DIGITAL SELECTIVE CALLING (DSC) TUTORIAL

INTRODUCTION - This paper describes in general terms how to set up and use Digital Selective Calling in your DSC capable VHF radio. You can start using many of these calls by just entering a MMSI (Maritime Mobile Service Identity) into your radio but to use this marvelous capability to its fullest extent you should also connect your radio to a GPS. The terms used in each radio owner's manual vary slightly so this paper is generic because of the minor differences. The common thread is that most of the procedures are easy to understand by reading the VHF/DSC Radio Guide and/or Owner's Manual and following the prompts on your radio. Prompts will lead you through each type of call, once you understand the terms included below. The biggest Lesson Learned when trying these procedures has been to have reading glasses handy and not to rush through any step.

MMSI ENTRY – DSC (Digital Selective Calling) will not work in your VHF radio until you have entered a Station Identity/MMSI into it. Before you can send or receive DSC messages, including Distress Calls, you must enter the MMSI following the Owner's Instruction Manual for your specific model of VHF.

Each boat's nine digit MMSI comes from either:

1. **FCC issued Ship Radio Station Authorization (Ship Station License)**
2. **Boat US at www.boatus.com/mmsi**
3. **Sea Tow at www.seatow.com/boating_safety/mmsi/mmsiRegister.asp**
4. **US Power Squadron at www.usps.org/php/mmsi/home.php**

Only one MMSI should be used by each vessel. The same MMSI should be used for all VHF radios on that vessel.

CONNECTING GPS TO DSC/VHF RADIO – Following the Owner's/Instruction Manuals for both pieces of equipment find their "NMEA In" and the "NMEA Out" wires and join the GPS "Out" to the VHF "In" and the GPS "In" to the VHF "Out" wires using a plug or adaptor recommended by the radio manual, crimped wire butt connectors, solder connections or a small Terminal Strip (NOTE: wire colors may not match). Check the "Setup" menus of both pieces of equipment to be sure that they are both on a compatible setting . When you see position data (Lat/Long) displayed on the VHF you have correctly connected the wires and have a working DSC capability ☺

PROGRAMMING ADDRESS IDs – Many VHF radios will hold up to 100 Individual and Group IDs (MMSIs). MMSIs of all boats and groups that you will talk to (on a cruise, e.g.) should be pre-programmed into your radio's Directory. Some radios offer the option of manually entering MMSIs before each call.

TESTING DSC – Display of GPS position (Lat/Long) on a VHF/DSC Radio indicates the GPS and radio are properly installed. Class D DSC radios purchased after 2011 have a Test Call capability that will trigger a response from Rescue 21 stations within range. Test Calls to the identity 003669999 should be limited to once a week. Other DSC tests should be made using an Individual DSC Call to another DSC-equipped radio.

INDIVIDUAL DSC CALL (SEND) - You can 'discretely' call another boat or station and shift their VHF radio to any working channel that you choose, without first calling them on Ch-16 or 9. Each radio varies slightly on how this is done so you must consult your manual on how to do this. Basically, you will select 'Individual Call', 'Address', and 'Intership Channel' from your DSC Menu by following the prompts on your radio's LCD Screen. Once the radio is 'Ready' you will be prompted to send the call and then be notified when the transmission is complete. When the receiving station acknowledges receipt of the call both radios will automatically shift to the Intership Channel that you have selected. This shift is normally accompanied by a beep. You can then talk to the boat or station you have called following normal R/T procedures. After the call you simply shift your radio back to whatever channel you normally listen to (Ch-16).

Updated as a HANDOUT for *Safety for Cruising Couples* Seminar hosted by CCA and RSYC on 2 March 2013

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INDIVIDUAL ACKNOWLEDGEMENT –Acknowledgements can be pre-programmed to happen automatically or manually. In the Manual Mode the receiving boat or station must select and send back an "Able to Comply" transmission before both radios automatically shift to the Intership Channel chosen by the caller. In the Automatic Mode this transmission is sent when the receiving unit turns off the alarm/beep that alerts them to each incoming call. Prompts on the receiving radio will normally tell you how to do this and must be carefully followed

POSITION REQUESTS. When you want to send your own position and request the position of a specific boat or station listed in your directory you select 'Position Request' and 'Address' from the DSC Menu on your radio and follow the prompts to transmit the request. Once the request is transmitted an acknowledgement from the receiving boat will include their position. Follow your radio's prompts to read their position. Some plotters will automatically display this position on their chart. No acknowledgement means that the receiving boat is not in your communication area or that it chose to ignore your request.

POLLING REQUESTS. When you want to know if a specific boat is in your communication area you can find out by sending a 'Polling Request'. Select Polling Request and the boat's Address from your DSC Menu and follow the prompts to transmit the request. Once the request is transmitted an acknowledgement from the receiving boat will include their position. Some plotters will automatically display this position on their chart. No acknowledgement means that the receiving boat is not in your communication area or that it chose to ignore your request.

ACKNOWLEGEMENT OF POSITION AND POLLING REQUESTS. When you receive a request from another boat or station your radio will beep and show you the type of request, who sent it and how to reply or ignore the request. If you initiated the request the return call will also cause your radio to beep and show you who responded, then prompt you on how to display the position received.

GROUP CALL. Group Calls are used to transmit messages/announcements to a specific group only. Both the calling boat and the receiving boat must have the Group MMSI in their radios. The receiving boats all receive a VHF beep and must acknowledge the call similar to the way they acknowledge an Individual call before their radios will shift to the Intership channel selected by the caller. There is also an option to ignore the call.

***Always follow the prompts when you hear a beep, ringing, or an alarm sound*.**

***WARNING REMINDER*. Care should be used not to transmit an "All Ships Call" (routine, safety or urgency) or a "Distress Call" while using the non-emergency features of Digital Selective Calling. Doing so will bring immediate response from USCG. If you inadvertently transmit one of these calls you should immediately turn it off and cancel it by voice on VHF Ch 16 on High Power. DISTRESS CALLS are made only when the Master or Captain determines that the boat or a person is in distress and requires immediate assistance. Distress Calls are made by pressing the Distress/Red button for 5 seconds. Detailed information about the nature of a distress can be selected before sending the Distress Call, if you have time, by following the prompts on your radio before pressing the button.**

ALL SHIPS CALLS allow contact to be established with other vessels in your communications area without having their ID in your DSC Calling Directory. They are classified ROUTINE, SAFETY or URGENCY. URGENCY calls are similar to PAN PAN Calls and are given when a vessel may not be truly in distress but has a problem that may lead to a distress situation requiring assistance. SAFETY CALLS are similar to SECURITY Calls and are given when safety information needs to be transmitted to other vessels. When another vessel transmits an Urgency or Safety Call your radio should sound an emergency alarm and prompt you to VHF Ch 16 for the voice announcement.

***IMPORTANT SAFETY NOTE*. DSC Distress Calls notify boats and stations in the immediate area in real time that you require assistance. A 406 EPIRB can take up to two hours to notify Rescue Centers ashore that you require assistance. DSC Distress calls give your exact position while an EPIRB gives tracking stations info to calculate your position within two miles. The locating beacon on an EPIRB requires a direction finder to locate you within that two mile circle. 406 GPIRBs (an EPIRB with a built in GPS) will reduce the time and give the Rescue Control Center an exact position which can be relayed to vessels in your area but this also takes time. The best combination appears to be to have your DSC VHF plus a 406 GPIRB for offshore rescues. For inshore/near shore rescue it is hard to find anything better than a DSC VHF equipped radio, and the price is minor.**