



Government of Bermuda
Ministry of Transport
Department of Marine & Ports Services

Guide to Marine VHF Radiotelephone Communications in Bermuda

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1.0 Marine VHF Radiotelephone Communications

1.1 Licensing of Radio Installations

All radio installations must be licensed by law. The licence for a Class 5 Marine Radio Station can be obtained from the Department of Telecommunications, located in the Perry Building on Church Street in Hamilton. The licence costs \$ 210.00 and is valid for a period of 5 years.

When you receive your licence you will be issued with a radio callsign and MMSI number. This should be displayed near your boat's radio equipment, so that when requested it can be given to authorities without any difficulty. The radio callsign is unique to your vessel, as is the MMSI number (short for Maritime Mobile Service Identifier) which uniquely identifies your boat and is required when using Digital Selective Calling (DSC) equipment, and when programming your 406 MHz EPIRB.

1.2 Allocation of the Marine VHF Channels in Bermuda

Ch 07	Public access repeater (Ch 07 International)
Ch 10	Port operations (Tugs and tenders)
Ch 12	Port operations (Bermuda pilot service)
Ch 16	Distress, Call / Reply
Ch 13	Swing Bridge operations.
Ch 22	Bermuda Police Marine Section
Ch 27	Bermuda Radio primary working channel
Ch 68	Bermuda Radio secondary working channel
Ch 70	Digital Selective Calling (<u>voice communication prohibited</u> - to be used exclusively for digital selective calling for distress, safety and calling.)
Ch 80	Ferry operations (Marine & Ports)
WX Ch 02	Weather Channel 2 - Bermuda Weather Service local forecasts, US National Weather Service Tropical Weather Outlook and local navigational information transmitted continuously by Bermuda Radio.

Working channels available to members of the boating public include 06, 08, 09, 11, 14, 66, 67, 69, 71, 72.

It is extremely important that you become familiar with the above channels and their assigned uses in local waters so as not to interfere with port operations or other safety traffic.

1.3 Avoidance of Interference

Before beginning your radio call a careful check should be made to ensure that channel 16 and the working channel that you intend to use are not already in use.

The following transmissions are strictly forbidden :

- a) Unnecessary transmissions
- b) The transmission of superfluous signals and correspondence
- c) The transmission of false or mis-leading signals
- d) The transmission of signals without identification
- e) The transmission of profanity

Care should be taken to ensure that distress or urgent traffic on Channel 16 is not interrupted.

1.4 The Phonetic Alphabet

The phonetic alphabet was devised to help pass messages when communication is difficult. The words are in common usage in everyday life and their pronunciation is clear and simple - the first letter of each word represents the letter of the alphabet required in order to spell out each word of your message. The phonetic alphabet is of additional use when words of different meanings have similar pronunciations, e.g. boy and buoy.

A	Alpha	G	Golf	M	Mike	S	Sierra	Y	Yankee
B	Bravo	H	Hotel	N	November	T	Tango	Z	Zulu
C	Charlie	I	India	O	Oscar	U	Uniform		
D	Delta	J	Juliet	P	Papa	V	Victor		
E	Echo	K	Kilo	Q	Quebec	W	Whiskey		
F	Foxtrot	L	Lima	R	Romeo	X	Xray		

Numbers are spoken over the radio as they sound in English, with the exception of

4 (four) - spoken as *fower*

5 (five) - spoken as *fife*

9 (nine) - spoken as *niner*

1.5 General Call and Reply

The procedure used to establish communications with another station is simple, but needs to be strictly adhered to in order to preserve Channel 16 as the international distress, call and reply channel.

All communication on Channel 16 should be kept to a minimum. It should be remembered that your VHF radio is capable of transmitting well beyond inshore waters and that every time you transmit you are possibly interfering with ship-to-ship communications or other important operations on the high seas that you may be unable to hear. For this reason use your VHF radio's lowest power setting (1 Watt) whenever possible.

1.6 Calling

As the calling station it is your responsibility to select an appropriate working channel for use once you have established communication with the desired station. The only exception to this rule is when dealing with a coast station, who will allocate the working channel to use.

