

2008

# Radio Operator Short Range



## Handbook

Version 1.2

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Aug 2008

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### ***National Water Activities Centre (NWAC)***

The National Water Activity Centre (NWAC) of Scouting Ireland is situated 20 Km from Limerick City on the shores of Lough Derg which is just 3 Km from the village of Killaloe. The site is bounded on one side by an extensive forest with panoramic views of counties Clare and Tipperary. On the other side we have Lough Derg which is one of Ireland's most picturesque lakes leading up to the north to the villages of Mountshannon, Garrykennedy, Terryglass and Portumna.

The Centre is run by a trained group of volunteers and the training of staff is provided by the Irish Sailing Association (ISA).

The centre is the ideal location to explore water activities with your Section. The centre can provide canoeing, sailing, rafting and fun water based activities where your Section can explore the water with the comfort and security of trained staff. If you are experienced in water activities then the centre is an ideal base to explore the beauty of Lough Derg.

Killaloe is one of Ireland's most attractive villages with many places of historical interest as well as excellent outdoor sporting facilities. Killaloe was also the home of Brian Boru, High King of Ireland in 1102, when it was the Capital of Ireland.

The centre is tasked with providing members of Scouting Ireland with access to Water Activities training. Training provided at the centre includes Sailing in small dinghy's like the Topper Taz, Topaz and Laser Pico's as well as sailing and rowing in small crewed Dutch Lelievlet vessels. The centre also has lake based canoe/kayak introduction training.



## **Marine Short Range Radio (VHF)**

# Radio Operator Short Range



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## Radio Frequency Theory Introduction

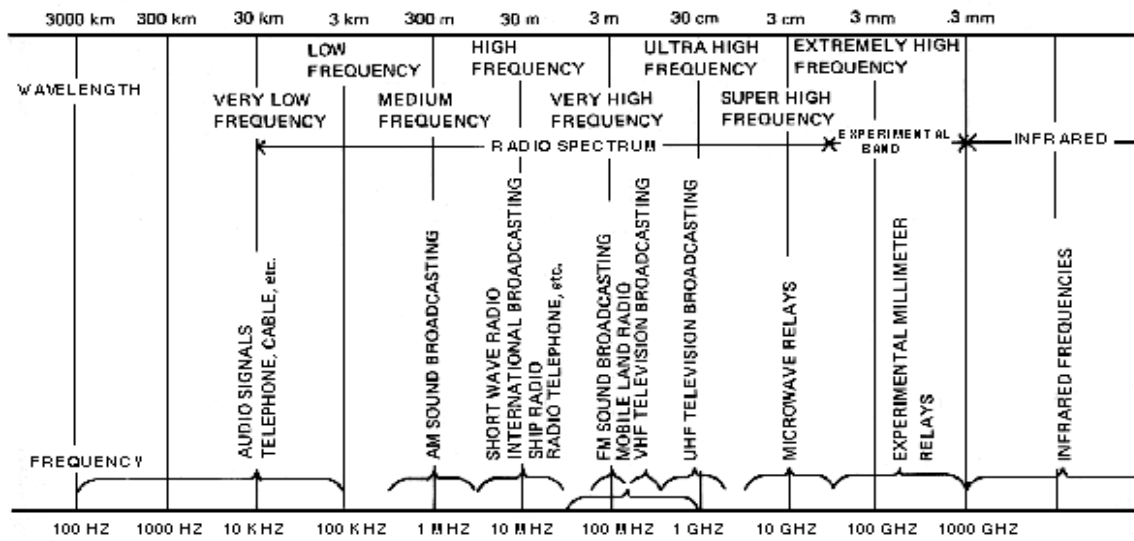
10 kHz to 30 kHz	Very Low Frequency (VLF)
30 kHz to 300 kHz	Low Frequency (LF)
300 kHz to 3 MHz	Medium Frequency (MF)
3 MHz to 30 MHz	High Frequency (HF)
30 MHz to 328.6 MHz	Very High Frequency (VHF)
328.6 MHz to 2.9 GHz	Ultra High Frequency (UHF)
2.9 GHz to 30 GHz	Super High Frequency (SHF)
30 GHz and above	Extremely High Frequency (EHF)

### The Radio Spectrum

The radio spectrum is broken into several bands as outline in the figure above. These bands are subdivided into certain allocated frequency ranges. These frequency ranges directly relate to specific solutions and technologies requiring an RF element as the physical layer.



## Frequency Vs Wavelength



The frequency chosen for a specific solution or technology is usually allocated based on the characteristics of the frequency being used. Lower frequencies have a very long wavelength, whereas frequencies in the UHF (Ultra high frequencies) and SHF (Super High Frequencies) have very short wavelengths. Lower frequencies are affected more by atmospheric conditions and changes in the ionosphere than the previously mentioned higher frequencies. These frequencies also display the characteristics of using ground wave to communicate from one point to another. An example of low frequency communications would be Ham radios, which use characteristics in the ionosphere to bend or bounce a signal from one point on the earth to another. The higher frequencies tend to be more point to point or “line of sight”, examples of these types of frequencies would be microwave receiver/transmitters, satellite dishes or walkie-talkie devices.

