

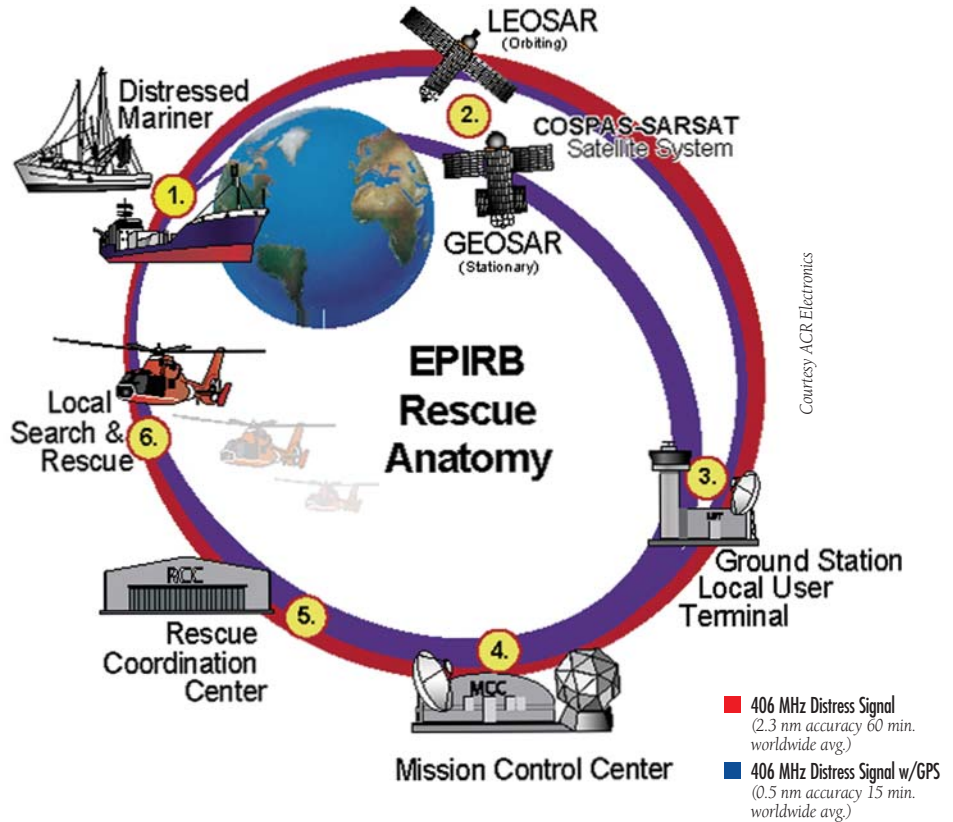
Staying Safe

Essential Electronics

Mention safety and survival to mariners and they picture liferafts and PFDs—personal flotation devices. So far so good, but if electronics don't come to mind also, you could be missing the boat.



In an emergency, with a DSC VHF all you have to do is flip open the cover and push a button. A signal is sent automatically directing other DSC radios to switch to voice monitoring of Channel 16, which is watched full time by the Coast Guard.



The Best Defense

Being prepared to deal with accidents at sea is second best to avoiding unsafe situations in the first place. That's where traditional electronics more than earn their keep. As your first line of defense, your boat's radar, chart plotter and sounder (fish finder) are designed to tell you in detail what's out there and how far you are from danger, whether it's a shoal, land mass, shallow water, navigation marker or another boat. Many electronics feature audible alarms that the captain can set to warn of impending problems such as those just mentioned above and others, including cross-track errors when running or anchors that are dragging when swinging from the hook at night.

Also helping to fend off problems are monitors that track virtually every system aboard a vessel. They let you know if all is well, or if the boat is experiencing a mechanical or other fault that is not yet apparent to the operator. Some of the safety-related functions that monitors track include bilge water levels, number of times a bilge pump runs, exhaust overheating, smoke/fire, engine temperatures and pressures, battery conditions and water depth beneath the keel. For the visually inclined, onboard television monitors are readily available to keep tabs on things in the engine room and other mechanical spaces.

