



Up Top In Operations

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New Frequencies, New Equipment Requirements

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Coast Guard telecommunications are undergoing a lot of change. In addition to the nationwide revamp of the National Distress and Response System (<http://www.uscg.mil/rescue21/>), the Coast Guard is under the same mandate as the rest of the federal government to convert most radio operations to more spectrally efficient narrowband radios (see "Why Narrowband" in this issue).

By January 1, 2008, all Coast Guard VHF and UHF radio operations are to be operating using new radio channels with "narrowband" radios. This is a big challenge, as the Coast Guard has many logistics and tactical radio systems across the nation.

The Auxiliary, as an extension of the Coast Guard, falls under the same mandate. Many Auxiliary districts have radio repeater systems authorized by their CG districts that are affected by this change. In addition, the Auxiliary is authorized a specific frequency, 143.28Mhz, for our use nationwide.

These issues affect many Auxiliary facilities, not just radio facilities.

Surface and aviation facilities often have radio transmitters to participate on non-marine, non-aviation government frequencies. Today, all these transmitters are "wideband" transmitters, often amateur radio equipment with official modification to operate on government frequencies.



The Coast Guard frequency management group (CG-622) has negotiated for new VHF frequencies for the Auxiliary to support our operations and the shift to narrowband radios. As of January 1, 2008 we officially lose 143.28Mhz. Instead, we have five new coordinated frequencies in the 138-144Mhz and 148-150Mhz band (and some other special circumstance frequencies, too). During the transition period to January 1, 2008 we may operate wideband radios on the new frequencies. After January 1, 2008 we must, just as the rest of the federal government, operate narrowband. *Continued on page 3*

Why Narrowband Radio?

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"Narrowband" refers to how much radio spectrum a radio channel requires to pass information. For our use, the "information" is a human voice.

Our most familiar radio link is the marine VHF-FM radio system. This technology evolved over the latter half of the last century. The voice channels are wide, using 25Khz of radio spectrum to carry a human voice conversation. Wide channels allowed radios to use much simpler technology and be very crude (by today's electronic standards).

The same type of "wideband" channels were used on many other radio bands, including business radios, civilian government radios, and many military radios. The demand for radio spectrum to carry voice and data has exploded since "wideband FM" was generally adopted decades ago. The Federal Communications Commission [FCC, regulates civilian radio use and marine radio use in the US] and the National Telecommunications and Information Administration

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Why Narrowband Radio?

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[NTIA, regulates federal government radio use in the US] embarked on a schedule of technology improvements to increase radio spectrum capacity. The easiest starting point was to use newer technology and cut the amount of radio spectrum used for each radio channel in half, doubling the capacity of the airwaves.

While we as humans can hear (at best) audio signals up to about 20,000 Hz, our voices are in the 100-1800 Hz audio range. Wideband radio channels pass 5,000 Hz of audio signal. Narrowband radio channels limit the voice audio to 3,000 Hz; still more than adequate.

Wideband radios commonly use 25Khz of radio spectrum to handle a radio signal that includes that human voice signal. The spacing of 25Khz makes it easier for radios to be "sloppy" and be off-frequency slightly and still work properly. Narrowband radios require much tighter electronic tolerances; 12.5Khz and 6.125Khz spacings are used, requiring all radios to be "tight" in both transmission and in reception.

The marine VHF-FM system is not being changed, but virtually every other government and civilian business VHF radio has a scheduled change to narrowband systems over the next few decades. For federal government radios, the schedule calls for all existing wideband VHF radios to cease operation by January 1, 2008. (The FCC regulates the marine band standards for both government and civilian use, and no change is planned for our traditional boat radio).

Special Radio Event

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Every year the Auxiliary sponsors a nationwide Amateur Radio special event celebrating the anniversary of the Coast Guard Auxiliary and the International Search and Rescue (ISAR) competition between the U.S. Coast Guard Auxiliary and the Canadian Coast Guard Auxiliary. [This year's ISAR is hosted by the U.S. Coast Guard Auxiliary in Portsmouth, VA from November 5-6.]

Auxiliary members that are also licensed amateur radio operators sponsor amateur radio stations with special event call signs, and operate the amateur radio stations during the scheduled time period. Amateur radio operators worldwide, looking for unique contacts and commemorative confirmation postcards, contact the special event stations, often striving to contact all the special event stations.