It should be noted that most countries regulate the use of specific frequencies in each country. In order to use specific frequencies, typically an application to transmit on a given frequency needs to be requested from the communications regulator in the given country.

## ***Wavelength, Frequency and Antenna Size***

The length of a radio wave is inversely proportional to the frequency, the lower the frequency the longer the radio wave. Wavelength =  $300/\text{Frequency (MHz)}$ . Conversely, the higher the frequency the smaller the wave used. The length of the wave has a direct relationship to the size or length of the antenna so the higher the frequency the shorter the antenna.



### **ELF/VLF antenna on Submarines**

Submarine ELF/VLF Buoyant wire antenna systems - Whilst submerged submarines use antenna systems connected to a buoy which can be reeled in or out allowing ELF/VLF communications via an extended and extremely long antenna. Because the frequency used is so low, (in some cases below the human voice range) the antenna can extend for Km.



### **Example of SHF antenna**

Satellite communications employ such a high frequency, that the receiving end employs the distinctive satellite dish shape to “catch” the transmitted signal. The signal is so small that the dish “catches” the transmitted signal and focuses the waves on the LNB (low noise block) at the centre of the dish. The waves are focused on the LNB because the antenna is so small; it is mounted in a housing which is referred to as the “oven box”. The waves are so directional that strong winds on the dish can cause the angle to vary can lose the signal.

Marine VHF operates in the 156 - 162 MHz band so the maximum length of an antenna for this 1.9M, however as antenna are usually cut to  $\frac{1}{2}$  or  $\frac{1}{4}$  of a wavelength 94cm or 47cm is most usual. Small units can have even smaller antenna where electronics and the addition of coils electrically lengthen the antenna to match the frequency.



## Marine VHF Radio



Marine VHF radios mostly uses "simplex" transmission, where communication can only take place in one direction at a time. A transmit button on the set or microphone determines whether it is operating as a transmitter or a receiver. The majority of channels, however, are set aside for "duplex" transmissions channels where communication can take place in both directions simultaneously.

Each duplex channel has two frequency assignments. This is mainly because, in the days before mobile phones and satcomms became widespread, the duplex channels could be used to place calls on the public telephone system for a fee via a marine operator.

Marine VHF radios can be fixed or portable. A fixed set generally has the advantages of a more reliable power source, higher transmit power, a larger and more effective aerial and a bigger display and buttons. A handheld VHF radio set can be carried to a lifeboat in an emergency, has its own power source and is more easily water-proofed.



Radios can be operated in voice only mode or with the use of Digital Selective Calling (DSC). DSC is part of the Global Maritime Distress Safety System (GMDSS) which bundles a number of advanced radio features to increase maritime safety.

## Radio features



**Squelch Control** - Squelch excludes undesired lower-power input signals that may be present at or near the frequency of the desired signal. Squelch is a noise gate that only allows signals at a specified strength over a threshold to be played through the speaker. To cut out weaker signals, increase the squelch until the background interference noise disappears. To receive weaker signals, decrease the squelch.

**Ch16 Override** – This button is a quick method of setting the radio to channel 16.

**Distress button** – This button a Digital Selective Calling (DSC) will automatically change the set to channel 16 and send out a distress message.

**Transmit Power** – Low 1Watts, High 25 Watts.

**Dual watch** – This enables monitoring of a channel plus channel 16. The operator is working on one channel but when a transmission is on channel 16 the radio will switch to that transmission.

**Scanning** – This feature enables monitoring of a multiple channels. The radio will stop at a channel when it detects a transmission. It is possible in this mode to miss a transmission.



## ***Global Maritime Distress Safety System (GMDSS)***

The Global Maritime Distress Safety System (GMDSS) is an internationally agreed-upon set of safety procedures, types of equipment, and communication protocols used to increase safety and make it easier to rescue distressed ships, boats and aircraft.

GMDSS consists of several systems, some of which are new, but many of which have been in operation for many years. The system is intended to perform the following functions: alerting, search and rescue coordination, locating, maritime safety information broadcasts, general communications, and bridge-to-bridge communications. Specific radio carriage requirements depend upon the ship's area of operation, rather than its tonnage. The system also provides redundant means of distress alerting, and emergency sources of power.

Recreational vessels do not need to comply with GMDSS radio carriage requirements, but will increasingly use the Digital Selective Calling (DSC) VHF radios and offshore vessels may elect to equip themselves further. Vessels under 300 Gross tonnage (GT) are not subject to GMDSS requirements and vessels from 300 to 500 GT have less restrictive carriage requirements than vessels 500 GT and over.