VHF/DSC

Despite the best preparations and procedures, sometimes accidents happen. When you need to call for help in a hurry, DSC-equipped VHF radiotelephones are the answer. Radios with Digital Selective Calling include a very obvious "button" on the face plate. Lifting the protective cover and activating the button sends a burst of information to other vessels in the area that are DSC-equipped. Included in the data are the boat's Maritime Mobile Service Identity (MMSI) and location, if the calling boat's VHF is interfaced with its GPS. The signal also commands other DSC radios to switch to voice monitoring on Channel 16, which the U.S. Coast Guard monitors 24 hours a day. New fixed-mount



SARTs—Search and Rescue Transponders—direct rescuers to a target by emitting signals that are displayed on the rescue boat's radar.

marine VHF's are required to have minimal capabilities of DSC.

Boats with older non-DSC VHF radiotelephones can still contact the Coast Guard directly over Channel 16. Handheld VHF's and cellular phones are excellent to alert others to your situation as long as you aren't operating out of range. VHF's are limited to line-of-sight transmissions, typically about 20 miles. Cell phones usually run out of service range pretty quickly as you head offshore.

GMDSS Lifeboat Radios

An international marine safety agreement requires that lifeboats aboard certain commercial ships carry rugged waterproof handheld radios designed to summon help in an emergency. Equipped with long-life batteries, the no-nonsense handhelds feature a dedicated Channel 16 button and a durable high-gain antenna. Although they're designed to meet the stringent requirements established by the Global Maritime Distress

and Safety System (GMDSS), the lifeboat radios are available to recreational users as well.

EPIRBs/GPIRBs

If you don't have at least one of these aboard, you should. A properly operating EPIRB—Emergency Position-Indicating Radio Beacon—will alert rescue agencies such as the Coast Guard and provide the location. It does this by sending signals to satellites passing overhead. The quickness and accuracy of the fix depends on the satellite coverage in the area. EPIRBs come in a variety of types. The most common are:

Category I

406/121.5 MHz. Float-free, automatically deployed and activated. Detectable by satellite anywhere in the world. Recognized by GMDSS.

Category II

406/121.5 MHz. Similar to Category I, except is manually deployed and activated. Some models are also water activated.

Class A

121.5/243 MHz. Least expensive. Designed to be detected by overflying commercial or military aircraft. Although satellites were designed to detect these EPIRBs, that coverage is limited. Alerts may be delayed for several hours. The Coast Guard no longer recommends Class A, B, C or S EPIRBs.

GPIRBs take a more proactive approach (the "G" is for GPS). Equipped with an internal GPS, a GPIRB determines its location and broadcasts the coordinates on 406 MHz to rescue agencies via geostationary and polar-orbiting satellites. The GPIRB updates and broadcasts its position every 20 minutes or so.

PLB

Weighing about a pound and just larger than the palm of your hand, a waterproof Personal Locator Beacon can be carried in a pocket and activated in a man-overboard sit-

uation. It transmits on 406 MHz, sending unique digitally coded signals via satellite, and also on 121.5 MHz, the search and rescue homing frequency.

SART

Another piece of safety equipment required aboard some commercial vessels by international regulations is designed to assist rescue crews locate survival craft. Called a Search and Rescue Transponder (SART), the flashlight-size device responds to pulses emitted from standard 9 GHz X-band radars by transmitting signals that identify the range and bearing of the survival craft on the rescue vessel's radar screen by "painting" it with a series of arcs made up of in-line dots.

SSAS

Although SSAS—Ship's Security Alert System—is not a traditional type of safety electronics, it could save lives nonetheless. There are several varieties of the device, but in basic terms the equipment sends encoded messages to specific authorities for processing by military and law enforcement agencies alerting them to a security problem aboard the vessel. A GPS interface regularly updates the latitude and longitude of the vessel, providing the security agencies with accurate location information. The device is designed to meet security requirements under the Maritime Transportation Security Act for some types of ships on international voyages. Recreational vessels sailing in dangerous waters should consider having one aboard.

ME



An SSAS alerts authorities that a security problem exists aboard.



PLBs—Personal Locator Beacons—are designed to signal for help in an emergency via a satellite link.