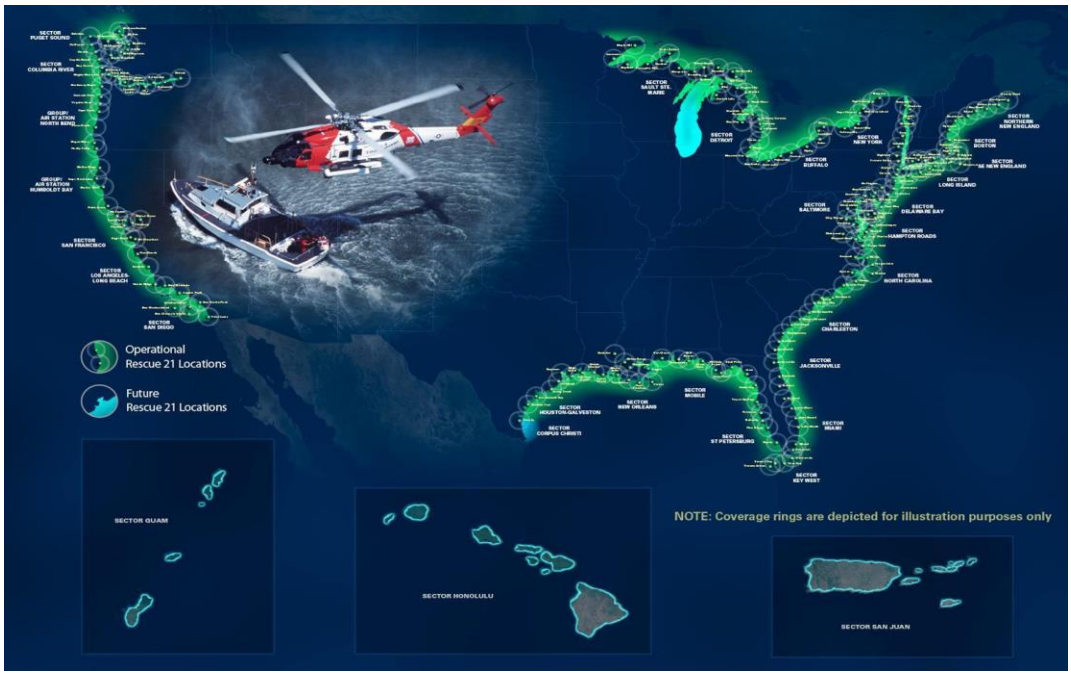
Rescue 21 - Taking the "Search" out of Search and Rescue

By Keith Wohltman, U.S. Coast Guard Auxiliary Flotilla 95

MARCO ISLAND, FL – Your offshore fishing trip has turned into a life and death situation. Your fishing buddy is experiencing chest pains and you need medical help. You quickly use your VHF-FM marine radio to call the Coast Guard on channel 16. What you may not realize is that the moment you initiate that Mayday call, the Coast Guard's Rescue 21 system is locking in on your signal. Even if you don't know exactly where you are, the Rescue 21 hardware will find you.



A graphic representation of Rescue 21 locations. Photo from coastguard.dodlive.mil

Rescue 21's design only requires the system to receive a 1 second transmission of a 1-watt transmission from a 2-meter height at 20 nautical miles (nm). Basically, this would be you on your boat with a handheld portable radio.

The system immediately records and digitizes your message. Their 300 foot plus radio towers contain direction finding capabilities and calculate the origin of your radio signal. This creates a "line of bearing", (LOB). Automatically, your audio message and LOB are forwarded to the nearest Ground Center. There, appropriate resources are deployed immediately to your location. This can be planes, boats, or helicopters. Rescue can be started while you are still making your call.

The LOB is just that, a line pointing in the direction of your boat. But where on that line are you exactly? The good news is that in many instances, a second Rescue 21 tower has picked up your signal, and between the two they can pinpoint your location.

How well does this work? Well, the Coast Guard reported that over 98,000 **Search and Rescue** (SAR) cases had been conducted. This equates an average over 1,000 SAR cases per month. Considering that Rescue 21's reached Initial Operating Capability (IOC) in December 2005, I would say it is working very well. The Coast Guard completed deployment of Rescue 21 in October, 2017 and covers more than 95,000 miles of coastline, navigable rivers and waterways. The system is now operational along the coasts of the contiguous United States; Hawaii; Puerto Rico; Guam; the U.S. Virgin Islands; the Northern Marianas Islands of Saipan, Tinian and Rota; in parts of Alaska; and in much of the Mississippi, Missouri and Ohio rivers and their major tributaries.

How effective is the system? The Coast Guard reported the following:

> "In one incident that highlighted the unique capabilities of the Rescue 21 system, a fisherman was rescued after 12 days missing at sea. The fisherman's radio antenna had been lost in a storm, and in desperation he used a shirt hanger as a makeshift replacement. He managed to send a momentary distress call, but it was too garbled for Coast Guard watchstanders to discern his location. However, the call was picked up on several Rescue 21 towers, and the system's direction-finding technology identified his position. The Coast Guard diverted a nearby Navy vessel, and the fisherman was rescued."

Can you improve this system--absolutely. Since 1999, any newly designed marine VHF radios are required to include **Digital Selective Calling**, (DSC). DSC is used to transmit and receive distress signals and to relay emergency and safety calls and automatic alerts. DSC enabled radios allow you to send a Mayday message by pressing a single button. VHF radios equipped with DSC must have a **Maritime Mobile Service Identity** (MMSI) number to function. You must register your radio's MMSI. You can easily register your MMSI with BoatUS or SeaTow. The MMSI nine-digit number can be thought of as the phone number for your boat. With the MMSI registered, activation of the DSC button transmits all the information about you and your boat. That allows you to spend more time helping your friend.

Can you make it even better? You sure can. If you have a GPS onboard your boat, connecting the GPS to the VHF radio will send the latitude and longitude along with all the information in the MMSI database. Pushing a single button gives the Coast Guard your information and your location and that takes the search out of search and rescue. Many new VHF radios come equipped with an internal GPS that eliminates the need to connect your chart plotter to the radio.

One additional benefit of the Rescue 21 system is that it can pinpoint Mayday call hoaxes and save deployment of resources.

Improvements and enhancements to the Rescue 21 system are being planned. The Coast Guard has developed mobile, deployable towers and electronics packages that can help restore

communications after natural disasters. Rescue 21 installations demonstrated “particular robustness during Hurricane Sandy,” Deputy Project Manager Eugene Lockhart said, helping the Coast Guard coordinate the interagency command, control and communications essential to disaster recovery.

For more information about registering your DSC-equipped VHF radio's MMSI, go to: BoatUS's website, https://www.boatus.com/mmsi/ or SeaTow's website, https://www.seatow.com/tools-and-education/mmsi

For more information about safe boating courses Joe Riccio, (239)-384-7416 or CGAUXCOURSES@GMAIL.COM.

To schedule your **FREE** Vessel Safety Check, please call: John Moyer, (239)-248-7078 or Coast Guard Auxiliary Station – Flotilla 95, (239) 394-5911 or email John at Jmoyer1528@aol.com.

For those interested in joining Flotilla 95, USCG Auxiliary, please call Bob Shmihluk at (215) – 694-3305