



SAFETY
ON THE
WATER

GMDSS GUIDELINES
FOR SMALL BOAT USERS
IN EUROPEAN WATERS

PLEASE
AFFIX
STAMP

THE EPIRB REGISTER
MARITIME RADIO AFFAIRS UNIT
ROOM 3.28
DEPARTMENT OF THE MARINE
AND NATURAL RESOURCES
LEESON LANE
DUBLIN 2

WHO WE ARE:

DEPARTMENT OF THE MARINE AND NATURAL RESOURCES

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MARINE SURVEY OFFICE

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IRISH COAST GUARD

Leeson Lane
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**Emergency Tel: Ring 999
or 112* and ask for
Marine Emergency.**

THE MARINE RADIO SURVEY OFFICE

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IRISH WATER SAFETY

The Long Walk
Galway

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ISA

Irish Sailing Association
3 Park Road
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Tel: (01) 2800239

RNLI

Royal National Lifeboat Institution
15 Windsor Terrace
Dun Laoghaire
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Tel: (01) 2845050
Registered Charity No. CHY 2678

BIM

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Dun Laoghaire
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*New European standard emergency number.

WHAT WE DO:

We are the Government Department responsible for the safety of life at sea and the prevention of pollution from ships.

We are the Division of the Department of the Marine and Natural Resources responsible for the enforcement of National and International legislation relating to all aspects of Marine Safety and pollution prevention. This includes all approvals, surveys and inspections of ships and certification of crews.

We are the Division/Service of the Department of the Marine responsible for search and rescue, intervention in shipwreck and casualty and response to pollution at sea. We provide commercial marine communications and maintain 50 coastal rescue stations manned by volunteers available to respond to marine emergencies.

We are the Government office responsible for surveys and inspections of radiocommunication and radio navigation equipment on all Irish ships. We implement the Merchant Shipping and the Wireless Telegraphy Acts in so far as they relate to Marine Radio. We conduct all examinations for radio operator certificates of competency.

We are the Government Agency responsible for issuing ship's radio licences and radio operator certificates of competency.

We as a statutory body have a responsibility to promote through education a nationwide water safety awareness.

We are the governing body representing sailing, windsurfing, powerboating and personal watercraft in Ireland. We can advise on all aspects of boating safety. We have a network of clubs and recognised teaching establishments that operate training courses for all types of leisure craft.

We exist to preserve life from disaster at sea. This is achieved by providing a fleet of lifeboats, with 24 hour cover, and crewed by well-trained volunteers. In addition, we work with other national organisation to promote sea safety. We are funded entirely by voluntary contributions.

We are the principal development agency for the seafood industry and promote safe working practices for the industry which involves Fisheries Training for both new entrants and practitioners, developing codes of practice, production of training materials and trials of preventative measures against risk on board fishing vessels.



GLOSSARY OF TERMS (continued)

NAVTEX	-	Marine safety information system
ODTR	-	Office of the Director of Telecommunications Regulation
RCC	-	Rescue Co-ordination Centre
RNLI	-	Royal National Lifeboat Institution
SART	-	Search And Rescue Radar Transponder
SRC	-	Short Range Certificate
VHF	-	Very High Frequency

GMDSS GUIDELINES FOR SMALL BOAT USERS IN EUROPEAN WATERS

Whatever the size of your boat, this booklet will provide useful information about the Global Maritime Distress and Safety System (GMDSS) in European coastal waters, which became fully operational on 1 February 1999.

It should enable you to acquire a knowledge of the basic concepts of GMDSS and provides guidance on training, qualifications and equipment.

INTRODUCTION

The Global Maritime Distress and Safety System (GMDSS) has been developed by the International Maritime Organization (IMO) to replace the existing world-wide distress and safety communications system.



GMDSS regulations are a compulsory requirement for all commercial vessels over 300 gross tons and for various classes of passenger and fishing vessels. In Ireland, these regulations are administered by the Maritime Radio Affairs Unit of the Department of the Marine and Natural Resources. If you need further information see contact address and telephone no. on back page.

Fitting of GMDSS communications will be a voluntary option for virtually every class of small non-commercial craft e.g. leisure fishing boats, lifeboats and pleasure craft representing a huge armada of small craft operating within the European coastal regions. For the foreseeable future existing distress alerting arrangements for small craft (particularly VHF Channel 16) will operate in parallel with GMDSS. However, GMDSS will eventually replace it and become the sole means of initiating distress and safety communications. You must therefore carefully consider the options which are available to you, thinking about your own needs for training and equipment to understand and use GMDSS.