## **Emergency Position-Indicating Radio Beacon (EPIRB)**

The 406 MHz Emergency Position-Indicating Radio Beacon (EPIRB) is an element of the GMDSS designed to operate with Cospas-Sarsat system. These automatic-activating EPIRBs, now required on ships, commercial fishing vessels, and all passenger ships, are designed to transmit to a rescue coordination centre a vessel identification and an accurate location of the vessel from anywhere in the world. Newest designs incorporate GPS receivers to transmit highly accurate positions of distress.

## **NAVTEX**

Navtex is an international, automated system for instantly distributing maritime navigational warnings, weather forecasts and warnings, search and rescue notices and similar information to ships. A small, low-cost and self-contained "smart" printing radio receiver installed in the pilot house of a ship or boat checks each incoming message to see if it has been received during an earlier transmission, or if it is of a category of no interest to the ship's master. The frequency of transmission of these messages is 518 kHz in English, while 490 kHz is used to broadcast in local language. 4209.5 kHz is allocated for tropical areas but is not in wide use.

## Inmarsat

Satellite systems operated by the Inmarsat, under contract to the International Mobile Satellite Organization (IMSO), are also important elements of the GMDSS. Four types of Inmarsat ship earth station terminals are recognized by the GMDSS: the Inmarsat A, B, C and F77.



The Inmarsat C SafetyNET service is a satellite-based worldwide maritime safety information broadcast service of high seas weather warnings, navigational warnings, radio navigation warnings, ice reports and warnings and other similar information not provided by NAVTEX. SafetyNET works similarly to NAVTEX in areas outside NAVTEX coverage.

## Long Range HF

GMDSS systems may include High Frequency (HF) radiotelephone and radiotelex (narrow-band direct printing) equipment, with calls initiated by digital selective calling (DSC). Worldwide broadcasts of maritime safety information are also made on HF narrow-band direct printing channels.

## Search and Rescue Transponder (SART)

The GMDSS installation on ships include one or more Search and Rescue Transponder (SART) devices which are used to locate survival craft or distressed vessels by creating a series of dots on a rescuing ship's 3cm radar display. The detection range between these devices and ships, dependent upon the height of the ship's radar mast and the height of the SART, is normally about 15 km.





## Digital Selective Calling (DSC)

Digital Selective Calling (DSC) was introduced on MF, HF and VHF maritime radios as part of the GMDSS system. DSC is primarily intended to initiate ship-to-ship, ship-to-shore and shore-to-ship radiotelephone and MF/HF radiotelex calls. DSC calls can also be made to individual stations, groups of stations, or "all stations" in one's reach. Each DSC-equipped ship, shore station and group is assigned a unique 9-digit Maritime Mobile Service Identity.

DSC distress alerts, which consist of a preformatted distress message, are used to initiate emergency communications with ships and rescue coordination centres. DSC was intended to eliminate the need for persons on a ship's bridge or on shore to continuously guard radio receivers on voice radio channels, including VHF channel 16 (156.8 MHz) and 2182 kHz now used for distress, safety and calling. A listening watch aboard GMDSS-equipped ships on 2182 kHz ended on February 1, 1999. In May 2002, International Maritime Organization (IMO) decided to postpone cessation of a VHF listening watch aboard ships. That watchkeeping requirement had been scheduled to end on 1 February 2005.

IMO and International Telecommunication Union (ITU) both require that the DSC-equipped MF/HF and VHF radios be externally connected to a satellite navigation receiver. That connection will ensure accurate location information is sent to a rescue coordination centre if a distress alert is ever transmitted. The FCC requires that all new VHF and MF/HF maritime radiotelephones type accepted after June 1999 have at least a basic DSC capability.

Digital Selective Calling equipment, a part of GMDSS, provides all the functionality of voice-only equipment and, additionally, allows several other features:

- A transmitter can call a receiver automatically using Digital Selective Calling on Channel 70, using a telephone-type number known as a Maritime Mobile Service Identity (MMSI).
- A distress button, which automatically sends a digital distress signal identifying the calling vessel and the nature of the emergency.
- A connection to a GPS receiver allowing the digital distress message to contain the distressed vessel's position.

The MMSI is a nine digit number identifying a VHF set or group of sets. The three left hand digits of MMSI indicate the country called the Maritime identification digits (MID), in Ireland this is 250 so for all Irish vessels the 9 digit MMSI will start with 250.

## ***GMDSS Sea Areas***

### **Sea Area A1**

An area within the radiotelephone coverage of at least one VHF coast station in which continuous digital selective calling (Ch.70/156.525Mc.) alerting and radiotelephony services are available. Such an area could extend typically 40 km to 55 km from the Coast Station.

### **Sea Area A2**

An area, excluding Sea Area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC (2187.5 kHz) alerting and radiotelephony services are available. For planning purposes this area typically extends to up to 200 km offshore, but would exclude any A1 designated areas. In practice, satisfactory coverage may often be achieved out to around 750 km offshore.

### **Sea Area A3**

An area, excluding sea areas A1 and A2, within the coverage of an INMARSAT geostationary satellite in which continuous alerting is available. This area lies between about latitude 76 Degree NORTH and SOUTH, but excludes A1 and/or A2 designated areas.

