

Serenity Houseboat



Standard Operating Procedures for:

VHF Marine Radio

I. Overview

VHF, or Very High Frequency, marine radio is the standard method of communication between vessels. Marine radio equipment is installed on all large ships and most seagoing small craft. It is also used, with slightly different regulation, on rivers and lakes. It is used for a wide variety of purposes, including summoning rescue services and communicating with marinas and other vessels, and operates in the very high frequency (VHF) range, between 156.000- and 162.025-MHz.

A marine VHF set is a combined transmitter and receiver and only operates on standard, international frequencies known as channels, see Appendix A for a full list of VHF Channels. Channel 16 (156.8 MHz) is the international hailing and distress channel. Transmission power ranges between 1 and 25 watts, but is dependent on line of sight; antennas mounted on tall towers can have maximum ranges of up to about 60 nautical miles, but on houseboats a range of 5 nautical miles is more realistic and can be affected by obstructions like canyon walls on Lake Powell. Frequency modulation (FM) is used, with vertical polarization, meaning that antennas have to be vertical in order to have good reception.

Modern-day marine VHF radios offer not only basic transmit and receive capabilities. Permanently mounted marine VHF radios on seagoing vessels are required to have Digital Selective Calling (DSC) and new VHF radios, even recreational models, are now required to include DSC features. DSC allows mariners to instantly send an automatically formatted distress alert to the Coast Guard or other rescue authority anywhere in the world. DSC also allows mariners to initiate or receive distress, urgency, safety, and routine radiotelephone calls to or from any similarly equipped vessel or shore station, without requiring either party to be near a radio loudspeaker. DSC acts like the dial and bell of a telephone, allowing you to "direct dial" and "ring" other radios, or allow others to "ring" you.

The Serenity is equipped with two VHF Radios, one at each helm station. Both are DSC equipped and have been registered and integrated with the vessels GPS receiver. Whenever the houseboat is underway the operator must maintain a watch on VHF Channel 16; it is recommended that this channel be monitored at all times, but is not required when alongside the slip or anchored.

II. Voice Communications

a. Basic Radio Operation

- i. Turn the VHF radio on by turning the Volume knob to the right.
- ii. Set the Volume at a comfortable level.

- iii. Tune to desired channel. VHF Channel 16 should be monitored whenever the houseboat is underway; it is recommended to maintain a watch on this frequency at all times, but is not required.
- iv. Set the squelch by turning it all the way down and then slowly increase squelch until it just silences the static.
- v. For additional operations, consult the owner's manual.



b. Initiating a Radio Call

- i. Listen for a minimum of 2-minutes before transmitting to ensure you are not stepping on other communications.
- ii. Channel 16 is for hailing and distress communications only. Use Channel 16 only to establish communication, if necessary, and then immediately switch to a different channel.
- iii. Repeat vital information three times to ensure it is accurately communicated.
- iv. English is the international language for communication on VHF Marine frequencies. Speak clearly and use pro-words such as:
 1. *Acknowledge – I understand and will comply.*
 2. *All stations – This broadcast is meant for everyone.*
 3. *Negative Response – The station I was calling did not respond.*
 4. *Over – I am finished speaking and am awaiting you response.*
 5. *Out – I have completed communications.*
 6. *Standby – Hold on and await my response.*
 7. *Station calling – I am responding to a hail, but I did not understand the identity of the vessel calling.*
 8. *This is – stated before stating your identity to clarify who is calling*
- v. Using the phonetic alphabet when spelling: Alpha, Bravo, Charlie, Delta, Echo, Foxtrot, Golf, Hotel, India, Juliet, Kilo, Lima, Mike, November, Oscar, Papa, Quebec, Romeo, Sierra, Tango, Uniform, Victor, Whiskey, X-ray, Yankee, Zulu
- vi. Using a phonetic numbering system based on the English language.

c. Example Radio Call.

The following would be an appropriate exchange if the houseboat Serenity were calling a small boat named Rubber Ducky. Initial contact would be made on VHF channel 16, but would then

shift to another channel immediately where communication would be reestablished and information could be exchanged.

Serenity – “Rubber Ducky, Rubber Ducky, Rubber Ducky. This is, Serenity, Serenity, Serenity; on Channel one-six. Over.”