WHAT IS GMDSS?

The GMDSS is primarily a vessel-to-shore alerting system where Rescue Co-ordination Centres (RCC's) receive distress alerts from vessels and then co-ordinate an appropriate rescue response. Vessel-to-vessel distress alerting is also a feature of GMDSS and operates in a similar way to the current distress system. GMDSS also provides Urgency, Safety and routine communications and safety information broadcasts (navigation warnings, weather forecasts and search and rescue messages etc).

GMDSS is designed to provide an automatic means of transmitting and receiving distress alerts either by using Digital Selective Calling (DSC) via conventional radio or via the Inmarsat satellite system. DSC communication is much faster and has a greater probability of reception than the existing manually operated distress system. The transmission



Graphic courtesy of Thomas Reed Publications-VHF DSC Handbook

of a DSC distress alert provides the receiving station with the identification of the vessel in distress. When the DSC Equipment is interfaced with a Position-Fixing System on board, e.g. GPS, the position of the vessel in distress is also included in the transmission. The Rescue Co-ordination Centre is, therefore, almost immediately aware of "who you are", and more importantly, "where you are".



GMDSS also provides the facilities to send distress alerts and locating signals using EPIRBs (Emergency Position Indicating Radio Beacons) and SARTs (Search And Rescue radar Transponders). EPIRBs and SARTs are covered later in the booklet.

GMDSS uses 4 coverage areas:- A1, A2, A3 and A4 to cover the sea areas of the world for distress watchkeeping:-

Sea Area A1 is an area within VHF range of a coast station fitted with DSC (about 30 - 40 miles)

Sea Area A2 is an area within MF range of a coast station fitted with DSC (about 150 miles)



Sea Area A3 is an area covered by the Inmarsat Satellite System (excluding A1 and A2 areas)

Sea Area A4 is basically the polar regions which are not covered by the above

In European coastal waters, areas A1 and A2 are available.

In the Republic of Ireland, A1 area coverage was completed in 1999 and this service will be provided by the Irish Coast Guard in addition to their A2 area distress watch.

The A1 European Area has now been completed.

Watchkeeping at Sea

VHF DSC radios automatically keep watch on VHF channel 70 and will alarm when there is an incoming call for your vessel, an "all ships" call, urgency or safety, a distress call or distress relay. The radio will indicate which channel to use for the subsequent communications such as channel 16 for distress working or 72 for ship-to-ship.

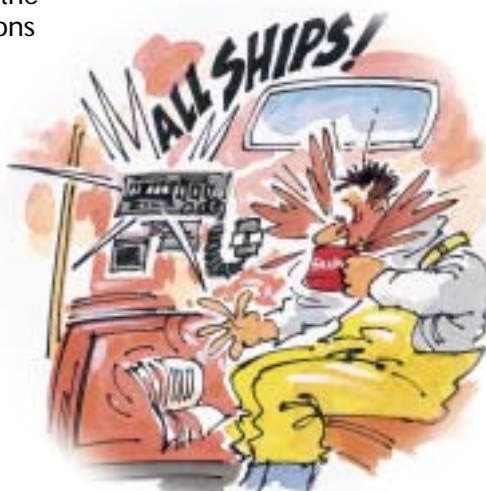
In the Republic of Ireland the Irish Coast Guard will continue to provide distress watches on channel 16 for the foreseeable future.

Small craft

If you are already fitted with VHF DSC then an automatic watch should be kept on channel 70 and, if practicable, a dual-watch on channels 16 and 13 to ensure that you monitor distress, safety and shipping traffic. If you sail within an area which operates a port operation or vessel traffic service (the management of ships' movements) then you should keep watch on that channel rather than channel 13. If you are unsure what channel that will be, or whether you are in an area which monitors ships movements, please check with the appropriate publication or contact the relevant Harbour Authority or your local Coastguard.

Merchant Ships

Merchant ships, which are legally required to carry GMDSS radio equipment, keep an automatic watch on channel 70 for DSC calls and will keep an aural watch on channel 16 until 2005. When hazards or density of traffic warrant it, these ships also keep a watch on channel 13 for bridge-to-bridge communication at sea.



Which radio equipment should I get?

DSC Type

DSC controllers are divided into various classes. Vessels which instal DSC equipment on a voluntary basis should use class D type controllers for VHF operation. A class D controller is capable of sending **and receiving** distress, safety and routine calls.

