

## **U.S. NATIONAL IMPLEMENTATION TASK FORCE GMDSS INFORMATION BULLETIN**

### **GMDSS AND THE RECREATIONAL BOATER**

#### **General Background**

This Information Bulletin provides a brief overview of the Global Maritime Distress and Safety System (GMDSS) and how it affects recreational boats. The GMDSS is a major update of the international rules and equipment requirements governing safety radio equipment, which has been required on large ships since 1 February 1999. Recreational vessels are not required to participate in GMDSS but will find that traditional maritime radio systems are being upgraded to include automated watchstanding and calling services on large vessels and on the Coast Guard shore radio networks. GMDSS is being implemented globally including coastal regions and port areas.

#### **Marine VHF Radio under GMDSS**

Marine VHF radio is the primary GMDSS system used by recreational vessels. Citizen Band Radio and Cellular phones are not part of GMDSS and use of those systems will not change. Cellular phones have a place on board and provide an added measure of safety, however, the Coast Guard does not advocate cellular phones as a substitute for the VHF maritime radio system. VHF maritime radios were designed with safety in mind. If you are in distress, your call can be received not only by the Coast Guard but also by other ships that may be in the vicinity. A VHF radio also helps ensure reception of storm warnings and other urgent marine information broadcasts which are announced by the Coast Guard on channel 16. Timely receipt of these broadcasts may save your life. Coast Guard vessels and aircraft can home on your VHF signals to help locate you. Additionally, your VHF marine radio can be used anywhere in the United States and overseas.

#### **FCC VHF Rulemaking**

The Federal Communications Commission (FCC) issued a Report and Order establishing a DSC equipment requirement for other users of MF and VHF radio. The FCC action has thus begun a very gradual shift to DSC by requiring new models of MF and VHF radios sold in the U.S. to have at least a simplified DSC capability. Radios without DSC, which are presently 'type accepted', can continue to be manufactured and sold indefinitely. Portable handheld VHF radios will not be required to have DSC. The technical specifications for DSC were developed for international use but the FCC accepted a simplified version recommended by the Radio Technical Commission for Marine Services (RTCM) for use by U.S. vessels that are voluntarily equipped. The FCC Rules for several years permitted the RTCM SC-101 minimum standard but that option has since been withdrawn. The GMDSS Task Force notes that the SC-101 VHF radio can send distress alerts adequately but is difficult to operate for other functions. The Task Force therefore recommends the International Class "D" VHF-DSC standard as more satisfactory for general use.

#### **Digital Selective Calling (DSC) on VHF**

Distress alerts sent by DSC include the vessel's identification and position if the transmitter is connected to a GPS or Loran receiver, a great help to the Coast Guard. DSC equipped marine radios use a digital calling signal on VHF channel 70 to transmit routine calls and distress alerts. To enable these automated functions, the owner must register for an MMSI number for identification (see MMSI paragraph below), embed the MMSI in the radio, and connect the navigation receiver. DSC calls may be made to a specific station or to "all ships" and such calls indicate the channel on which to reply for follow-up communications. DSC radio users need to understand the basic operation of the radio, how DSC provides an automated watch, the importance of registering the radio identity and keeping the radio on and tuned to the calling and distress channel. Recreational vessels are not required to use DSC but are permitted to use it if desired. There is an excellent tutorial on the use of DSC on the BOATUS website at [www.boatus.com/mmsi](http://www.boatus.com/mmsi).

#### **Coast Guard VHF Shore Network**

The Coast Guard's shore network of VHF stations is now being upgraded for DSC but the upgrade cannot be completed until about 2011. Even after completion of the DSC upgrade, the Coast Guard plans to continue the watch on channel 16, the distress and calling channel, for the benefit of boats without DSC. The international rules have also been changed to require large ships to continue the voice watch on channel 16 indefinitely to provide for interoperability between DSC and non-DSC vessels.

### **Medium Frequency and High Frequency Radios**

The Medium Frequency (MF) maritime radio bands using 2182 kHz as the voice distress and calling frequency have been upgraded using the DSC Distress and Safety calling frequency 2187.5 kHz. Similarly, there are DSC calling channels assigned in each of the High Frequency (HF) maritime radio bands (4207.5, 6312.0, 8414.5, 12577.0, and 16804.5 kHz). The Coast Guard has already upgraded its HF network for DSC operation but is currently studying options relative to upgrading the shore MF networks. The Coast Guard has stated that it plans to continue the shore watch on 2182 kHz indefinitely to accommodate vessels without MF-DSC. Recreational vessels are not required to use DSC in the MF/HF bands and may continue to use non-DSC MF radios and make voice calls on 2182 kHz if they hold the necessary Ship Station License issued by the FCC. Manufacturers are permitted to continue to sell type accepted MF models indefinitely but must offer at least the simplified DSC capability on new models for use by voluntary vessels. Large ships were permitted by international rules to discontinue the watch on 2182 kHz 1 February 1999 but recent FCC action has extended the 2182 watch requirement for U.S. ships.

