7 operation
- Remote controlled network management and configuration
- Simple Network Management Protocol (SNMP) Interface
- No single point of failure
- Well-proven reliable communication system



INTUITIVE AND AUTOMATIC
USER INTERFACE

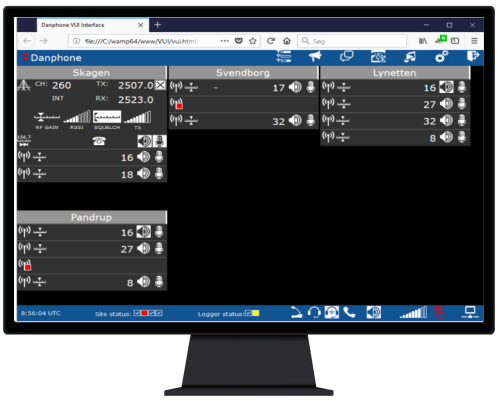
Customized for every day operation from national systems to simple single radio setups, Danphone's user interface focus on easy operation. Visual and audible alarms are automated and the system will automatically prioritize distress messages for fast response.

EASY OPERATION

Danphone's operator software has an intuitive graphical interface. The Operator Workstations are touch monitor PC terminals configured as clients logged onto the system server via LAN. The control and Voice Switch Software is installed on the server. User applications are installed on each individual operator terminal.

Voice User Interface

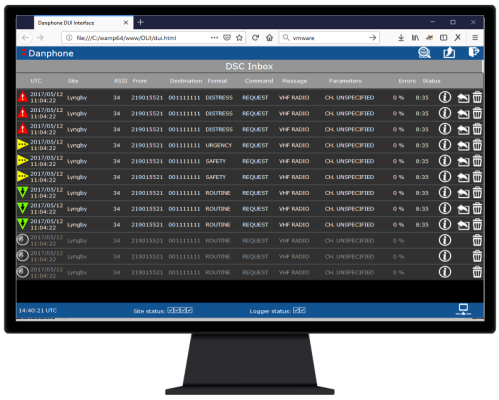
The Voice User Interface allows transmitting of voice recorded messages. It provides a complete overview of all radio sites including their current operational status and configuration. Furthermore, the display shows a control panel with number keypad for channel configuration and facility keys for broadcast transmissions and scanning. Touch screen operation ensures an efficient service.



Danphone's Voice User Interface

Digital Selective Calling

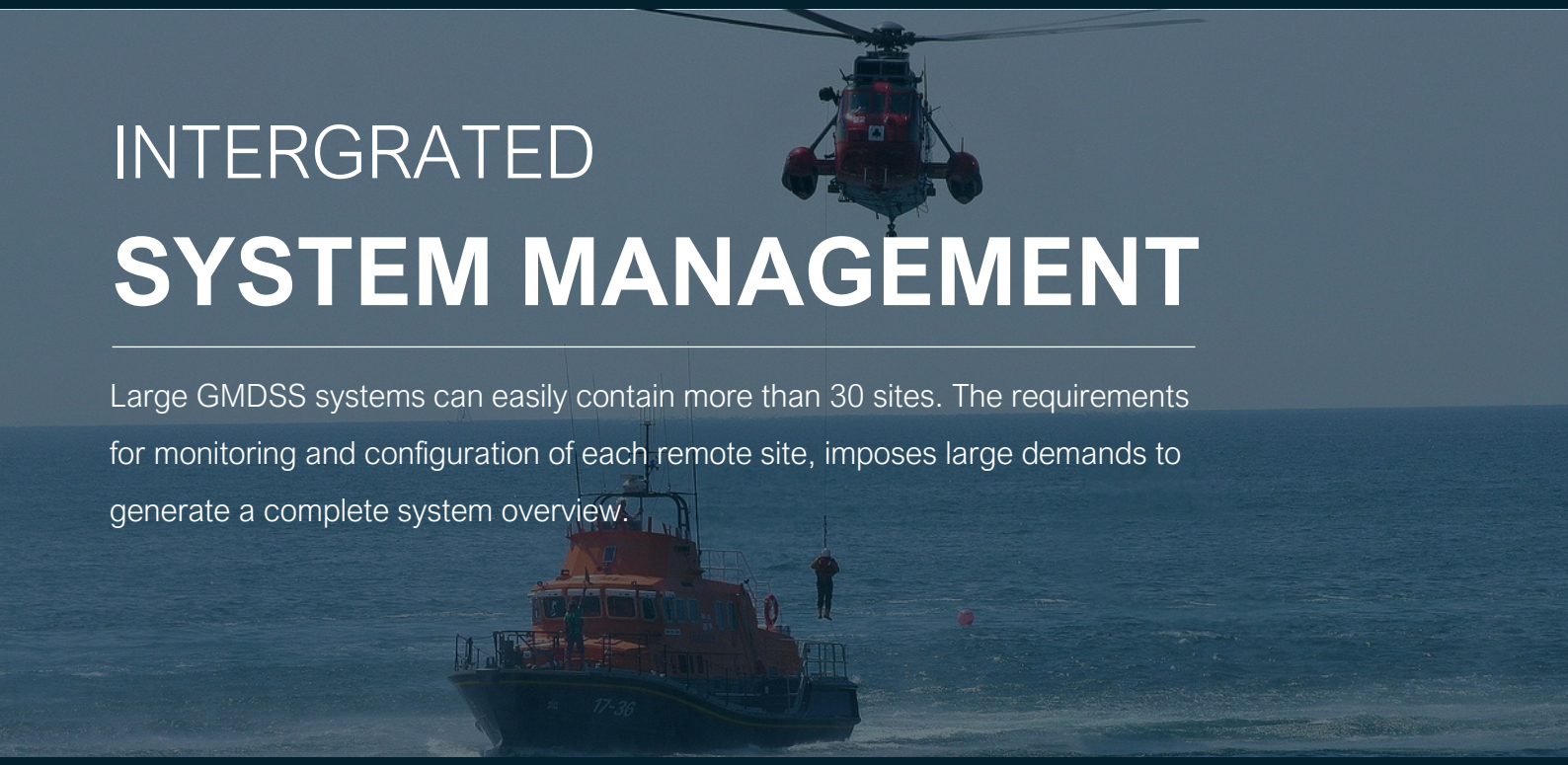
Digital selective calling (DSC) ensures fast and reliable response to vessels in distress. The DSC Inbox lists all unanswered DSC messages in order of priority and time. Distress messages are displayed in red, safety messages in yellow and routine messages in green. Danphone's DSC interface prioritizes all distress calls for quick response and is compliant to: ITU-R M. 493-14, ITU-R M. 541-10, ITU-R M. 821-1, ITU-R M.1080. It ensures full logging of all received and sent messages for future references.