In Ireland the specification for a class D controller will be the European Telecommunications Standard Institute (ETSI) standard ETS 301 025.

Prior to installing equipment, you should check that it is type-approved. If you are in any doubt, contact the Maritime Radio Affairs Unit (see contact address and telephone number on the back page).



Photo by courtesy of ICS Electronics

EPIRBs

A further benefit of GMDSS is to provide the mariner with at least two independent means of transmitting a distress alert. An EPIRB provides the simplest means of providing one way to alert Rescue authorities. The most common EPIRB system is operated on 406MHz by the COSPAS/SARSAT organisation which uses polar orbiting satellites.

When the 406MHz EPIRB is correctly installed in a bracket which is provided with a hydrostatic release mechanism, it will detach itself automatically, if the vessel sinks, float-free and transmit a distress signal via the satellite system (which calculates the position of the EPIRB) and relays the information to the nearest Rescue Co-ordination Centre.



Photo by courtesy of Pains-Wessex



However, it should be remembered that the EPIRB is designed to complement the other communications facilities of the GMDSS – it should not be used to replace any element of the GMDSS!

EPIRB registration details will provide the Irish Coast Guard with the information needed to co-ordinate a rescue (see page 12 for details).

Most 406MHz EPIRBs also transmit a signal on 121.5MHz which enables search and rescue vessels (ie RNLI Lifeboats, Search and Rescue Helicopters etc) to obtain a radio bearing of the EPIRB.



SARTs

SARTs provide a homing signal by transmitting a coded response to a radar signal. These signals are displayed on the rescue vessel's radar screen.

NAVTEX

Mariners at sea can be made aware of search and rescue information, navigation warnings, weather forecasts etc. In coastal waters, this service is provided by the NAVTEX system which transmits this information on Medium Frequencies. Navtex receivers display this information either on screen or on a paper printout.



INMARSAT

The Inmarsat Organisation operates a constellation of four satellites (which rotate at the same speed and direction as the earth) and are capable of relaying voice, telex, fax and data transmissions. Anyone intending to make a passage outside MF range of a coast station should consider satellite communications as a means of communication. With size and cost considerations, Inmarsat "C" may be the most suitable equipment for small craft and is capable of sending text messages only.

Inmarsat broadcasts the same type of information as Navtex on Inmarsat C.

How do GMDSS radio procedures work?

The difference between current procedures and GMDSS is that DSC is used to transmit the initial call. For example, currently you would initiate the call on Channel 16 to agree a working channel, whereas the GMDSS procedure would send a DSC call on Channel 70 containing the proposed voice working channel. Once the other station has accepted the call then it can respond directly on the working channel.

If you are in distress, a DSC Distress Alert should be sent **before** the MAYDAY procedure. This Distress Alert will activate all alarms in any DSC radios within range and alert any radio operators to listen on the distress working channel (ie for VHF - Channel 16) for the subsequent MAYDAY call. The DSC alert contains your identification number and should contain a valid position (preferably as an automatic input from your navigation receiver).

DO NOT RELY SOLELY ON THE DSC ALERT. IT SHOULD BE IMMEDIATELY FOLLOWED BY THE "MAYDAY" PROCEDURE ON THE APPROPRIATE DISTRESS CHANNEL/FREQUENCY (IE CHANNEL VHF 16) AS SHOWN ON THE ENCLOSED RADIO PROCEDURES STICKER

Why do I need training?

Education and Training are vital elements for any effective radio distress system. GMDSS is no different, and international qualifications have been agreed in order to ensure that mariners possess the relevant skills to operate their equipment effectively. These qualifications will soon replace the existing certificates shown below:-

CURRENT QUALIFICATIONS	GMDSS QUALIFICATIONS
VHF (Only) Restricted Certificate	Short Range Certificate (SRC)
Restricted Radio-Telephony Certificate*	Long Range Certificate (LRC)

* No longer available



Short Range Certificate (SRC)

The SRC is awarded to candidates who can demonstrate how routine, safety, urgency and distress communications are organised in a GMDSS Sea Area A1. A practical examination in the use of a DSC controller is included, together with Navtex, SARTs and EPIRBs. In addition, if you intend to fit Satellite equipment (e.g. Inmarsat-C), there is a modular qualification covering satellite operation.

If you have a radio-telephony certificate (ie the VHF Only certificate) it is possible to upgrade to the SRC by taking a modular course.

For candidates with no current radio operating qualification, the SRC is available by taking a more comprehensive course which, in addition to the GMDSS aspects covered in the modular course, also includes radio voice procedures and techniques.