Your call should consist of :

The name of the station you are calling (spoken up to 3 times)

" this is "

the name of your vessel (spoken up to 3 times)

"Over

Example

Call	" Bermuda Radio, Bermuda Radio " " this is " " Nonsuch, Nonsuch " " Over. "
Reply	" Nonsuch " " this is " " Bermuda Radio " " Shift to Channel 27 " " Over. "
Caller then Replies	" Bermuda Radio " " this is " " Nonsuch " " Shifting to Channel 27."

Once communication has been established on the working channel, you can then pass your message. Once you have completed sending your message you should return to channel 16 to maintain a listening watch for possible distress calls from nearby vessels.

2.0 Distress, Urgency and Safety - the priority of communications

2.1 Distress

A vessel is in distress only when it is in grave and imminent danger, and requires immediate assistance. The distress signal is the word " Mayday " and is to be used only on the authority of the captain or person responsible for the vessel. For example, when the vessel is sinking or on fire, with the lives of all onboard threatened.

2.2 Urgency

The people onboard a vessel require urgent help, but are not in immediate danger. The urgency signal "Pan Pan " is used. For example, a vessel's engine is disabled and she is dragging her anchor down onto a lee shore; a sailboat is dismasted with hull integrity not affected; a man overboard situation has occurred; medical assistance is required.

2.3 Safety

The safety signal is " Securite " (pronounced " Say-cure-it-tay ") and indicates that a message concerning the safety of navigation will follow. Such messages usually originate ashore, but they can be used by ships at sea to report a navigational hazard. For example, a drifting lightbuoy, a wreck, a failed light, a smallcraft or gale warning.

3.0 Distress Broadcast Procedure

3.1 Sending a Distress Message

Remember : Distress messages have priority over all other communications....

Ensure that your VHF equipment is switched to Channel 16 and that the receiver squelch control is properly adjusted.

Call “ Mayday, Mayday, Mayday “
 “ this is “
 Name of your vessel (repeated 3 times)

 “ Mayday “
 Name of your vessel
 Position
 Nature of distress
 Type of assistance required
 Any other information to assist rescuers - if time permits
 “ Over “

Listen for a reply to your call. If none is heard repeat the above procedure.

Example

Call “ Mayday, Mayday, Mayday “
 “ this is “
 “ Nonsuch, Nonsuch, Nonsuch / ZFU2345 “
 “ Mayday “
 “ Nonsuch “
 “ My position is 4 miles Northwest of North Rock “
 “ I am taking on water and require immediate assistance “
 “ Nonsuch is a 28 foot, blue sloop, with 3 people onboard”
 “ Over “

Once an acknowledgment has been received ensure that you maintain a good radio watch on Channel 16 for further instructions from Bermuda Radio and / or other air or surface search units.

3.2 Receiving a Distress Broadcast

Should you receive a distress broadcast, cease all transmissions immediately and monitor any further distress communications to ensure that assistance is being provided. Should a distress call appear to go unanswered then you should acknowledge the distress message even if you are not in a direct position to assist. Every effort should then be made to relay the distress message to Bermuda Radio in order that further action can be taken to assist the vessel in distress.

3.3 Relay of Distress Calls

When a vessel or coast station receives a distress call and feels that further assistance is necessary, or a vessel in distress is unable to transmit a distress call for itself, or a distress message has only been received by a vessel not in a position to assist, the signal “ Mayday Relay “ is used.

Example “ Mayday Relay, Mayday Relay, Mayday Relay “
 “ this is “
 “ Bermuda Radio, Bermuda Radio “
 “ Mayday “
 “ Nonsuch / ZFU2345 in a position 4 miles Northwest of North Rock “
 “ reports taking on water and requiring immediate assistance. “
 “ Nonsuch is a 28 foot, blue sloop with 3 persons onboard
 “ Over “

3.4 Control of Distress Traffic

Control of all distress traffic is initially the responsibility of the station in distress. However, this responsibility is usually handed off to Bermuda Radio by the distress vessel as Bermuda Radio is better positioned to co-ordinate communication, and impose silence on any station that may be interfering with distress traffic.

All vessels who are aware of the existence of a distress situation and are not in a position to be of assistance are forbidden to transmit on any frequency being used for distress traffic and / or search and rescue related activity.

Having been made aware that a distress situation exists, Bermuda Radio will normally make use of the signal " Seelonce Mayday " to impose radio silence on Channel 16.

