



MARINE SAFETY ADVISORY

Office of Search and Rescue

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Washington, DC

Safety Advisory 01-22

Maritime Distress Communication Devices

This Marine Safety Advisory addresses maritime distress communication devices available to recreational and commercial mariners. Over the past decade, these devices have proliferated in the marketplace, and there are key differences to consider when purchasing one. Some devices transmit via satellite, while others transmit on terrestrial frequencies, and these devices use different technologies to relay the distress notice. Furthermore, not all devices notify the U. S. Coast Guard directly.

The Coast Guard **strongly recommends** that mariners fully understand the capabilities and limitations of devices when purchasing a distress communication device. It is imperative that mariners know how the devices work and who is notified when a distress signal is transmitted. Below is a list of the common devices, their capabilities, and potential considerations.

The following devices *NOTIFY* the U.S. Coast Guard:

- **Digital Selective Calling (DSC)** – DSC is an internationally recognized radio system protocol to facilitate establishing digital and voice communications between terrestrial-based radio stations on the same network. A radio equipped with DSC can generate a distress alert with vessel ID and position data, and an alert is relayed by other DSC-capable radios. The user must register their Maritime Mobile Service Identity (MMSI) to link the radio to the vessel. Information to register MMSI can be found at <https://www.fcc.gov/wireless/bureau-divisions/mobility-division/ship-radio-stations>. *Failure to do so may delay rescue.*
- **Medium and High Frequency (MF/HF) Radio** – MF/HF-DSC radios are not typically carried by smaller recreational vessels but are useful for larger vessels operating in the open ocean or on transoceanic voyages. The MF/HF-DSC radio operates in the band of 2000 KHz to 18000 KHz and provides digital and voice communications typically within the range of approximately 200-500 miles or farther depending on the atmospheric conditions and propagation. The frequencies 2187.5 KHz, 4207.5 KHz, 6312.0 KHz, 8414.5 KHz, 12577.0 KHz, and 16804.5 KHz are for distress and safety purposes and monitored by the U.S. Coast Guard. The frequencies may also be used for routine ship-to-ship communications with distress communications having priority.

The following frequencies are for distress and safety purposes and monitored by the U.S. Coast Guard:

- 2187.5 KHz
- 4207.5 KHz
- 6312.0 KHz
- 8414.5 KHz
- 12577.0 KHz
- 16804.5 KHz

- **Very High Frequency (VHF) Radio** – The VHF maritime radio operates in the maritime very high frequency band of 156.050 MHz (channel 01A) to 157.425 MHz (channel 88) and provides digital and voice communications within the radio line of sight range (approximately 5-15 miles depending on the antenna height above water). A radio equipped with DSC can use channel 70 (156.525 MHz) for reporting a distress or to contact other stations by entering their MMSI and then switching to a voice channel for further communications. The U.S. Coast Guard monitors channels 16 (voice) and 70 (DSC).
- **Electronic Position Indicating Radio Beacon (EPIRB)** – The EPIRB is an emergency alerting device operating in the dedicated 406.0 – 406.1 MHz distress band monitored by the International Cospas-Sarsat Programme. It may be water-activated or manually activated, depending on the model. Orbiting satellites detect and relay the signals to ground operating stations, which can locate the source and relay the coordinates and associated registration information to the appropriate internationally recognized Rescue Coordination Center worldwide. Newer EPIRBs also include encoded Global Navigation Satellite System (GNSS) position data and an Automatic Identification System Search and Rescue Transmitter (AIS-SART) locating signal. EPIRB distress alerts from U.S. coded beacons, as well as any EPIRB alert located in a U.S. SAR Region, are routed directly to a U.S. Coast Guard Rescue Coordination Center.
- **Personal Locator Beacon (PLB)** – The PLB is a manually activated emergency alerting device operating in the dedicated 406.0 – 406.1 MHz distress band monitored by the International Cospas-Sarsat Programme. Orbiting satellites detect and relay the signals to ground operating stations, which can locate the source and relay the coordinates and associated registration information to the appropriate Rescue Coordination Center worldwide. Newer PLBs also provide an AIS-SART locating signal as well as GNSS position data. Similar to EPIRBs, PLB distress alerts are routed directly to a Rescue Coordination Center based on the beacon location.
- **Maritime Survivor Locating Device (MSLD)** – The MSLD, also called a Man Over-Board (MOB) device, is a personal device intended for use by persons at risk of falling into the water such as mariners and workers on marine installations or docks, or by divers returning to the surface out of sight of their dive boats. The Federal Communications Commission (FCC) requires that a MSLD transmit on at least one of the following frequencies: 121.5 MHz (aviation distress), 156.525 MHz (channel 70), 156.750 MHz (channel 15), 156.800 MHz (channel 16), 156.850 MHz (channel 17), 161.975 MHz (AIS1), 162.025 MHz (AIS2), or include a function intended to send a distress message directly to the U.S. Coast Guard or any other search and rescue organization. MSLDs transmit on frequencies that are received on a device monitored by personnel at the MSLD-wearer's vessel or facility. The devices typically provide only line of sight (5-15 miles) communications and the functionality varies by the device model and the operating frequencies used. *Note, MSLDs may NOT notify a search and rescue authority, such as the U.S. Coast Guard, depending on the device capabilities and operating location.*

The following devices *DO NOT NOTIFY* the U.S. Coast Guard:

- **Satellite Emergency Notification Device (SEND)** – A SEND is a portable emergency notification and locating device, which uses commercial satellite systems. The devices use an internal GNSS chip to gather location information. When the SEND is triggered, this information is sent via commercial satellite to a commercial monitoring agency whose role is to pass the information to an appropriate responding agency based on the device’s reported location. Examples of responding agencies could be local search and rescue authorities, local police, or voluntary search and rescue. At present, no SEND operators have established formal arrangements or procedures with the U.S. Coast Guard for receiving SEND reports. A subscription service is required for a SEND and the service area coverage depends on the satellite service provider and may not provide worldwide coverage. Examples of SENDs are the Garmin inReach and the Globalstar SPOT.

