Objectives

Welcome to Topic 26.

Reading this topic is intended to give you, the emergency communicator, a basic knowledge of marine communications and the proper procedures to follow in the event of a maritime emergency.

Student Preparation required:

Understand the following definitions:

- *Vessel*: A general term for all craft capable of floating on water and larger than a rowboat.
- *Ship*: A general term for larger seagoing vessels of every kind.
- *Boat*: A term applied to smaller craft propelled by oars, sails, or engines.
- *Marine*: An adjective meaning related to or connected with the sea.

Introduction

The most common marine radio mode is VHF-FM, (156 to 162 MHz), with an effective range from ship to ship of 10 to 15 miles, and ship to shore of 20 to 30 miles. Vessels that routinely travel outside this distance generally have MF/HF-SSB, satellite communications, or both. CW

communication on MF/HF is no longer used.

No license is currently required for pleasure boats operating on the VHF-FM channels in US territorial waters. The FCC limits VHF-FM marine radios to a maximum of 25 watts. Radios are also required to be capable of 1-watt operation for short-range and in-harbor use. For more regulatory information, visit https://www.fcc.gov/wireless/bureau-divisions/mobility-division/maritime-mobile/coast-radio-stations

The use of VHF and MF/HF marine radios is restricted to vessels on the water. The use of portables or mobiles to communicate with crew on shore is not allowed. Certain commercial users, such as marinas, marine towing services, and fish canneries may be licensed for limited base operations on certain channels. In an emergency, however, the FCC rules are suspended, and you may use whatever means of communication are necessary to protect life and property.

Channel Selection

Marine VHF-FM frequencies have been assigned channel numbers, and all are designated for specific uses. Channel 16 has been designated worldwide as a distress and calling frequency. All vessels are required to maintain a listening “watch” on Channel 16 while underway. With the growth of boating and the elimination of mandatory radio licenses for certain vessels operating in domestic waters, Channel 16 has suffered from abuse and overuse. To maintain the integrity of Channel 16 as a distress frequency, Channel 9 has been designated as an alternate calling frequency. While Channel 16 can be used for routine calling, most calls should be made on Channel 9. This would apply to owners of newer marine radios, which are capable of simultaneously monitoring both Channel 9 and Channel 16 using either a “scan” or “dual watch” function.

The designated use for every marine channel is contained in the manual that comes with all VHF-FM radios. For example, Channel 13 is designated for navigational purposes, and a number of channels are used for inter-ship communication. Others are not for public use. Channel 83 is reserved for use by the Coast Guard Auxiliary. Channel 22 is for public communication with the Coast Guard, but it may not be used by boaters unless they are specifically instructed to do so by the Coast Guard radio operator on Channel 16. Channel 22 is also used by the Coast Guard to broadcast “Notice to Mariners” (NTM) messages, after announcing them on Channel 16. Channel 6 is an Inter-Ship Safety channel, often used for search and rescue operations.

A list of all marine channels and their assigned uses can be seen at:
https://www.navcen.uscg.gov/?pageName=mtVhf

Frequencies for Key Marine VHF Channels

Channel	Frequency	Used by
9	156.45	Calling
22	157.1	Coast Guard - NTMS
16	156.8	Calling/Distress
23	157.15	Coast Guard
17	156.85	State/Local Gov't. Shore Sta.
68	156.425	Inter-Ship
18	156.9	Commercial Inter-ship
69	156.475	Inter-ship
21	157.05	Coast Guard
83	157.175	Coast Guard Auxiliary

Spoken Emergency Signals

To simplify identification of marine radio traffic, certain prowords are used. When you hear one of these, you should listen carefully, write down any information, and refrain from transmitting on the frequency until necessary. The prowords are listed below, with an explanation of each.

- "MAYDAY MAYDAY" — This call has the highest priority and urgency. The vessel calling is threatened by grave or immediate danger and requires immediate assistance. If you hear this call, copy the information on paper, resist the urge to contact the party calling, and listen first for a reply from a Coast Guard unit. Only if no response is heard should you attempt communication with the vessel in distress.

- "PAN PAN" (pronounced "pawn-pawn") — Known as an "urgency" call. The vessel calling has an urgent message concerning the safety of a vessel or person. Again, copy the message, but respond only if no answer is heard. This signal may also be used by the Coast Guard for certain urgent messages to all vessels on the channel.

- "SECURITE" (pronounced "securitay") — This safety signal is used for official messages about the safety of navigation or important weather warnings. The Coast Guard can be heard using this proword in regular "notice to mariners" transmissions.

- "SILENCE" — The Coast Guard may declare SILENCE on a specific channel. Only those units actively involved in an incident may transmit on that frequency until the Coast Guard lifts the order.

Incident Reporting

There are two types of incidents that ham radio operators should report directly to the Coast Guard:

- Vessels in distress. Report these directly to the nearest Coast Guard station.
- Oil and chemical spills in public waters. Report these to the Coast Guard's National Response Center (NRC) at 800-424-8802.

The secondary reporting method is via the NRC website at: https://nrc.uscg.mil/
If neither is available, try contacting the nearest Coast Guard facility.

Distress Information

If you hear a distress call, listen first to see if the Coast Guard responds within a minute or two. If they do not, attempt to gather the following information:

- Position of the vessel involved, number of persons on board, nature of the distress.
- Name of the vessel.
- Call sign (if any).
- Length and type of vessel.
- Color.
- Any descriptive features — number of masts, flying bridge, etc.
- Weather conditions on scene.
- Frequency being used to communicate with the vessel.
- On-board emergency equipment: Life raft, Emergency Position Indicating Radio Beacon (EPIRB), and class of EPIRB, if possible.