Example " Mayday, All Stations, All Stations, All Stations "
" this is Bermuda Radio / ZBR "
" Seelonce Mayday "
" Over "

This indicates that distress traffic is being passed on that channel and that it is not to be used for any traffic that is of less than distress priority.

3.5 Alternate Call and Reply Channel

Normally Bermuda Radio will designate Channel 07 as the temporary call and reply channel so that distress communication may continue un-interrupted on Channel 16. As soon as normal working can be resumed on Channel 16 Bermuda Radio will make an announcement to this effect on Channel 16 and Channel 07.

Example " Mayday, All stations, All stations, All stations "
" this is "
" Bermuda Radio, Bermuda Radio / ZBR "
" Seelonce Fenee "

3.6 Urgency Broadcast Procedure

The urgency signal is second in importance only to the distress signal, and should be sent only on the authority of the captain or the person responsible for the vessel.

Example " Pan Pan, Pan Pan, Pan Pan "
" All stations, All stations, All stations "
" this is "
" Nonsuch, Nonsuch, Nonsuch / ZFU2345 "

" Pan Pan "
" My position is 4 miles Northwest of North Rock "
" We are dismayed and drifting. We require urgent assistance "
" Nonsuch is a 28 foot blue sloop with 3 persons onboard "
" Over "

3.7 Safety Broadcast Procedure

The safety broadcast is sent on a working channel after an initial call on Channel 16. Vessels hearing such a call should monitor the message until they are sure that it is of no concern to them.

Example " Securite, Securite, Securite "
" All stations, All stations, All stations "
" this is "
" Bermuda Radio, Bermuda Radio / ZBR "
" Small Craft Warning issued, listen on VHF Channel 27 "
" Out "

4.0 Marine VHF Services Available in Bermuda

4.1 Bermuda Radio, Callsign ZBR

Bermuda Radio offers a variety of services to mariners in Bermuda waters. It fulfills a role comparable to that of coastguard communication stations elsewhere in the world. This station not only broadcasts notices to mariners, local navigational warnings and weather information for the safety of vessels operating in Bermuda waters, but also holds responsibility for the co-ordination of search and rescue around Bermuda.

Enquiries on marine related matters can be directed to Bermuda Radio both by radio and by telephone. Traffic can be passed on VHF radio by calling Bermuda Radio directly on Channel 27, or by first calling on Channel 16 before changing to a working channel. Enquiries can be made by either telephone at (441) 297-1010 or e-mail operations@rccbermuda.bm / dutyofficer@marops.bm

There is no commercial marine radio to telephone inter-connect service in Bermuda.

4.2 Channel 07 Repeater Station

A public access repeater positioned at Gibb's Hill Lighthouse is operated on VHF Channel 07 International. Its purpose is to receive signals from a vessel on Channel 07, and re-broadcast that signal, thereby extending the vessels transmission range beyond ' line-of-sight ' (which is all that VHF radio will normally allow). For example a vessel near Northeast Breaker Beacon with a 25 watt VHF set and an antenna approximately 6 feet above sea level, will in practice be able to communicate with a similarly equipped vessel operating on Challenger Bank.

4.3 Testing Your VHF Radio Equipment

The practice of conducting a radio check with Bermuda Radio whenever a VHF set is first switched on is unnecessary, as this can also be accomplished by listening for a unique feature of the Channel 07 repeater. A radio check can be carried out on Channel 07 International by simply pressing your VHF transceiver's transmit button and releasing it. This activates the repeater equipment at Gibb's Hill which in turn continues to transmit for a few seconds after you have released your transmit button. You should then be receiving this continued signal, and although there is no speech present, you will plainly hear the repeater cease transmitting and cut-out, meaning that your radio's receiver is also working.

4.4 International and USA Channel selection

It is important to note that Channel 07 International is a Duplex channel. On most VHF sets available however Ch 07 can be selected as being either Channel 07 International (Duplex), or Channel 07A or USA (Simplex). By operating on Channel 07A you utilise the same transmit and receive frequency - effectively bypassing the repeater and communicating in a normal fashion directly with the other vessel. However you will still be causing the repeater to activate, resulting in transmissions to everyone listening on Channel 07 International. As a rule you should always operate in the international mode to avoid confusion.

4.5 VHF Radio Channel Types

Simplex

A simplex channel uses a single frequency for transmitting and receiving - allowing ship to ship, or ship to shore communication to be carried out, and any number of vessels to operate in alternating fashion on the channel concerned.

