Group DSC Primer for Fleets, Racing and Safety: Group Calls on your VHF and SSB

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A new use for Digital Selective Calling

Not just for safety anymore, DSC can be used to contact another boat for purely non-emergency reasons, such as finding other boats positions and automatically plotting them on your chart-plotter. Not only that, you can set your radio to be part of a “group” to send and receive alerts intended for a fleet of vessels. This capability may serve any fleet, be it yacht club, regatta, race or just a group of friends.

The DSC Basics

Every DSC-capable VHF and SSB (1.) should be connected to a GPS and be programmed with the vessel’s MMSI(link is external) number.(1) Many VHF’s now have an internal GPS. If your navigation system supports receiving DSC information from your VHF radio, it is highly recommended that the radio also be connected to send DSC information to the navigation system. A DSC VHF can query another boat’s VHF and automatically receive a reply with the second boat’s position. Emergency VHF transmissions automatically have the position embedded. This will enable newer chart-plotters to automatically plot the position of emergency and non-emergency boat positions received by DSC. (2.)

It is important to have a remote microphone at the helm both to communication with other marine traffic, and to enable an emergency transmission from the masthead antenna while at the helm. To send an emergency transmission, lift the cover on the red button and hold the button down for FIVE seconds! Hold and wait for the beep! Please see your instruction manual.

MMSI ("Maritime Mobile Service Identity") is a unique number, like a phone number, and can be obtained from your national registrar (FCC in the US) or, for US use only, from BoatUS(link is external) or others. The FCC license has a fee and may be used for individual and group calls, and may be used internationally. The BoatUS MMSI is free, cannot be used for international travel, can be used to make group calls, and cannot be used to generate a new group MMSI. Only one MMSI number should be used on all equipment used on a boat (VHF, SSB, VHF handhelds, AIS, AIS emergency beacons). If your boat drags or your dinghy losses its engine power, one VHF can query the other's position to track down the boat or dinghy!

The FCC in the United States does not allow a user to change an AIS MMSI: if a change is desired, it must be done by an authorized dealer or by the factory. If you ever decide to travel out of the US, it would be wise to obtain an FCC MMSI for the boat, rather than send the AIS unit back to the dealer. This MMSI may stay with the boat when it's sold, but it is best to ensure that it stays with the vessel so original equipment does not have to be returned to the dealer or factory.

https://sailingeurybia.com/transferring-your-mmsi/
https://www.navcen.uscg.gov/?pageName=mtMmsi

An FCC issued MMSI is also listed in the international database provided to international rescue groups, while a BoatUS MMSI is not.

It is preferable to have an FCC MMSI, so that the MMSI may be retained and the boat can be sailed in foreign waters, after the sale, without changing the MMSI entered into electronics at the dealer or

manufacturer. In an emergency, a Boat US MMSI cannot be referenced or found in the International directory, and the boat cannot be identified by MMSI out of the United States.

The MMSI identifies your vessel when making or receiving a DSC call, whether it's an emergency transmission or just a normal contact. VHF and SSB radios have directories that allow users to store commonly-called MMSI's for ease of use. Some older radios do not have a separate group directory; newer radiodss do.

Procedures vary for placing DSC calls, depending on the VHF and SSB model, but all include selecting the MMSI of the recipient, specifying the nature of the call and sometimes the working channel, and initiating the transmission. The recipient will hear an alert tone on their radio and depending on radio model and nature of call, the radio may switch automatically to a pre-selected channel to complete the traffic. Some radios require accepting and acknowledging a DSC call before switching to the channel proposed by the caller, by pushing a button on the microphone. Please see your radio's instructions. Both VHF and SSB radios have a provision for making test calls to the US Coast Guard to see that they are working.

Groups

It's now possible to create groups and to contact all group members at once. As it turns out, this is very simple. If you add a "Group MMSI" into your group directory, then calls transmitted to that group will cause all radios in the group within propagation range, to respond and change to the working channel. For a regatta, rally, fleet or friends cruising in company this may be a huge convenience.

No separate license, fee or special programming is required.

Group MMSI

Every DSC radio has a directory to enter the MMSI numbers for boats that are called frequently, and newer radios have a separate directory for group MMSI numbers. One does not need to change your MMSI

or a get a separate license to use group MMSI calling. Group calls allow radio calling to all members of a group that have the group MMSI call entered into the group directory.

There is no formal program for issuing Group MMSI's. A Coast Guard(link is external) site explains how you may generate your own legal one. Simply put, you take an existing MMSI, drop the zero from the end and add a zero to the front, so 123456780 would become 012345678.

When you add this number to your VHF or SSB radio group directory, the radio will become part of that group. Calls placed to the group will now be received by all members within range (usually about 25 nm for VHF, and up to thousands of miles for SSB, depending on frequency and propagation) including YOUR radio.