Rubber Ducky – “Serenity, this is Rubber Ducky, go ahead.”

S – “Rubber Ducky, Serenity. Shift and answer on channel 68; that is, channel six-eight. Over.”

RD – “Serenity, Rubber Ducky. Understood, shifting to channel 68. Rubber Ducky, Out.”

d. Mayday Calls

- i. A Mayday Call is used to signal a life-threatening emergency effecting your vessel. When issuing a mayday call you will likely be under stress, but try to remain calm and speak slowly and clearly. Take a few deep breaths and think over what you are going to say before you begin your call.
- ii. Call Procedure:
 1. Ensure the VHF Radio is on Channel 16.
 2. Take a few deep breaths and think over what you are going to say. Listen for other stations speaking on Channel 16 and wait for dead air.
 3. Depress the transmit button and say, “Mayday, Mayday, Mayday. This is Serenity, Serenity, Serenity. Break.”
 4. Release the transmit button and ensure that the channel is clear.
 5. Depress the transmit button and state the following, “Mayday, Mayday, Mayday. This is Serenity, Serenity, Serenity. My location is [Latitude and Longitude], [Geographic location, e.g. “just inside the mouth of Hall’s Bay”]. We are a 65-ft houseboat with white and maroon superstructure. We are experiencing [nature of distress; e.g. fire, flooding, explosion, etc.] and need immediate assistance. There are ## people on board with [state any injuries or other information]. This is Serenity. Over.”
 6. If you do not have all the previous information, provide what you do have.
 7. Await response from NPS or other vessels. If no response is received within 30-seconds, repeat the process.
- iii. Relaying a Mayday Call; if you hear a Mayday Call, be sure to write down the information being provided by the vessel in distress. If, after the mayday call has been made, you do not hear a response from NPS within 2-minutes, you must then relay the Mayday Call. Say the following, “Mayday relay, Mayday relay, Mayday relay. This is Serenity. The following distress call was received from [vessel in distress’s name]. The reported position of the [vessel in distress’s name] is [position of vessel in distress]. Over.”

e. Pan-Pan Calls

- i. A Pan-Pan Call (pronounced pon-pon) is used for incidents of lesser gravity, such as an engine breakdown, loss of command, a non-life-threatening medical problem, etc.
- ii. To make a Pan-pan call:
 1. Say, “Pan-pan, Pan-pan, Pan-pan”
 2. Provide you vessels name.
 3. State you position.
 4. State the nature of your problem.
 5. State action being taken.
 6. Say, “Over.”

III. Digital Selective Calling (DSC)

- a. Both Serenity's VHF radios are equipped with DSC, have been connected to the GPS receiver, and are registered. This allows you to send DSC messages and utilize the Distress button to send an immediate distress message.
- b. Maritime Mobile Service Identity (MMSI) Number. The Serenity has been registered and the MMSI number is:

338154427

- c. GPS Interconnection. Both Serenity's VHF radios have been connected to the GPS receiver via a NMEA 0183 two wire connection. If the GPS receiver is on, this will automatically provide your position, with a timestamp, to any distress message. For this reason, it is recommended that whenever either VHF radio is on, that the GPS chart plotter also be on in order to provide this data stream.
- d. Distress Call via DSC.
 - i. Ensure that the GPS Chart Plotter is on, if possible, so that up to date position information will be transmitted.
 - ii. Press and hold the DISTRESS button for 5-seconds to initiate transmission.
 - iii. The Radio will transmit a DSC Distress Message containing your MMSI number, which is registered to the vessel and your position with a time stamp. Any radio receiving this DSC Distress Message will automatically switch to VHF Channel 16 awaiting a voice Mayday Call.
 - iv. Transmission will take less than a second, then the radio will wait for a response for 3.5-minutes, and, if not acknowledged it will repeat the process until an acknowledgement is received or it is canceled. In general, only the USCG or NPS should Acknowledge a DSC Distress Message.
 - v. A detailed Distress Message containing additional vessel information, the nature of distress, and other information can also be sent. For information on how to send these Distress Messages, consult the owner's manual.
- e. Initiating a DSC Call
 - i. Utilizing DSC, you can transmit a message directly to another station whose MMSI number you know. Simply enter in the MMSI, or select it from a stored list, enter the VHF voice channel you want to begin voice communications on.
 - ii. A station receiving a DSC Call can then Acknowledge the call and the radio will automatically tune to the specified VHF voice channel.
 - iii. The sending unit will automatically shift to the specified VHF voice channel once it receives the Acknowledgement and the two stations may begin conversing over that VHF voice channel.
 - iv. For complete instructions on using the DSC Call functionality, consult the owner's manual.