Duplex

Duplex channels are normally only used for ship to shore communication to ensure privacy and exclusivity in the use of that particular channel. Duplex operation involves the use of two frequencies - one frequency for transmitting, and another frequency for receiving. Ship stations are not normally able to use duplex channels for ship to ship communication unless a shore based repeater capability is installed.

4.6 VHF Channel 70 - Digital Selective Calling

The introduction of the Global Maritime Distress and Safety System has brought with it various forms of new technology and procedures, most of which are filtering through to the leisure and small boat market. One such development is Digital Selective Calling, which gives the ability to call ship to ship and ship to shore on an individual basis in a concept similar to paging.

What is Digital Selective Calling ?

- DSC forms part of the Global Maritime Distress and Safety System (GMDSS)
- It eliminates the need for a listening watch to be maintained (the radio does it automatically)
- VHF Channel 70 is set aside exclusively for use of DSC
- DSC capable radios maintain a continuous watch on Channel 70 even when the radio is in use on another channel
- A DSC call is made up of the called station's MMSI number, your MMSI number, the working channel that you wish to utilise, your GPS position, the nature or priority of your communication

Why is this important to me, a weekend boater or local fisherman ?

- Most new VHF sets come fitted with DSC as a standard feature
- Eventually you will be unable to call Bermuda Radio or any other vessel without using DSC
- DSC will greatly increase the chance of you being heard by Bermuda Radio or other nearby vessels when you do get into trouble
- Without DSC there is an increased chance that you will miss vital distress or safety messages
- It will be important that you know how to transmit and respond to DSC Distress alerts
- A major benefit of DSC is that by interfacing a GPS receiver to your VHF radio, your DSC call can contain your current GPS position
- Distress alerts will be acknowledged by the local coast radio station, in Bermuda this is Bermuda Radio. Mobile DSC stations should not relay or acknowledge distress traffic and should only utilise the "Distress" button on the set when they are in grave and imminent danger.

What is an MMSI Number ?

The radio is programmed with your assigned Maritime Mobile Service Identity (MMSI) number and when a call is received from somebody using your MMSI number, an alarm activates getting your attention.

- MMSI = Maritime Mobile Service Identity
- This is a 9 digit number unique to your vessel which acts like a telephone number
- It is programmed into your VHF radio
- Bermuda MMSI numbers start with the Bermuda country code 310
- Your complete MMSI number will appear something like 310990001.

How do I get an MMSI number ?

- Obtain either a Class 5 or Class 9 Marine Radio Licence from the Department of Telecommunication (for VHF radio use you only require a Class 5 license)
- It is an offence to install or operate any radio equipment on board a Bermuda boat without first obtaining a Bermuda radio licence
- It will soon become an offence to operate a DSC radio without a correctly programmed MMSI number

Just recap that for me ?

- Digital Selective Calling or DSC
- A cross between a normal telephone and a traditional marine VHF radio rolled into one unit
- DSC allows you to call another station by use of a ½ second digital call on VHF Channel 70
- Once the call has been acknowledged (the equivalent of answering a telephone) you use the radio in the usual way on the selected working channel
- If the call remains unanswered the details will be stored in the "received calls" log

By viewing the message window on the radio you can see who is calling and see which VHF working channel that they want you to use. You then simply acknowledge the call by pressing a button and change to the working channel to establish regular voice communication with them. DSC calls are automated and fast (approximately a ½ second in duration).

4.7 Cellular Telephones - use on the water

Cellular telephones are a proven and useful backup to marine VHF radio - however they are not a substitute for a VHF radio. You are required by law to carry a VHF radio depending upon your area of operation. Practically speaking if you get into trouble on the water it is far better to call for assistance using a VHF since other vessels nearby will hear and be able to respond. Bermuda Radio will also normally be able to quickly determine your exact position using direction finding equipment. Without an accurate position any rescue effort will either take longer, or maybe even fail completely.

4.8 VHF Radio Limitations... and some alternatives

Any time you are going so far offshore as to possibly go beyond the practical range of VHF communication you need a reliable alternative for distress alerting.

Options include:

**A 406 MHz Emergency Position Indicating Radio Beacon (EPIRB)
Single Side Band (SSB) Radio
Satellite Telephone**

4.9 406 MHz EPIRB

A 406 MHz EPIRB is probably your best option because of its small size and compact design.