### **Maritime Mobile Service Identity (MMSI) Numbers**

The new DSC calling identity is the nine digit Maritime Mobile Service Identity (MMSI) that is assigned by the FCC to vessels desiring or required to use DSC in the VHF, MF, and HF maritime radio bands. The way to get an MMSI number assigned is to apply to the FCC for a radio station license. Station licenses are no longer required for recreational vessels less than 65 feet in length operating only on VHF exclusively in U.S. waters. The FCC has authorized assignment agents to collect the boater's identification particulars and to assign MMSI numbers. These organizations can make MMSI assignments on line or by calling the toll free number and there is no fee for the service:

BoatU.S.	<a href="http://www.boatus.com">www.boatus.com</a>	1-800-395-2628
Sea Tow	<a href="http://www.seatow.com">www.seatow.com</a>	1-800-4-SEATOW (800-473-2869)
U.S. Power Squadrons	<a href="http://www.usps.org/php/mmsi">www.usps.org/php/mmsi</a>	

### **Other GMDSS Radio Safety Systems**

There are other components of the GMDSS which have proven benefits for maritime safety and which can be used by recreational vessels on a voluntary basis. The satellite Emergency Position Indicating Radio Beacon (EPIRB) is a valuable safety system for boats going well offshore and while usually purchased, can now be rented for brief periods from Boat U.S. outlets. A simplified EPIRB called a Personal Locator Beacon (PLB) operating on 406 MHz is also available for use by recreational vessels. Registration of the EPIRBs and PLBs with the National Oceanic and Atmospheric Administration (NOAA) is mandatory. Each EPIRB and PLB package contains the necessary instructions and proper registration ensures that the Coast Guard will be able to obtain information that could prove essential in providing you assistance when needed.

### **GMDSS Satellite Communication Systems**

The Inmarsat B, C, Mini-C and the new Fleet 77 systems are approved for GMDSS use. The Inmarsat-M, mini-M, Fleet 33 and Fleet 55 systems, while not GMDSS approved are widely used by voluntary vessels. There are also regional satellite systems and global systems such as Iridium and Globalstar, which, while not GMDSS approved for larger vessels, can be very useful for communications on voluntary vessels. When using non-GMDSS systems for distress calls it would be prudent to know the telephone number of the local Coast Guard station and the nearest Rescue Coordination Center (RCC).

## **Watchkeeping on Marine Radios**

All vessels over 20 meters in length are required to stand watch for voice calls on VHF channel 13 or 67, the bridge-to-bridge safety channels which are restricted to low power communications involving safety of navigation, when operating within the 12 mile limit. FCC Rules require that all users of marine radios, including voluntary users, keep the radio turned on and watching the appropriate emergency channel at all times when underway and not working on another channel. In the case of regular VHF, the watch is maintained on channel 16, for VHF-DSC equipped vessels, the watch is maintained on channel 70. For MF Radios the watch is maintained on 2182 kHz and for MF-DSC radios on 2187.5 kHz. There are similar requirements that voluntary vessels with HF-DSC radios and Inmarsat Satellite terminals cruise with the radios turned on and watching the emergency channels (8414.5 kHz plus one other HF DSC frequency)..

## **Marine Safety Broadcast Systems**

There are also three GMDSS and one non-GMDSS broadcast systems which provide Marine Safety Information (MSI) including weather forecasts and warnings, notices to mariners, and distress alerts. The non-GMDSS system is the U.S. NOAA Weather Radio, a continuous voice broadcast on VHF frequencies that provides overlapping coverage to about 20 miles offshore. The near coastal GMDSS system is Coast Guard VHF broadcasts of urgent marine warnings that are preceded by an announcement on channel 16. The Coast Guard also makes intermediate range Navtex broadcasts from selected stations on 518 kHz, which provide coverage to about 200 miles offshore in northern waters and up to 100 miles off southern shores. Scheduled Navtex broadcasts are printed out or stored in a Visual Display Unit (VDU), which omits repeats of messages already received. Recreational vessels may prefer to use one of the new paperless Navtex receivers with a VDU. High seas GMDSS SafetyNET broadcasts are transmitted on the Inmarsat-C system and provide near global coverage. SafetyNET broadcasts are directed to one or more of the 16 global Nav/Met areas but can also be directed to a smaller defined geographical area. The Coast Guard also makes scheduled MSI broadcasts on HF frequencies for long-range coverage.

## **False Alerts in GMDSS Systems**

An excessive number of false alerts have been experienced in all GMDSS systems, especially DSC and Inmarsat-C, and adversely affect Coast Guard workloads. Compulsory ships are required to carry certified GMDSS operators but recreational vessels are permitted to use any GMDSS system appropriate for their operations without any operator qualification. Since the large percentage of false alerts is attributed to a lack of operator competence, it is especially important that recreational boaters receive instruction in the proper operation of GMDSS equipment. Determining an accurate position is obviously important for search and rescue cases. If you are equipped with a GPS or Loran navigation receiver, you should enhance your safety by connecting the navigation receiver to any of the GMDSS DSC and Inmarsat systems that are all capable of transmitting a pre-formatted distress alert which includes position.

## **The GMDSS Task Force**

Additional information on the GMDSS including broadcast schedules can be obtained from Publication No. 117 "Radio Navigational Aids" published by the National Geospatial-Intelligence Agency (NGA). This Bulletin was approved on 24 July 1997 and updated on 16 May 2002 and 6 August 2009 by the National GMDSS Implementation Task Force, a U.S. Coast Guard sponsored group established to coordinate implementation problems, recommend their resolution, and assist in disseminating GMDSS information. Task Force documents may be accessed on the Coast Guard GMDSS Web Site at [www.navcen.uscg.gov/marcomms](http://www.navcen.uscg.gov/marcomms) (click on GMDSS, then on GMDSS Task Force). The Task Force is soliciting feedback on problems encountered and invites responses to Captain Jack Fuechsel, Task Force Executive Director 1600 North Oak Street, #427, Arlington VA 22209; phone 703-527-0484; or E-mail: [gmdss@comcast.net](mailto:gmdss@comcast.net). Reproduction and wide dissemination of this document is encouraged.