OCC Members Only: We have created such a number.
For the OCC fleet, group MMSI is 023200173

This should be placed as an entry in your group directory, since you want to be part of this group for both send and receive. When you enter a harbor, you can call, with one group VHF call, all OCC members in the harbor for cocktails! If you make the same call on SSB, you may have invited hundreds of boats from around the world.

There are smaller areas of the world, each with their own MMSI, to allow emergency calls within this area to all boats positioned with a likelihood of giving quick aid.

http://www.bruneibay.net/bbradio/bbrNAVAREAgroupIDs.htm

For a round the world cruiser, it is important to realize that there is a big change when you enter the Pacific. A world cruiser leaving the Atlantic for the Pacific would be much better served if there was more widespread knowledge of the need for SSB DSC calling in the Pacific because of the distance and paucity of rescue services. It is much harder to coordinate anything at distance with a satellite phone. Many

longer yacht races in the far-Pacific (not the Transpac or Pacific Cup) require DSC SSB installation and monitoring, since satellite phones have limited means to summon local assistance. (3.)

For Atlantic crossings, or any passages beyond the range of shore S&R services, the report into the sinking of the Chiki Rafiki has a similar message. MAIB chief inspector Steve Clinch stated:

> "I hope that this report will serve as a reminder to all yacht operators, skippers and crews of the particular dangers associated with conducting ocean passages, and the need for comprehensive planning and preparation before undertaking such ventures.
>
> On long offshore passages, search and rescue support cannot be relied upon in the same way as it is when operating closer to the coast, and yachts' crews need a much higher degree of self-sufficiency in the event of an emergency."

Yacht crews can create mutual support by traveling in groups and maintaining 24/7 VHF and/or HF/SSB communication via DSC calling. So they can help each other.

Benefits of groups

Boat-to-boat VHF and SSB DSC group calling creates significant day-to-day benefits.

1. Radios now have an "extra set of ears" on watch, listening for calls from the group(s) you're affiliated with. You can leave the radio on VHF 16 as required and still not miss the DSC or group fleet calls. You can listen with the volume turned down at night, and the radio will wake up and ring for a DSC call to you. If you leave your SSB on scan, the radio will listen in a quiet mode (not wake sleepers) and only wake up with sound when your MMSI or a group MMSI in your group directory is called. This is only limited by amperage and

battery usage, but most SSB installations are conservative in listen mode.

I suggest you keep the VHF on at night with volume down. If you see a boat, dragging or in trouble, and it does not answer at night with a voice call on 16, try making a DSC call. The use of Navarea MMSI is more designed for SSB, but if you spot a boat dragging, can't see the name, and they don't answer on voice, the only way to reach them (other than by dinghy) maybe a general DSC call by VHF Navarea MMSI or CCA group MMSI if you know it is a CCA member. I recommend adding the Navarea MMSI and CCA Group MMSI to the VHF group directory for your location. The Navarea group MMSI for USA (East) is 036904000, and for USA (West) is 036912000.

DSC SSB radios quickly scan six frequency in six different marine bands to listen for a DSC call with your MMSI or a group MMSI in your group directory. To call someone, a likely marine band is chosen based on time of day and likely propagation. If this is unsuccessful, a different maritime band can be tried again.

At present, DSC SSB radios, like the ICOM 801, 802 and 803, scan and call on duplex channels (apart from 2Meg) for General calls. This limits General DSC calls to shore stations and prevents General DSC calls (apart from 2Meg) to other yachts. But there are no shore stations listening to DSC General duplex channels. HF/SSB DSC radios must be reprogrammed for simplex sending and receiving of DSC calls for General calling, so that other yachts or shore stations can be reached.

"This frequency adaptation for the General receiver is recommended by both Cmdr (US Navy Ret) Terry Sparks (see www.made-simple-for-cruisers.com) and Bob Smith (Yachtcom, UK see www.yachtcom.co.uk) in their revised frequency scanning plan for the DSC General receiver in ICOM radios. This adaptation converts all the General DSC watch frequencies to simplex to facilitate yacht- to-yacht AND yacht-to-shore and station-to-yacht use, rather than solely yacht-to-shore station use.

See:
http://www.made-simplefor-cruisers.com/-%20ICM802/Appendix%20XI%20DSC%20calling%20upgrade%20for%20Cruisers.pdf

AND

http://www.made-simplefor-cruisers.com/-%20ICM802/ICOM%20DSC-EMERG %20Frequencies.pdf

This re-programming of the DSC General watch frequencies in Icom radios has been in successful operation for years in the UK/Europe and in the USA, based on the (co-incidentally identical) strategy of both Terry Sparks (see www.made-simplefor-cruisers.com) and Bob Smith (see www.yachtcom.co.uk).