Once you have the information, advise all persons on board to don life jackets, and contact either 911 dispatch or the closest Coast Guard facility by phone. In some cases, a local fire or police boat may be able to respond more quickly than the Coast Guard, which may be some distance away.

Identify yourself as an Amateur Radio operator relaying an emergency message. Pass on all the information that you have gathered and assist as requested. Provide your name and phone number or other means of contact so that responding local public safety agencies or the Coast Guard may reach you if needed. It may be possible that you are the only station that can communicate with the distressed vessel.

Routine Communication

Calling a vessel on a marine channel is very similar to 2 meters. If using Channel 9, transmit the name of the vessel you want to talk with twice, followed by your station's name twice, and the channel designation. For example: "Fishy Business, Fishy Business, this is Dream Boat, Dream Boat, Channel 9."

Listen for at least 30 seconds before repeating the call. Once you get an answer, direct the station to shift to a "working" channel: "Fishy Business, this is Dream Boat; shift to Channel 69."

In order to avoid confusion on congested channels, FCC rules require you to identify your vessel on each transmission, although some stations shift to a shortened call after the initial contact is established. *The use of 10 codes and "Q" signals is not permitted on marine VHF-FM.*

MF/HF SSB Communications

Vessels that operate further offshore may operate a MF/HF-SSB unit on designated channelized international frequencies. *Vessels using a MF/HF radio must also have a VHF-FM radio aboard.* The US Coast Guard maintains "guard" on (it monitors) 2182 kHz, the calling and distress frequency, as well as other designated frequencies in this band. A complete list of MF and HF maritime frequencies and assignments can be seen at: www.navcen.uscg.gov/?pageName=mtHighFrequency

Many boaters carry HF Amateur Radio aboard. A listing of Amateur Radio maritime nets is on the ARRL Web at www.arrl.org/arrl-net-directory. These nets may also be used to pass emergency traffic. Distress traffic received over MF/HF-SSB should be handled in the same way as on VHF-FM.

NOAA Weather Radio Frequencies

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

Channel numbers, e.g., WX1, WX2, etc. have no special significance but are often designated this way in consumer equipment. Other channel numbering schemes are also prevalent.

Source: US Coast Guard: https://www.navcen.uscg.gov/?pageName=mtVhf

The NOAA weather radio network provides voice broadcasts of local and coastal marine forecasts on a continuous cycle. The forecasts are produced by local National Weather Service Forecast Offices. Coastal stations also broadcast predicted tides and real-time observations from buoys and coastal meteorological stations operated by NOAA's National Data Buoy Center.

Based on user demand, and where feasible, offshore and open lake forecasts are broadcast as well.

Coverage

The NOAA Weather Radio network provides near continuous coverage of the coastal US, Great Lakes, Hawaii, and populated Alaska coastline. Typical coverage is 25 nautical miles offshore but may extend much further in certain areas.

To expand NOAA Weather Radio coverage in the state of Alaska, the National Weather Service (NWS) and U.S. Coast Guard are partnering to establish a network of low-power 5-watt NOAA Weather Radio transmitters at 24 USCG "high" sites located from the Dixon Entrance to Bristol Bay. These low-power transmitters operate on standard NWR frequencies under joint licensing with the NWS. See NWR at USCG Sites in Alaska at www.nws.noaa.gov/om/marine/aknwr.htm.

Locations of coastal NOAA Weather Radio stations are listed on the Station Listing and Coverage page at www.nws.noaa.gov/nwr/coverage/station_listing.html.

Several NOAA Weather Radio transmitters operate as "Marine-Only," broadcasting marine information on a more rapid cycle than is possible with "All-Hazard" transmitters. These are typically established as part of a cooperative effort between the local marine community and the National Weather Service. For information on how to establish a "Marine-Only" NOAA Weather Radio transmitter in your area, contact the National Weather Service.

Many NOAA Weather Radio receivers are also programmed for three additional frequencies: 161.650 MHz (marine VHF Ch. 21B), 161.775 MHz (marine VHF Ch. 83B), and 163.275 MHz. The first two frequencies are used by Canada for marine weather broadcasts; the latter (163.275 MHz) was used by the National Weather Service for earlier weather broadcasts and later for internal coordination in the event of a power outage, but it is no longer in active use.

Most VHF marine radiotelephones have the ability to receive NOAA Weather Radio broadcasts. However, it is recommended that a separate NOAA Weather Radio receiver be carried aboard so that mariners may maintain a simultaneous watch on NOAA Weather Radio and marine VHF channels.

Audio

Recorded voice broadcasts have been largely supplanted by a computer-synthesized voice. Efforts continue to both expand the coverage of the NOAA Weather Radio network and improve the audio quality. The older computer-synthesized voice was a product of six-year-old technology and has been replaced in response to user demands for a clearer, more human-sounding voice system.

Review

Marine radio uses both VHF-FM and MF/HF-SSB. Coastal operations are on VHF-FM, and Channel 16 is the international emergency channel. If you hear an unanswered distress call, you may assist by answering the call and relaying the information to the nearest Coast Guard or local marine patrol office.

Recommended Activities

1. If you live within 50 miles of a seacoast, a major navigable river, or any of the Great Lakes, identify the U.S. Coast Guard station nearest to your community and its contact information.