To obtain details of examination centres and examinations you should contact the Maritime Radio Affairs Unit which conducts the examinations for this certificate in Ireland. (see contact address and telephone no. on the back page)

Long Range Certificate (LRC)

The LRC may be used on vessels that are not legally required to fit GMDSS equipment but may make voyages outside of A1 areas. A practical examination in the use of DSC controllers, Navtex, SARTs, EPIRBs as well as "traditional" VHF, MF and HF radios is also included. In addition, if you intend to fit Satellite equipment, there is a modular qualification covering satellite operation.

To obtain details of examination centres and examinations you should contact the Maritime Radio Affairs Unit which conducts the examinations for this certificate in Ireland. (see contact address and telephone no. on page 17)

If you have a radio-telephony certificate (ie the Restricted R/T Certificate) it is possible to upgrade to the LRC by taking modular courses (ie "DSC Module" and "Satellite Module").

For candidates with no current radio operating qualification, the LRC is available by taking a more comprehensive course (typically four days) which, in addition to the GMDSS aspects covered in the modular courses, also includes radio voice procedures and techniques.



It is strongly recommended that you attend a recognised SRC or LRC course in order to prepare thoroughly for the radio examination.

Why should I licence my radio?

It is a legal requirement to ensure your vessel's radio is properly licenced. In the Ireland, ship radio licenses are issued by the Director of Telecommunications Regulation. If you have any queries regarding radio licencing, or if you wish to obtain a Ship Radio Licence, contact the Office of the Director of Telecommunications Regulation (ODTR) which also adminsters the allocation of Maritime Mobile Service Identity (MMSI) numbers.

It is vital that your 406MHz EPIRB is registered with your appropriate national authority, so that your vessel's details (ie Name, Size and type of vessel) are known immediately if your EPIRB is activated.

Where should I register my EPIRB?

COSPAS-SARSAT 406MHz and INMARSAT-E (L-Band) EPIRBs installed on Irish vessels are required to be registered in Ireland. This registration service is provided **FREE OF CHARGE** by the Maritime Radio Affairs Unit. An EPIRB Registration Card is available at the end of this booklet and can be detached and sent to the EPIRB Registry.



Do's and Don'ts

DO:-

- Make sure you are properly trained and qualified so that you can operate your radio kit effectively. In an emergency, you don't want to be looking for the handbook!
- Make sure your vessel has an up to date radio licence. If you fit DSC equipment, remember that you will need to obtain an MMSI number from the office of the Director of Telecommunications Regulations who automatically register this number with your licence.
- Register your 406MHz EPIRB with the MRSO.
- Ensure that your EPIRB is installed correctly onboard and that regular checks are made on the battery and the hydrostatic release.
- Maintain a good radio watch when at sea, on the recommended channels for distress, calling and ship movements.

DON'T:-

- Allow unauthorised persons to operate your radio, EPIRB etc. There is a real risk of setting off false distress alerts due to unfamiliarity with the kit or lack of training.
- Rely on a Cellular phone to replace your marine VHF radio for distress and safety calls.
- Transfer your EPIRB to another vessel without informing your national EPIRB registration authority of changes.
- Ignore the DO's!!

Recommended GMDSS Equipment

Area of Operation from Coast (Nautical Miles)	Up to 5m	Up to 30m	Up to 60m	Up to 150m	Unrestricted
Hand held waterproofed VHF radio - also for use in liferaft	R	R	R	R	R
VHF fixed radio installation - fitted with DSC	O	R	R	R	R
406 MHz float-free EPIRB (with 121.5 Mhz homer)	O	R	R	R	R
MF SSB radio installation - fitted with DSC	None	None	O	R	R
INMARSAT	None	None	O	O	R
NAVTEX Receiver - will receive up to 400 miles from NAVTEX transmitter	None	O	R	R	R
Search And Rescue radar Transponder (SART)	None	R	R	R	R

R=Recommended O=Optional



Why shouldn't I use my mobile telephone to make calls for help?



Cellular phones appear to offer a low cost alternative to marine VHF. However, if you were in distress they have several significant weaknesses.

- The cellular networks may offer poor coverage at sea.
- You can only ring one number (eg Coast Guard), so other vessels close by will be unaware of your situation, and therefore unable to offer assistance.
- If you are on the fringe of a cell, you can very easily lose contact.
- **Lifeboats and Helicopters are not equipped to obtain a bearing of cellular signals.**

YOU ARE THEREFORE STRONGLY ADVISED TO CARRY A TYPE APPROVED MARINE VHF.