Danphone's Digital Selective Calling (DSC)

KEY FEATURES

- Integrated VHF and MF/HF radio control
- Touch screen operation
- Channel scanning and automatic broadcast transmission
- Instantaneous voice replay
- Intercom between operators
- Received signal strength indication (RSSI)
- Quality of Line indication (QoL)
- Customizable user interface
- Language packages
- PSTN interface
- VoIP
- DSC



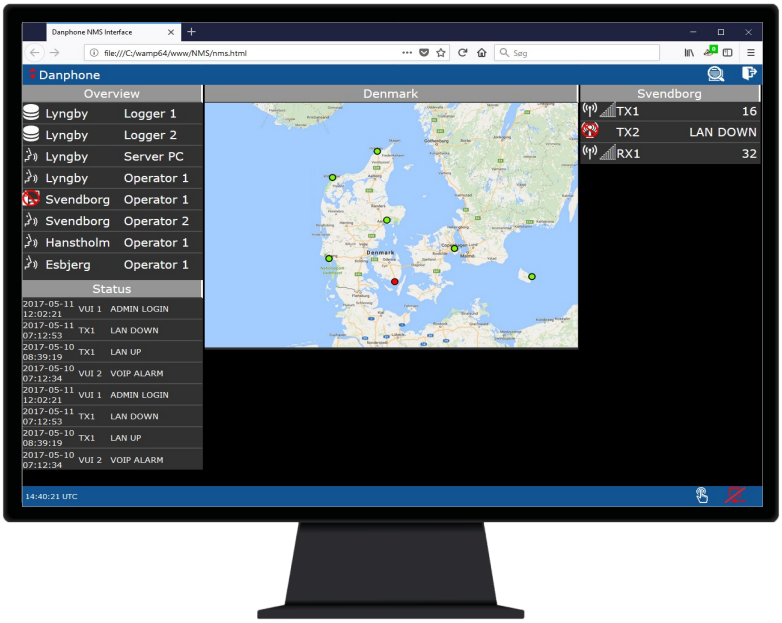
INTERGRATED
SYSTEM MANAGEMENT

Large GMDSS systems can easily contain more than 30 sites. The requirements for monitoring and configuration of each remote site, imposes large demands to generate a complete system overview.