### **Sea Area A4**

An area outside Sea Areas A1, A2 and A3 is called Sea Area A4. This is essentially the polar regions, north and south of about 76 degrees of latitude, excluding any other areas.

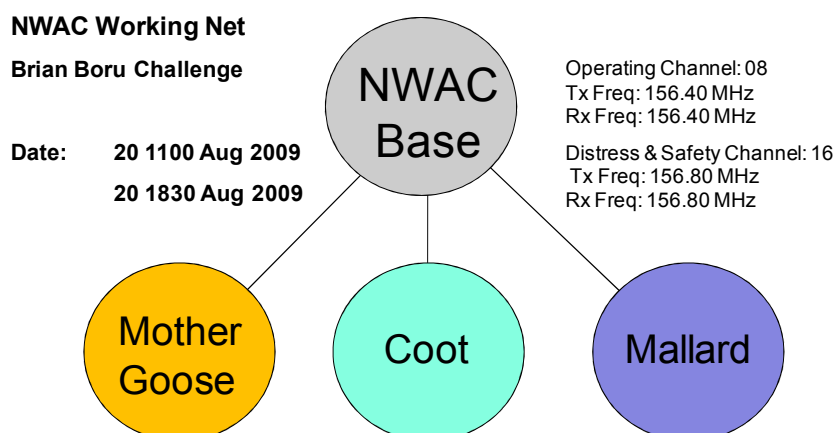


## Marine VHF Radio Operating Procedure

The accepted conventions for use of marine radio are collectively termed "proper operating procedure." These conventions include:

- Listening for 2 minutes before transmitting.
- Using Channel 16 only to establish communication (if necessary) and then switch to a different channel.
- Using a set of international "calling" procedures such as the "MAYDAY" distress call, the "PAN-PAN" urgency call and "SECURITÉ" navigational hazard call.
- Use prowords, phonetic alphabet and phonetic numbering to aid clarity.
- Hold the microphone or telephone mouthpiece directly in front of your mouth at a distance of no more than 30cm.
- Your speech will be more easily understood if you follow these rules (RSVP):
  - **Rhythm.** Keep a natural rhythm and divide your conversation or message into sensible phrases.
  - **Speed.** Slightly slower than normal conversation.
  - **Volume.** As for normal conversation. Shouting only causes distortion.
  - **Pitch.** Your voice should be pitched higher than usual but discomfort should be avoided.

## The Radio Net



### *Radio Net*

The radio net is a group of radio stations working together for the purpose of communicating with each other.

### Type of Stations

**CONTROL STATION** is responsible for Radio discipline and efficient clearance of traffic on the net. It normally associated with a centre or port. In the example above NWAC Base.

**SUBSTATIONS** Vessels and boats generally serve as substations on the net.

### Call Signs

These are used to identify the stations and vessels on the net. This is usually the vessel name.

### Maritime Mobile Service Identity (MMSI)

This is like a call sign that is used with Digital Selective Calling (DSC) to identify a vessel or coastal location.

# Radio Operator Short Range



## *Calling and Answering on a radio net*

### **Parts of a Call:**

CALL – TEXT – ENDING

### **Calling Transmission:**

INITIAL CALL

<call sign(s) being called> **THIS IS** <calling call sign>.

TEXT OF MESSAGE

The information to be passed.

ENDING

**OVER** End of my transmission, a reply is expected.

**OUT** End of my transmission, no reply is expected.

### **Answering Transmission:**

ANSWERING CALL

Call sign of answering station.

TEXT OF MESSAGE

The information to be passed or

**RECEIVED** I have received you last transmission satisfactorily

**WAIT XX MINUTES** Receiving station if busy may ask the sender to WAIT XX MINUTES. Note XX is replaced with up to 10 minutes.

ENDING

**OVER, OUT.**

## ***Types of Initial Calls***

**Single Call** A call from one station to another station.

"BASE", "BASE", "BASE" **THIS IS "BRIAN CHARLES" OVER**  
"BRIAN CHARLES" send **OVER**  
"BASE" rescue boat required at kayak station **OVER**  
"BRIAN CHARLES" **RECEIVED OUT**

**Multiple Call** A call to two or more stations.

"BRIAN CHARLES" **AND "MOTHER GOOSE" THIS IS "BASE" MESSAGE OVER**  
"BRIAN CHARLES" send **OVER**  
"MOTHER GOOSE" send **OVER**  
"BASE" return to base now **OVER**  
"BRIAN CHARLES" **RECEIVED OUT**  
"MOTHER GOOSE" **RECEIVED OUT**