Making this adaptation to the standard General DSC watch frequencies enables longer range yacht-to-yacht DSC and MMSI calling. Yachts in a race, rally or cruising fleet can maintain a constant scanning watch for General DSC calls from other participants, utilizing the quiet/muted functionality of the DSC radio's speaker. Yachts helping other yachts to deal with problems before they become a Distress issue, is much easier and convenient with this configuration."
From:
http://www.bruneibay.net/bbradio/Documents/HF-SSB%20DSC-EasyInstallation.pdf

This re-programming of the general scanning channels does not change the simultaneous scanning of distress channels enabled by the secondary antenna on an Icom 801, 802 or 803. Both scans can be enabled full time if the secondary antenna is installed. This can be a simple wire in a hanging locker or in the overhead. This enables DSC SSB radios to simultaneous scan for all general and emergency traffic. One has to select "scan" to turn on general scanning receive. Emergency scan is on full time if the radio is on. DSC SSB test calls can be checked with an automatic acknowledgement from any US Coast Guard, except Guam, on 4207.5 kHz. (4.)

2. Yachts traveling together can provide quick mutual support, coordinate a cruise, or get advice about weather, anchorages, sailing conditions, technical problem etc. This semi-private multi-party conference call is a perfect solution for a cruise. This allows quick, nearby support, advice or assistance from other cruisers, before it becomes an emergency. The advantage of this on a cruise would be a group call would ring on every boat on the cruise within VHF or SSB range and switch everyone's radio, when acknowledged, to a group working frequency. (5.) (6.)

Some additional DSC items for Emergencies and Urgency

There are some USCG numbers you may wish to have in your radio for emergencies. Program these into your INDIVIDUAL, and not group, directory unless you want to be listening in on group Coast Guard calls. (4.)

Ship Group. The U.S. Coast Guard group ship station call identity is 036699999. Calls to all U.S Coast Guard ships within VHF range can be made by entering 036699999 in the INDIVIDUAL directory and then placing a DSC call.

Shore Group. The U.S. Coast Guard DSC group coast station identity is 003669999 (note the two zeroes. A call goes to USCG shore stations only). Calls to all Coast Guard coast stations within VHF range can be made by entering 003669999 in the INDIVIDUAL directory and then placing a DSC call. This will allow discussions of a routine, Securite or Pan-Pan nature to take place with the Coast Guard easily before a situation becomes a Mayday.

Some radios do not allow entry of a group number in the individual directory. I could not enter the CG ship's MMSI (one starting zero) in the individual directory in the ICOM 92d, but I was able to enter both CG ships and the Coast Guard coast station MMSI's into the individual calling directory of a Vertex Standard GX2100. Interestingly, I was able to enter the group Coast Guard coast station

MMSI (two starting zeros) into the individual directory of the ICOM 92d.

One can call a group from the group directory. The Coast Guard should be entered and called from the individual directory, since one does not want to receive all Coast Guard group traffic. It is helpful to enter the ship's MMSI into the individual directory of all of the ship's radios and handhelds. With this, one can call to or from the vessel and the dinghy (especially when the outboard stops and before you float out to sea!)

Your local district. A complete list of USCG MMSI group numbers for local sectors and groups can be found at

http://www.uscg.mil/acquisition/rescue21/dsc.asp(link is external)

Having your local Coast Guard or SAR MMSi number programmed in may be helpful in reaching them in an urgent situation. (7.)

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Please also see:

(1.)
http://www.bruneibay.net/bbradio/Documents/HF-SSB%20DSC-EasyInstallation.pdf

(2.)-
https://www.navcen.uscg.gov/?pageName=AboutDSC

(3.)-
http://www.bruneibay.net/bbradio/bbrHFSSBcruising.htm
http://www.bruneibay.net/bbradio/bbrHFSSBsafety.htm

(4.)-
https://www.navcen.uscg.gov/?pageName=cgcommsCall

(5.-)
http://www.bruneibay.net/bbradio/bbrmarinecomms.htm

(6.-)
http://www.bruneibay.net/bbradio/bbremergcontact.htm

(7.)
https://www.navcen.uscg.gov/?pageName=AboutDSC

This is series of videos on Icom and DSC calling.
https://youtu.be/_8KSKaPQqns

This is a Youtube video on the new M803 with focus on the DSC functions:
https://www.youtube.com/watch?v=Rii27HqiQLo

Stan Honey, Ron Trossbach, Allan Riches of Brunei Radio, Simon Currin, Emily Winter, Rachelle Turk, Mark Lenci, Walt Paul and Michael Moradzadeh all contributed materially to this article. I greatly appreciate their help, comments, corrections and suggestions.