There is a unique public relations effort here: Auxiliary radio operators, operating as authorized amateur radio stations, provide a view of what the U.S. Coast Guard Auxiliary is about. There is member recruiting potential (the contacting amateur radio operators in the U.S. are potential members with special skills), as well as outreach to a particular segment of the public. As part of the planning, the special event is publicized in various Amateur radio magazines and organizational journals.

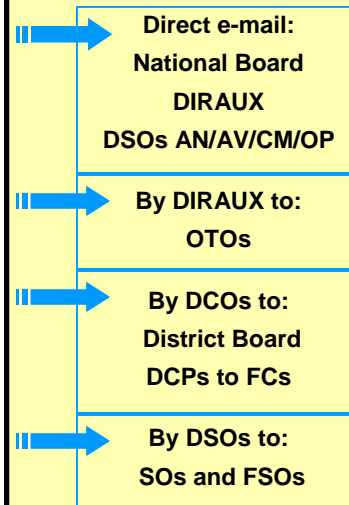


In 2004, the Special Event Radio Stations are operating Saturday November 6 from 1300Z to 2300Z. Special call signs cover the nation (the numbers in the callsigns are not Coast Guard districts, but federal area designators). This year, the call sign list is (24 strong) K1G, K2G, K2K, N2A, N2K, K3A, K3G, N3G, K4G, N4I (the ISAR station), W4A, W4W, N5I, K6A, N6C, K8E, K8G, N8G, W8A, W8C, W8E, W8G, W8R, and N9A. Operations are on specific frequencies on the 40M, 20M, 15M, and 10M amateur bands. The ISAR-2004 station is also operating on the 2M FM band, and at least one station is also operating on the 6M band.

If you'd like to know more or would like to assist or participate in future events, contact the BA-OTU Dan Amoroso nnn0abp@navymars.org.



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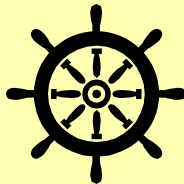
The majority of amateur radio VHF FM equipment cannot properly operate narrowband, and cannot meet frequency stability requirements. On the January 1, 2008 deadline (your CG district transition plans might call for an earlier date), existing Auxiliary transmitters operating wideband on non-marine government frequencies with less stable transmitters will not be authorized.

What does all this mean to Auxiliarists? Any new investment in radios should either be "normal" marine radios (FCC Part 80 Type Accepted), or be radios that are known to fully meet the new narrowband requirements. Some existing radios will have to terminate non-marine government frequency usage by the deadline date and be replaced by new equipment.

The National Operations Department Telecommunications Division (with your DSO-CM) is working on equipment recommendations to continue to allow "one radio fits all" at reasonable cost to Auxiliarists for the new technical requirements. This will take some time and cooperation of vendors, but your DSO-CM will have access to the most recent information available.

Broad technology improvement comes with some pain, and often without choice. Your CM leadership is working issues of repeater change cost, Auxiliary member investment, and other issues as best we can.

The granting of new coordinated frequencies acknowledges the benefit of the Auxiliary to the nation, and provides an opportunity to rework our VHF network in many dimensions as each CG district works out transition plans.



Up Top in Operations is the monthly newsletter of the National Operations Department of the United States Coast Guard Auxiliary.

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Facility Inspections

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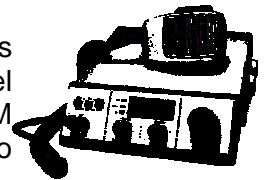
AUXDATA sends facility inspection reminders to facility owners with valid email addresses. This is done 30 days in advance of expiration.

Radio facility owners need to act promptly; you need to allow enough time for your district DIRAUX (according to your district procedures) to receive and process your CG2736A re-inspection. When your previous facility inspection lapses, you must stay off the air until you receive notification that your DIRAUX has accepted your re-inspection. It is important to fill out all the technical detail on the CG2736A form (transmitter, antenna details, latitude/longitude of transmitter). All this detail is required for regulatory approval of your government station.

Surface and aviation facilities have radios that operate on non-marine, non-aviation frequencies too. When filling out your annual inspection forms, make sure any of these transmitters are noted on the CG2736 or CG2736B inspection forms.

Having a valid inspected and accepted facility (surface, aviation, radio) does not inherently mean that you are authorized to operate on government frequencies. Consult the Auxiliary Operations Policy Manual (COMDT 16798.3D series) and your district policy regarding frequency authorization.

Questions should travel via the CM staff chain to your DSO-CM.



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