**All Station Call** A call to all the stations on the net.

**ALL STATIONS, ALL STATIONS, ALL STATIONS THIS IS "MOTHER GOOSE" MESSAGE OVER**  
"BASE" send **OVER**  
"BRIAN CHARLES" **SEND OVER**  
"GENOA" send **OVER**  
"KAYAK STATION" send **OVER**  
"OARS STATION" send **OVER**  
"MOTHER GOOSE" returning to base with broken Laser Pico **OVER**  
"BASE" **RECEIVED OUT**  
"BRIAN CHARLES" **RECEIVED OUT**  
"GENOA" **RECEIVED OUT**  
"KAYAK STATION" **RECEIVED OUT**  
"OARS STATION" **RECEIVED OUT**

# Radio Operator Short Range



## Prowords and their meaning

HULLO	Start of Call
THIS IS	Identity calling station.
SEND	Send your message, I am ready to receive.
OVER	I am finished my transmission and expect a reply.
OUT	I am finished my transmission but DO NOT expect a reply.
WAIT	I am bust and will get back to you in XX MINUTES.
MINUTES	Used with WAIT.
RECEIVED	Message received correctly.
ROGER	I received and acknowledge your message.
REQUEST RADIO CHECK	What is the strength and readability of my signal to you.
CORRECTION	What has been said is incorrect, the correct version is.....
WRONG	Reply to a repetition of a message that has an error.
STATION CALLING	Used when a called station is not sure who called it.
I SAY AGAIN	Used by sender when making repetitions for emphasis.
SAY AGAIN	Requested for repetition of all, or portion indicated, of a message.
ALL AFTER	Reference to a catch word or phase when requesting, or giving,
ALL BEFORE	Repetitions or corrections.
WORD BEFORE	Repetitions or corrections.
WORD AFTER	Repetitions or corrections.
FROM .... TO .....	Repetitions or corrections.
READ BACK	After OVER, repeat this message back to me exactly as received.

## ***Phonetic Alphabet***

Clear communications are critical when sending emergency VHF messages. To avoid any confusion, use the phonetic alphabet to spell out important information, such as your vessel name and the number and names of your crew. Here is the standard International phonetic alphabet.

### ***Phonetic Alphabet:***

A	<b>Alfa</b>	<b>(Alfah)</b>	N	<b>November</b>	<b>(November)</b>
B	<b>Bravo</b>	<b>(Brahvoh)</b>	O	<b>Oscar</b>	<b>(Osscah)</b>
C	<b>Charlie</b>	<b>(Charlee)</b>	P	<b>Papa</b>	<b>(Pahpah)</b>
D	<b>Delta</b>	<b>(Dellta)</b>	Q	<b>Quebec</b>	<b>(Kehbeck)</b>
E	<b>Echo</b>	<b>(Eckoh)</b>	R	<b>Romeo</b>	<b>(Rowmeoh)</b>
F	<b>Foxtrot</b>	<b>(Fokstrot)</b>	S	<b>Sierra</b>	<b>(Seeairrah)</b>
G	<b>Golf</b>	<b>(Golf)</b>	T	<b>Tango</b>	<b>(Tanggo)</b>
H	<b>Hotel</b>	<b>(Hohtell)</b>	U	<b>Uniform</b>	<b>(Youneeform)</b>
I	<b>India</b>	<b>(Indeeah)</b>	V	<b>Victor</b>	<b>(Viktah)</b>
J	<b>Juliett</b>	<b>(Jewleeett)</b>	W	<b>Whiskey</b>	<b>(Wisskey)</b>
K	<b>Kilo</b>	<b>(Keyloh)</b>	X	<b>X-Ray</b>	<b>(Ecks-ray)</b>
L	<b>Lima</b>	<b>(Leemah)</b>	Y	<b>Yankee</b>	<b>(Yangkey)</b>
M	<b>Mike</b>		Z	<b>Zulu</b>	<b>(Zooloo)</b>

### ***Figures are pronounced as follows:***

0	Zero	
1	Wun	<b>(with emphasis on 'N')</b>
2	Too	<b>(with sharp 'T' and long 'OO')</b>
3	Thuh-ree	<b>(with short 'U' slight rolling 'R' and long 'E')</b>
4	Fo-wer	<b>(with long 'O' as in FOE)</b>
5	Fi-yiv	<b>(emphasizing the consonants, with ling 'I' for first syllable (as in PIE) and short for the second (as in GIVE))</b>
6	Six	<b>(with emphasis on 'X')</b>
7	Se-ven	<b>(with two distinct syllable s, the 'EN' as in HEN)</b>
8	Ate	<b>(with ling 'A')</b>
9	Niner	<b>(with long 'I' (as in PIE) and emphasizing each 'N')</b>

# Radio Operator Short Range



## ***Radio check***

A radio check allows the operator of a radio to confirm it is operational. A signal of full strength and with full readability is known as a "5 by 5" signal. "2 by 5" is weak but very clear signal. The first number is the strength of the signal while the second number measures the readability of the signal.