SIMPLE MANAGEMENT

Danphone's Network Management System for GMDSS gives the user a complete graphical overview of the entire network as well as the ability to monitor and control each individual transceiver. The system enables remote controlled monitoring, system and device settings and even switching off transceivers and coaxial connections, e.g. in the event of failure. All kind of events, such as errors, alerts, acknowledgements, new system and device configurations etc. are automatically logged in the system database.

The system features IP-network infrastructure, remote configuration and monitoring via either touch screen or keyboard for easy operation. Each radio has its own status page showing operating temperature, transmitter power, reflected power, etc. Minimum and maximum values of these parameters can be adjusted to initiate external alarm handling. The colour on the icons shows green for OK, yellow for warning and red for error, which makes it simple to get an overview of the network. Automated visual alarms displayed on the map of all site locations, indicate warnings or failures along with a complete log of all events.



Screenshot of Danphone's User Interface with full overview of the network.

KEY FEATURES

- Complete system overview
- Complete logging of all events
- Various levels of monitoring: Network, sites and radios
- Multiple-level password protection
- Forward and reflected power
- Received signal strength indicator
- Visual alarm of warnings or failures
- Audible alarm upon request
- Flexible graphical user interface
- Optional features: Antenna VSWR, remote humidity readings, remote temperature readings, power supply alarm, etc.
- SNMP traps

INNOVATIVE SOLUTIONS AND **DEPENDABLE EQUIPMENT**

Maritime safety has been an international focal point since 1912. Since then, the marine industry has focused on developing a uniform standard of safety equipment to avoid delay in distress situations.

As a worldwide supplier, Danphone is a co-developer of innovative maritime safety systems compliant with IMO and ITU specifications.

WELL-PROVEN RELIABLE COMMUNICATION

Safety critical communication equipment is required to cover all sea areas. To meet all requirements, Danphone designs and builds a solution based upon products with high performance and reliability for VHF, MF/HF radios, DSC, NAVTEX and AIS. The radios are currently ensuring complete and reliable communication in over 30 coastal radio installations worldwide.

Danphone's VHF 75 Watt Base Station Transceiver is specifically designed to operate in the marine VHF band.

MF/HF transceiver covers sea area A2 and A3. Sea area A4 requires HF radio with DSC.

HIGH PERFORMANCE VHF & MF/HF RADIOS

Danphone incorporates state-of-the-art VHF and MF/HF radios in the GMDSS systems with a focus on explicit quality and functionality supporting safety-first policy. The new VHF radios come with an option of 2 receivers and built-in DSC modem for continuous automated supervision of CH70. In addition to VoIP and remote-control over IP, the VHF radio allows for local control via optional display and handset. The radios meet European ETSI and American FCC standards with respect to RF performance and EMC, and are manufactured with quality, cost efficiency and flexibility utmost in mind.

COMPLETE CUSTOMIZED SOLUTION

Danphone designs the complete solution meeting the customers needs and requirements. The solution is based upon customized and commercial of-the-shelf Danphone products and integrated 3rd party products from leading suppliers such as MF/HF radios.

All solutions are built, assembled and tested in-house to ensure quality, performance and longevity.

MF/HF 1 kW transmitter rack

Danphone's VHF tranceiver rack

OUR
REFERENCES

Danphone has collaborated with operators all over the world - from the hot humid conditions of India to the icy environment on Greenland.

2018, *Maldives,* 2 MF/HF sites utilizing a single one kw MH/HF transmitter and two receivers for voice and DSC

2018, *Bangladesh,* National GMDSS system with 7 VHF sites, 1 MF/HF, 1 NAVTEX transmitter and 1 central control center with full remote control of all sites.

2018, *Marocco,* MF/HF upgrade with a single transmitter and 12 receivers.

2017, *Mexico*, System upgrade with DSC facility and MF/HF transceivers.

2017, *Bahamas,* MF/HF and VHF GMDSS system with 10 operator workstations.

2016, *Trinidad & Tobago,* MF/HF and VHF GMDSS system with 2 sites and 8 transceivers.

2016, *Denmark,* National Coastal VHF radio system with 19 sites and 105 transceivers.

2016, *Morocco,* National GMDSS system with 9 remote-controlled coast stations incorporating a total of 27 VHF transceivers.

2015, *Denmark,* 23 radio sites incorporating 107 VHF transceivers, 8 MF transceivers and 11 MF receivers for the National Danish Coastal radio system.

2015, *Faroe Iceland,* 1 kW MF/HF system for MRCC Torshavn.

2014, *Iraq,* National GMDSS system with 27 VHF transceivers, 2 MF/HF transmitters and 3 MF/HF receivers.

2014, *Cyprus,* National GMDSS system with 12 VHF transceivers, 1 MF/HF transmitter

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