What is an EPIRB ? An Emergency Position Indicating Radio Beacon, or EPIRB, is basically a watertight battery operated radio transmitter designed for marine use that indicates the position of the ship in distress.

How is an EPIRB activated ? All EPIRBs can be switched on manually. Certain EPIRB models will also activate automatically when a vessel sinks suddenly and the beacon floats free from a special release bracket. The beacon then begins transmitting without human intervention.

How do they work ? A search and rescue satellite network called COSPAS/SARSAT with enhanced coverage allows satellite detection as the primary means of distress location. The introduction of the 406 MHz EPIRB and a new generation of satellites has resulted in faster detection times and more accurate position determination. Identification of the vessel in distress and the type of distress can also be indicated.

I'm in the market for an EPIRB for my boat, which type should I buy ? If you are buying an EPIRB today - make sure you purchase the 406 MHz model. The 406 MHz EPIRB utilises digital technology, has a long battery life and encoded vessel identification - all features that enhance survival.

Why carry an EPIRB ? EPIRBs have a proven track record of saving lives. A sinking vessel with no alternate means of communication can rely on a registered EPIRB to get help when needed.

What must you do when you purchase a 406 MHz EPIRB ? First check to make sure that you have either a Radio Callsign or MMSI number assigned by the Bermuda Government Department of Telecommunications Tel: (441) 292-4595. Then have this Radio Callsign or MMSI number programmed by the EPIRB supplier into your beacon.

NOTE : IF YOU PURCHASE AN EPIRB IN THE UNITED STATES BE SURE TO HAVE THE SUPPLIER PROGRAM YOUR EPIRB WITH YOUR BERMUDA CALLSIGN OR MMSI NUMBER PRIOR TO IMPORTING THE EPIRB INTO THE ISLAND.

Then complete a Bermuda EPIRB registration form and return it to the Bermuda Rescue Co-ordination Centre (Bermuda Radio). They maintain a database of all Bermuda registered vessels and aircraft fitted with 406 MHz distress beacons. This ensures fast, accurate processing of distress alerts on a 24 hour basis no matter where they occur in the world.

Contact RCC Bermuda / Bermuda Radio directly should you require assistance with this process. Telephone: (441) 297 1010 or E-mail : operations@rccbermuda.bm .

What do you mean my 406 MHz EPIRB must be registered ? 406 MHz beacons bought in the North American market normally come pre-programmed with a U.S. identification code. Every 406 MHz EPIRB must be registered in the corresponding country of registry of the ship or boat to which it is fitted. The company supplying the EPIRB should be given your vessels radio callsign or MMSI (Maritime Mobile Station Identifier) number. They then program this information into the beacon.

What happens if you fail to register your EPIRB ? It is vital that your EPIRB is properly programmed with the unique identifier obtained from the country with which the vessel is registered. Failure to do so is a punishable offence in some countries. To fail to comply with this basic rule seriously degrades the value of carrying an EPIRB in a distress situation.

For example, if a vessel is in distress and an EPIRB is activated, a Rescue Coordination Centre (RCC) such as Bermuda Radio will be able to cross reference your EPIRB data with your vessels registration information, providing a wealth of information to rescuers.

I have more than one EPIRB onboard my vessel; do I have to register all of them? Yes, each beacon transmits a unique identification code and therefore should be separately registered. A Bermuda EPIRB Registration Form is to be completed for each beacon. The company programming the beacon will adjust the programming so as to reflect that more than one beacon is fitted aboard the ship or aircraft concerned.

When my vessel changes registration, is sold, laid up, de-commissioned etc., what do I do about the EPIRB(s)? The person retaining or disposing of the EPIRB should *immediately* notify RCC Bermuda of the pertinent facts. If the EPIRB is kept, or sold, it will need to be re-programmed to reflect that it is fitted to a different boat (or the same boat with a new name and owner). If there is any doubt concerning the future use of the EPIRB - it should be destroyed, or otherwise rendered inoperable.

Questions or further information on the operation of your VHF radio, EPIRB registration or any other marine communication and navigation system in use can be directed to Bermuda Radio by telephone at (441) 297-1010 or by fax at (441) 297-1530 or e-mail operations@rccbermuda.bm on a 24 hour basis.

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