- |  |  |
|--|--|
| 1. Bad (Unreadable)                      | 2. Poor (Readable now and then)          |
| 3. Fair (Readable with great difficulty) | 4. Good (Readable with minor difficulty) |
| 5. Excellent (Perfectly readable)        |  |

**"BASE" "BASE" "BASE" THIS IS "BRIAN CHARLES" REQUEST RADIO CHECK OVER**  
**"BRIAN CHARLES" 5 by 5 OVER**  
**"BASE" 5 by 5 OUT**

The radio check cannot be on Channel 16 so if you are calling on channel 16 change to another channel to do the radio check.

**"BASE" "BASE" "BASE" THIS IS "BRIAN CHARLES" REQUEST RADIO CHECK OVER**  
**"BRIAN CHARLES" THIS IS "BASE" go to channel 7 1 I say again 7 1 OVER**  
**"BASE" THIS IS "BRIAN CHARLES" 7 1 OVER**  
**"BASE" 5 by 5 OUT**  
*(Both switch to channel 71 and ....)*  
**"BASE" "BASE" "BASE" THIS IS "BRIAN CHARLES" REQUEST RADIO CHECK OVER**  
**"BRIAN CHARLES" 5 by 5 OVER**  
**"BASE" 5 by 5 OUT**

## ***Corrections and Repetitions***

### **Corrections during transmission**

If the sender wishes to correct a word or phrase that has just been spoken, the pro-word **CORRECTION** is used followed by last correct word or phrase before the mistake, and then the corrected version.

“MOTHER GOOSE” returning to base with broken Laser Pico **CORRECTION** Topaz **OVER**

### **Correction after the message has been sent**

If a station realises that a mistake has been made in a message already sent, all the addresses are called, make a clear reference to the message followed by the pro-word **WRONG** and then the correction is made. The following pro-words may be used to the section of a message to be corrected.

**SAY AGAIN, ALL AFTER, ALL BEFORE, WORD BEFORE, WORD AFTER, FROM.... TO....., REPEAT BACK**

These pro-words are qualified by a correct word or phrase, which will help identify the part of the message being corrected.

### **Repetitions requested by transmitting station**

If a station sends a message and wants to ensure it was received correctly it can request it is repeated back, e.g.

“BASE”, “BASE”, “BASE” **THIS IS** “GENOA” message **OVER**

“BASE” send **OVER**

“GENOA” returning to base with broken Laser Pico **REPEAT BACK OVER**

“BASE” **I REPEAT BACK** returning to base without broken Laser Pico **OVER**

“GENOA” **WRONG** returning to base with broken Laser Pico **REPEAT BACK OVER**

“BASE” **I REPEAT BACK** returning to base with broken Laser Pico **OVER**

“GENOA” **ROGER OUT**



## Repetitions requested by receiving station

If a station fails to receive all or part of a message, the pro-word **SAY AGAIN** is used to ask for a repetition. If it is used on its own the entire transmission is repeated.

If only part of the message is missed, the pro-word **SAY AGAIN** may be followed by a qualifying word or phrase, e.g.

**"GENOA", "GENOA", "GENOA" THIS IS "MOTHER GOOSE" message OVER**

**"GENOA" send OVER**

**"MOTHER GOOSE" returning to base with broken Laser Pico OVER**

**"GENOA" SAY AGAIN boat type OVER**

**"MOTHER GOOSE" I SAY AGAIN Laser Pico OVER**

**"GENOA" RECEIVED OUT**

Or by identifying the part of the message using,

**ALL AFTER, ALL BEFORE, WORD BEFORE, WORD AFTER, FROM.... TO.....**

**"MOTHER GOOSE" returning to base with broken Laser Pico OVER**

**"GENOA" SAY AGAIN ALL AFTER base OVER**

**"MOTHER GOOSE" I SAY AGAIN with broken Laser Pico OVER**

**"GENOA" RECEIVED OUT**

## Distress Calls

**MAYDAY** is a request for immediate assistance in an imminent life-threatening situation. If you hear a Mayday call, listen—do not transmit. Determine if you are in a position to assist. If not, maintain radio silence and monitor the call.

**PAN-PAN** announces an emergency when a boat and/or people are in jeopardy but not in imminent danger. As with a Mayday call, listen to the pan-pan call, determine if you are in a position to assist, and keep radio silence if you are not.

**SÉCURITÉ** (see-cure-i-tay) is the signal that navigation information or weather warnings will be broadcast.



## ***Making a Mayday Call***

To make a Mayday call

1. Send DSC Alert.
2. Send distress call on VHF CH16 and/or MF 2182 kHz.
3. Activate EPIRB Beacon.

Ensure the set is switched on and open the cover on the RED distress button, press the button and hold for over 5 seconds. Now set the channel switch to channel 16 and follow the instructions below. Remain calm, and speak clearly.