***The following devices
DO NOT NOTIFY
the U.S. Coast Guard
when activated:***

- SEND
- AIS-SART
- Radar-SART



- **Automatic Identification System Search and Rescue Transmitter (AIS-SART)** – The AIS-SART may be water-activated or manually activated, depending on the model. Once activated, the AIS-SART operates on the maritime VHF channel AIS1 (161.975 MHz) and AIS2 (162.025 MHz), and provides a locating message containing the device identification and the position information from an integral GNSS receiver. The AIS-SART typically provides only line of sight (5-15 miles) communications to nearby AIS receivers. This signal is received by the AIS receiver, which provides a notification of SART detected and the location, and if integrated with an electronic chart display and information systems (ECDIS), displays this information on the ECDIS display screen. The AIS-SART is not designed as a distress alerting device, but does assist in locating those in distress.
- **Radar Search and Rescue Transponder (Radar-SART)** – The radar-SART may be water-activated or manually activated, depending on the model. Once activated, the radar-SART listens for a 9 GHz X-Band radar signal and, when one is detected, transmits a response that is displayed by the triggering radar as a line of 12 dots equally spaced by about 0.64 nautical mile (1,185 km) from the center of the radar display. The performance of the radar-SART relies upon nearby vessels having a compatible radar operating in the 9 GHz X-Band. Radar-SARTs do not function with radars operating outside the 9 GHz band, such as S-Band radars. The detection range is limited to the radar line of sight, typically 12-15 miles. The radar-SART is not designed as a distress-alerting device, but does assist the locating of those in distress.

In addition, the following recommendations are made to all owners and operators of recreational or commercial vessels:

- **Life jackets**
 - **Always wear a Coast Guard-approved life jacket while underway.** People rarely have time to locate and don a life jacket during an actual emergency.
 - **Make sure your life jacket fits properly.** People can slip out of ill-fitting life jackets when they hit the water, which immediately decreases their chances of survival.

- **Communication Devices**
 - **Locator beacons can help us find you faster.** Attaching a functional EPIRB to your vessel, or a PLB to your life jacket, and knowing how to use them can help rescuers locate you in an emergency.
 - **Use a marine VHF radio.** A cell phone may go out of range or run out of battery power when you need it the most. Make sure you familiarize yourself with how to use and properly maintain your radio.
 - **Have more than one way to communicate.** It is important to have more than one communication device on your vessel. We recommend having a properly working marine VHF radio, a well-charged cell phone in a waterproof case, and a properly registered EPIRB, PLB, or both.

- **Boating Knowledge**
 - **Know what gear you need.** Get a free safety inspection from the Coast Guard Auxiliary to make sure you have all the gear and safety equipment required by your state and federal laws. Find your local Coast Guard Auxiliary Examiner at <http://cgaux.org/vsc/>.
 - **Some major safety features you should have on your vessel.**
 - Life jackets and a throw-able floatation device
 - Kill switch for the engines
 - Working carbon monoxide alarm
 - Functioning marine VHF radio
 - Fire extinguisher
 - Sound-producing devices
 - Visual distress signals
 - **Take a boating safety course.** The Coast Guard Auxiliary is one of many organizations that offer valuable boating safety courses ranging from electronic navigation to boat handling.
 - **Know your navigation rules.** Know how to properly navigate waterways and maintain lookouts to keep yourself and everyone else around you safe.
 - **Know your vessel's limits.** Vessels carrying too much weight are more likely to become unstable and capsize.



- **Have a float plan**
 - **Tell someone where you're going and when you'll be back.** That way if you don't return, we've got a good starting point to find you.
 - **Check out the Coast Guard Boating Safety app.** You can file a float plan, request emergency assistance, request a vessel safety check, and report pollution and hazards to navigation.

- **Weather and Tides**
 - **Look at the weather and tides before you head out.** It might look like a nice day, but squalls and shifting tides can pose sudden dangers. Safety Alert 07-21 ([USCGSA_0721.pdf](#)) provides excellent tips to prepare for heavy weather events.
 - **Dress for the water, not for the weather.** Just because the weather is warm doesn't mean the water is warm, too. Check water temperatures before you go out and dress accordingly. Extended immersion in water with a temperature less than 95 degrees will result in hypothermia.



The following online resources are available to provide information on these topics.

- [USCG Boating Safety](https://www.uscgboating.org/) - <https://www.uscgboating.org/>
- [National Safe Boating Council](https://www.safeboatingcouncil.org/) - <https://www.safeboatingcouncil.org/>
- [Boating Safety Tips and Resources \(weather.gov\)](https://www.weather.gov/safety/safeboating) - <https://www.weather.gov/safety/safeboating>
- Downloadable USCG Auxiliary Float Plan - <http://www.floatplancentral.cgaux.org/download/USCGFloatPlan.pdf>

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