GLOSSARY OF TERMS

COSPAS/SARSAT	-	Multi-National Search and Rescue Satellite organisation
DSC	-	Digital Selective Calling
EPIRB	-	Emergency Position Indicating Radio Beacon
GMDSS	-	Global Maritime Distress and Safety System
HF	-	High Frequency
IMO	-	International Maritime Organization
INMARSAT	-	International Maritime Satellite organisation
ISA	-	Irish Sailing Association
LRC	-	Long Range Certificate
MF	-	Medium Frequency
MHz	-	Megahertz
MMSI	-	Maritime Mobile Service Identity
MRCC	-	Maritime Rescue Co-ordination Centre





Department of the Marine
and Natural Resources

Roinn na Mara agus Acmhainní Nádúrtha
Marine Survey Office

Irish Coast Guard
Garda Cóta na hÉireann



Bord Iascaigh Mhara
Irish Sea Fisheries Board

Foreword

This booklet has been produced by the Marine Safety Working Group which has representatives from the following Government Departments and National Institutions:

Department of the Marine and
Natural Resources
Marine Survey Office
Department of the Environment
Irish Coast Guard
Irish Water Safety
IrishSailing Association
Bord Iascaigh Mhara

Department of Education
Department of Enterprise
and Employment
Department of Arts, Culture
and The Gaeltacht
Health and Safety Authority
Royal National Lifeboat Institution

Whether your boat is large or small, commercial or pleasure, this booklet provides useful basic guidelines on the Global Maritime Distress and Safety System (GMDSS).

An "Emergency Radio Procedures" sticker is provided as an insert in this booklet. If it is missing please contact any of the above organisations.

Further copies are available from any of the organisations/agencies mentioned above. See back page for addresses and telephone numbers.

Who can I contact about?

GMDSS

Maritime Radio Affairs Unit
Room 3.28
Department of the Marine and Natural Resources
Leeson Lane
Dublin 2
Tel:- (01) 6199280 Fax:- (01) 6621571

Ship Radio Licensing

Licensing Division
Office of The Director of
Telecommunications Regulation
Block DEF, Abbey Court
Irish Life Centre
Lower Abbey Street
Dublin 1
Tel:- (01) 8049600
Fax:- (01) 8979665

EPIRB Registration

The EPIRB Register
Maritime Radio Affairs Unit
Room 3.28
Department of the Marine
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Leeson Lane
Dublin 2

Radio Courses & Qualifications

Maritime Radio Affairs Unit

Room 3.28
Department of the Marine
and Natural Resources
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Roinn na Mara
 agus Acmhainní
 Department of the Marine
 and Natural Resources

Lána Chill Mochargán
 Baile Átha Claithe 2
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 Dublin 2

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 Macasamhail (01) 661 8214
 Telephone (01) 678 5444
 Fax (01) 661 8214
 GTN: + 1 18

406 MHz EPIRB REGISTRATION CARD

Name of Vessel: <input type="text"/>		Owner's Name:	
Call Sign: <input type="text"/>		Address:	
Type of Vessel (please circle):		Telephone No:	
Merchant	Fishing	Alternative ON-SHORE 24 Hour contact	
Passenger Boat	Oil Rig Platform	details (name, address, tel. no. etc.)	
PleasureCraft		
MMSI: <input type="text"/>		
Fishing Vessel ID: <input type="text"/>		
Beacon Maker's Name and Type Number (from label): <input type="text"/>		
Beacon Serial No. (from label):	<input type="text"/>	Radiocommunication Facilities:	
	YES <input type="checkbox"/> NO <input type="checkbox"/>	VHF <input type="checkbox"/>	MF <input type="checkbox"/>
Is EPIRB fitted with a float-free device?:	YES <input type="checkbox"/> NO <input type="checkbox"/>	A <input type="checkbox"/>	B <input type="checkbox"/>
Call Sign encoded in beacon?:	YES <input type="checkbox"/> NO <input type="checkbox"/>	C <input type="checkbox"/>	M <input type="checkbox"/>
		INMARSAT <input type="checkbox"/>	
		Owner's Signature:	
		Date:	

Contact: The EPIRB Registry, Maritime Radio Affairs Unit, R3.28, Dept. of the Marine & Natural Resources, Leeson Lane, Dublin 2. Tel 01 6199280, Fax. 01 6621571