**MAYDAY, MAYDAY, MAYDAY, THIS IS** \_\_\_\_\_ [vessel name 3 times]  
**MAYDAY** \_\_\_\_\_ [followed by vessel name and MMSI number if you have one]  
**OUR POSITION IS** \_\_\_\_\_ [Buoy no. or GPS]  
**NATURE OF DISTRESS IS** \_\_\_\_\_ [Describe what happened]  
**AID REQUIRED** \_\_\_\_\_ [Describe the assistance you require]  
**THERE ARE** \_\_\_\_\_ [number] **PEOPLE ON BOARD**  
**THEY ARE** [ OK / INJURED / OVERBOARD ]  
**OVER**

Example:

**MAYDAY, MAYDAY, MAYDAY, THIS IS** Coot, Coot, Coot  
**MAYDAY** Coot  
**OUR POSITION IS** Lushing rocks 52° (degrees) 53" (decimal) 46' (minutes) North 8° 25" 16' West  
**NATURE OF DISTRESS IS** boat has taken on water and is in danger of capsizing  
**AID REQUIRED** I require immediate assistance  
**THERE ARE 4 PEOPLE ON BOARD.**  
**THEY ARE OK**  
**OVER**

Release the PTT switch and listen for a reply and repeat every 60 seconds until you get an answer.

NOTE: It is a serious offence to make a false MAYDAY call. Should you accidentally trip the DSC Distress button then transmit the following on channel 16.

**ALL STATIONS, ALL STATIONS, ALL STATIONS, THIS IS "BRIAN CHARLES" MMSI no. 250023453,**  
**POSITION** rocks 52° 53" 46' North 8° 25" 16' West  
Cancel my distress alert of 25 AUG 2009 at 17:20  
**THIS IS BRIAN CHARLES" MMSI no. 250023453**  
**OUT**

## ***Radio silence during a Mayday Call***

### **Imposing Radio silence**

Radio silence may be imposed on a channel while a distress situation is being handled using the proword **SEELONCE** from the word *Silence*.

**MAYDAY**

**ALL STATIONS, ALL STATIONS, ALL STATIONS**

**THIS IS** \_\_\_\_\_ [vessel or station name 3 times]

**MAYDAY** Coot

**SEELONCE MAYDAY** [prowords reserved for station controlling distress traffic ONLY]

**TIME** \_\_\_\_\_ [other stations close to distress may use **SEELONCE DISTRESS**]

**OUT**

Example:

**MAYDAY**

**ALL STATIONS, ALL STATIONS, ALL STATIONS**

**THIS IS** Lough Derg Coast Guard, Lough Derg Coast Guard, Lough Derg Coast Guard

**MAYDAY** Coot

**SEELONCE MAYDAY**

**TIME** 17:30

**OUT**

### **Relaxing radio silence for urgent traffic**

Radio silence can be relaxed by distress controlling station for vessels or stations wishing to pass urgent messages on channel 16 using the proword **PRUDONCE** from the word *prudence*.

**MAYDAY**

**ALL STATIONS, ALL STATIONS, ALL STATIONS**

**THIS IS** Lough Derg Coast Guard, Lough Derg Coast Guard, Lough Derg Coast Guard

**MAYDAY** Coot

**PRUDONCE, PRUDONCE**

**TIME** 17:30

**OUT**

## Radio Operator Short Range



### **Lifting radio silence for urgent traffic**

Radio silence is eventually lifted on channel 16 when the situation is under control using the proword **SEELONCE FEENEE**, Feenee is from the French word *fini*.

**MAYDAY**

**ALL STATIONS, ALL STATIONS, ALL STATIONS**

**THIS IS** Lough Derg Coast Guard , Lough Derg Coast Guard, Lough Derg Coast Guard

**MAYDAY** Coot

**SEELONCE FEENEE**

**TIME** 17:30

**OUT**

## ***Making a Pan-Pan Call***

Pan-Pan calls indicate an emergency situation that for the moment at least does not pose a threat to life or the vessel. Examples of Pan-Pan scenarios are fouled propeller, engine failure or out of fuel, small fire on board - now extinguished, unsure of position and man-overboard recovery.

To make a Pan-Pan call

1. Send emergency call on VHF CH16 and/or MF 2182 kHz.

Ensure the channel switch is set to channel 16 and follow the instructions below. Remain calm, and speak clearly.

**PAN-PAN, PAN-PAN, PAN-PAN, "Base", Base", Base" THIS IS \_\_\_\_\_** [vessel name 3 times]

**PAN-PAN \_\_\_\_\_** [followed by vessel name and MMSI number if you have one]

**OUR POSITION IS \_\_\_\_\_** [Buoy no. or GPS]

**NATURE OF DISTRESS IS \_\_\_\_\_** [Describe what happened]

**OVER**

**PAN-PAN, PAN-PAN, PAN-PAN, "Base", Base", Base" THIS IS Mallard, Mallard, Mallard**

**PAN-PAN** followed by vessel name and MMSI number if you have one

**OUR POSITION IS** Lushing rocks 52° (degrees) 53" (decimal) 46' (minutes) North 8° 25" 16' West

**NATURE OF DISTRESS IS** boat has taken on water and we are pumping out excess water

**OVER**

Release the PTT switch and listen for a reply.