APPENDIX A

VHF Marine Radio Channels

Channel Number	Ship Transmit MHz	Ship Receive MHz	Use
01A	156.050	156.050	Port Operations and Commercial, VTS. Available only in New Orleans / Lower Mississippi area.
05A	156.250	156.250	Port Operations or VTS in the Houston, New Orleans and Seattle areas.
06	156.300	156.300	Intership Safety
07A	156.350	156.350	Commercial
08	156.400	156.400	Commercial (Intership only)
09	156.450	156.450	Boater Calling. Commercial and Non-Commercial.
10	156.500	156.500	Commercial
11	156.550	156.550	Commercial. VTS in selected areas.
12	156.600	156.600	Port Operations. VTS in selected areas.
13	156.650	156.650	Intership Navigation Safety (Bridge-to-bridge). Ships >20m length maintain a listening watch on this channel in US waters.
14	156.700	156.700	Port Operations. VTS in selected areas.
15	--	156.750	Environmental (Receive only). Used by Class C EPIRBs.
16	156.800	156.800	International Distress, Safety and Calling. Ships required to carry radio, USCG, and most coast stations maintain a listening watch on this channel.
17	156.850	156.850	State & local govt maritime control
18A	156.900	156.900	Commercial
19A	156.950	156.950	Commercial
20	157.000	161.600	Port Operations (duplex)
20A	157.000	157.000	Port Operations
21A	157.050	157.050	U.S. Coast Guard only
22A	157.100	157.100	Coast Guard Liaison and Maritime Safety Information Broadcasts. Broadcasts announced on channel 16.
23A	157.150	157.150	U.S. Coast Guard only
24	157.200	161.800	Public Correspondence (Marine Operator)
25	157.250	161.850	Public Correspondence (Marine Operator)

26	157.300	161.900	Public Correspondence (Marine Operator)
27	157.350	161.950	Public Correspondence (Marine Operator)
28	157.400	162.000	Public Correspondence (Marine Operator)
63A	156.175	156.175	Port Operations and Commercial, VTS. Available only in New Orleans / Lower Mississippi area.
65A	156.275	156.275	Port Operations
66A	156.325	156.325	Port Operations
67	156.375	156.375	Commercial. Used for Bridge-to-bridge communications in lower Mississippi River. Intership only.
68	156.425	156.425	Non-Commercial
69	156.475	156.475	Non-Commercial
70	156.525	156.525	Digital Selective Calling (voice communications not allowed)
71	156.575	156.575	Non-Commercial
72	156.625	156.625	Non-Commercial (Intership only)
73	156.675	156.675	Port Operations
74	156.725	156.725	Port Operations
77	156.875	156.875	Port Operations (Intership only)
78A	156.925	156.925	Non-Commercial
79A	156.975	156.975	Commercial. Non-Commercial in Great Lakes only
80A	157.025	157.025	Commercial. Non-Commercial in Great Lakes only
81A	157.075	157.075	U.S. Government only - Environmental protection operations.
82A	157.125	157.125	U.S. Government only
83A	157.175	157.175	U.S. Coast Guard only
84	157.225	161.825	Public Correspondence (Marine Operator)
85	157.275	161.875	Public Correspondence (Marine Operator)
86	157.325	161.925	Public Correspondence (Marine Operator)
87	157.375	157.375	Public Correspondence (Marine Operator)
88A	157.425	157.425	Commercial, Intership only.
AIS 1	161.975	161.975	Automatic Identification System (AIS)
AIS 2	162.025	162.025	Automatic Identification System (AIS)

NOAA Weather Radio Frequencies

Channel	Frequency (MHz)
WX1	162.550
WX2	162.400
WX3	162.475
WX4	162.425
WX5	162.450
WX6	162.500
WX7	162.525