# Radio Operator Short Range



## ***Making a Sécurité Call***

Sécurité calls indicate that what follows is important safety information. This is normally broadcast on Channel 16 on VHF or 2182 kHz on MF. Such a call is a defence against getting run down during fog.

To make a Sécurité call

1. Send safety information call on VHF CH16 and/or MF 2182 kHz.

Ensure the channel switch is set to channel 16 and follow the instructions below. Remain calm, and speak clearly.

**SÉCURITÉ, SÉCURITÉ, SÉCURITÉ THIS IS** \_\_\_\_\_ [vessel or station name 3 times]

**PAN-PAN** \_\_\_\_\_ [followed by vessel name and MMSI number if you have one]

**OUR POSITION IS** \_\_\_\_\_ [Buoy no. or GPS]

\_\_\_\_\_ [Describe what happened]

[Repeat after 30 seconds]

**OUT**

**SÉCURITÉ, SÉCURITÉ, SÉCURITÉ THIS IS** Mallard, Mallard, Mallard

**SÉCURITÉ** followed by vessel name and MMSI number if you have one

**OUR POSITION IS** Crow Island 52° 52" 37' North 8° 25" 25' West

visibility is very poor due to heavy fog. Interested vessels contact channel 72

..... 30 sec pause .....

**SÉCURITÉ, SÉCURITÉ, SÉCURITÉ THIS IS** Mallard, Mallard, Mallard

**SÉCURITÉ** followed by vessel name and MMSI number if you have one

**OUR POSITION IS** Crow Island 52° 52" 37' North 8° 25" 25' West

visibility is very poor due to heavy fog. Interested vessels contact channel 72

**OUT**

Release the PTT switch and change to working channel (72 in this example).

## Appendix A – Marine VHF Channel Information

Channel Designator	Transmitting Frequencies (MHz)		Intership	Port Operations and Ship Movement		Public correspondence
	Ship Stations	Coast Stations		Single frequency	Two frequency	
60	156.025	160.625			x	x
01	156.050	160.650			x	x
61	156.075	160.675			x	x
02	156.100	160.700			x	x
62	156.125	160.125			x	x
03	156.150	160.750			x	x
63	156.175	160.775			x	x
04	156.200	160.800			x	x
64	156.225	160.825			x	x
05	156.250	160.850			x	x
65	156.275	160.875			x	x
06	156.300	156.300	x			
66	156.325	160.925			x	x
07	156.350	160.950			x	x
67	156.375	156.375	x	x		
08	156.400	156.400	x			
68	156.425	156.425		x		
09	156.450	156.450	x	x		
69	156.475	156.475	x	x		
10	156.500	156.500	x	x		
70	156.525	156.525	Digital selective calling for distress, safety and calling			
11	156.550	156.550		x		
71	156.575	156.575		x		
12	156.600	156.600		x		
72	156.625	156.625	x			
13	156.650	156.650	x	x		
73	156.675	156.675	x	x		
14	156.700	156.700		x		
74	156.725	156.725		x		
15	156.750	156.750	x	x		

## Radio Operator Short Range



Channel Designator	Transmitting Frequencies (MHz)		Intership	Port Operations and Ship Movement		Public correspondence
	Ship Stations	Coast Stations		Single frequency	Two frequency	
75	156.775	156.775	GUARD BAND (not used)			
16	156.800	156.800	DISTRESS, SAFETY AND CALLING			
76	156.825	156.825	GUARD BAND (not used)			
17	156.850	156.850	x	x		
77	156.875	156.875	x			
18	156.900	161.500		x	x	x
78	156.925	161.525			x	x
19	156.950	161.550			x	x
79	156.975	161.575			x	x
20	157.000	161.600			x	x
80	157.025	161.625			x	x
21	157.050	161.650			x	x
81	157.075	161.675			x	x
22	157.100	161.700			x	x
82	157.125	161.725		x	x	x
23	157.150	161.750			x	x
83	157.175	161.775		x	x	x
24	157.200	161.800			x	x
84	157.225	161.825		x	x	x
25	157.250	161.850			x	x
85	157.275	161.875		x	x	x
26	157.300	161.900			x	x
86	157.325	161.925		x	x	x
27	157.350	161.950			x	x
87	157.375	161.975		x		
28	157.400	161.200			x	x
88	157.425	162.025		x		

- Channel 10 is used for oil pollution control.
- Channel 16 is a distress, safety and calling channel only.
- Channels 15 & 17 are low power channels restricted to 1 Watt.
- Channel 61 is used by Lough Derg Coast Guard.
- Channel 62 is used by Lough Ree Coast Guard.
- Channel 67 & 28 are used by Shannon Coast Guard.
- Channels 67 & 04 are used by Galway Coast Guard.
- Channel 70 is used for DSC and cannot be used for voice communication.
- Of the 11 intership channels only 06, 08, 72 and 77 should be used as the others are for port operations.
- Weather Forecasts at 0103, 0403, 0703, 1003, 1303, 1603, 1903 & 2203 on Coast Guard working channels.