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Hank Demler, Editor  
[hwdemler@comcast.net](mailto:hwdemler@comcast.net)

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**NEWS FLASH**

The new version of the CG Auxiliary Operations Policy Manual COMDTINST M16798.3E is now available for download on the CG Directives website at [http://www.uscg.mil/ccs/cit/cim/directives/CIM/CIM16798\\_3E.pdf](http://www.uscg.mil/ccs/cit/cim/directives/CIM/CIM16798_3E.pdf).

This manual is in effect **immediately.**

Thanks to the entire OPS team who helped to make this happen!

**Wide Area Auxiliary Communications**

In the past year, we've had significant change in the technical and administrative sides of telecommunications. Through Coast Guard Spectrum Management, we have a greatly increased set of non-marine VHF frequencies finalized (see sidebar article). Through Coast Guard G-OCX-2, we have a new Auxiliary Operations Policy Manual M16798.3E signed and in the distribution process.

The combination of these two events makes it more practical and easier than ever to establish non-marine VHF radio repeater systems.

Let's step back a moment, though. Consider how the Auxiliary would operate in your area in the face of a disaster, manmade or natural. Commercial telephone and wireless carriers are swamped or destroyed. Dial-up internet access is spotty at best, and cable-based internet is out due to power loss or fiber destruction. Your Coast Guard Sector has only a very few working phone lines. How does the Auxiliary handle organizing members, determining asset availability and delivering assets (people, facilities) to needed areas? One answer is the use of

wide-area radio repeaters, designed with such events in mind (see sidebar on Why Repeaters?).

A system of repeaters, with a multitude of handheld or small radios in the field, provides an independent communication path with a big footprint, allowing Auxiliary elected and operational leadership to marshal resources. [A disaster plan is essential for this; communications capability only supports such a plan.]

There are other benefits of wide-area repeater coverage in Auxiliary operations. Areas of poor marine radio coverage for surface, air, and mobile facilities might fall into good non-marine repeater coverage areas, and solve communications problems.

How do you evaluate a potential repeater location in terms of radio coverage? The BC-OTT can assist with professional radio frequency modeling software that uses a digital terrain database to determine coverage area based on antenna height above ground level and other antenna/repeater characteristics.

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**Wide Area Auxiliary Communications**

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Good repeater locations are often in use by other commercial, government, and amateur repeaters. This provides an interference issue that requires careful design and particular equipment selection. Repeater sites are frequently at commercial locations, and may require paying rent or making some other arrangement. Consult the Auxiliary Manual for policies on donation of commercial space if the site is provided rent-free.

Backup power (whether bulk battery or generator) can be important in disaster situations. Access to the repeater site at all times can also be an issue. Protection against vandalism or theft might be an issue for repeaters, which are normally unattended.

Coordination with other Auxiliary repeaters is essential to prevent double coverage, where a radio in certain areas triggers multiple repeaters. The BC-OTT is the national coordination point. There are particular techniques to allow only triggering a specific repeater.

The design and construction of a modern narrowband VHF FM repeater system is highly technical. As government users,

the Auxiliary does not have the same requirements as commercial repeater installers would have, but we do have an obligation to meet technical standards. The equipment needed for a repeater system is not inexpensive; expect costs to start around \$3,000 and work upward rapidly.

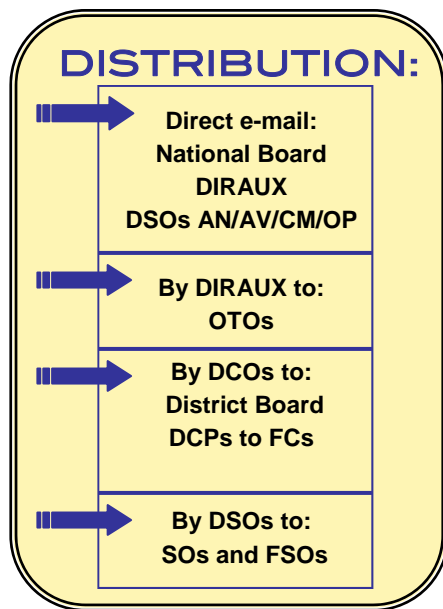
In planning for repeaters, remember to consider how spare parts will be handled. Repeater, given their usual higher-than-surrounding-terrain altitude, are often targets for lightning or wind.

How are repeaters handled administratively? Well, now that the Auxiliary has multiple non-marine VHF frequencies authorized, we finally have the national spectrum allocation to handle repeaters entirely as Auxiliary Radio Facilities.

Previously, any repeater had to be coordinated and approved by Coast Guard district staff, since at least one frequency had to come from the Coast Guard locally. Repeater are exempted by the Auxiliary Operations Policy Manual from having to have marine VHF capability (a human watchstander-based requirement for other radio facilities). An Auxiliary repeater that operates only on our authorized frequencies is handled with a radio facility inspection, followed by acceptance by the Director of

Auxiliary. The radios in the field (handheld, or installed on surface, air, or mobile facilities) are recorded in the relevant facility inspection as they have always been handled.

If you think an Auxiliary repeater is appropriate for your area, start with the disaster, surge, and regular operations plan. Repeater support communications needed by such plans, and don't just stand alone. Coordinate plans for repeaters through your DSO-CM to the BC-OTT to minimize interference with any other Auxiliary repeater. Your district is likely to have other feedback or coordination plans (and will certainly wish to insure technical design compliance), so early and regular discussion with your Auxiliary district communication staff is important. ♥



### VHF Non-Marine Frequencies

Our nationally-approved frequencies:

- 138.475 MHz
- 142.825 MHz
- 143.475 MHz
- 149.200 MHz
- 150.700 MHz
- 143.280 MHz (only through 1/1/08)

Only FM emission is allowed, and there is a maximum transmitter power output of 50 watts. The usage plan for these frequencies is:

*National repeater pair:*

149.200 MHz      150.700 MHz  
input                      repeater output

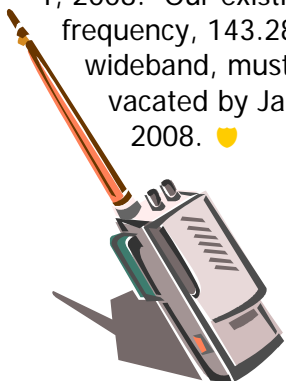
*National simplex frequency:*

143.475 MHz

*Additional simplex frequencies or additional repeater pair:*

138.475 MHz      142.825 MHz

These frequencies are authorized for use now. All operations on these frequencies must be narrowband by January 1, 2008. Our existing single frequency, 143.28MHz wideband, must be vacated by January 1, 2008. ♥



### Why Not Use HAM Radio?

The USCG Auxiliary is part of the Coast Guard, and therefore operates as part of the federal government. The federal government is not allowed to use civilian radio frequencies for official government business, given that separate radio bands are allocated for federal use.

Regardless of the civilian volunteer nature of the Auxiliary, we are bound by these federal regulations. [State and local governments are "civilian" users, not federal users.]

This means that Auxiliaries are not normally allowed to use Amateur Radio frequencies or bands for any official activity, whether members are otherwise licensed or not in their private lives. Ham bands (whether HF, VHF, or microwave) are not for passing official Auxiliary business.

Licensed amateur radio operators that are also members of the Auxiliary may certainly chat on amateur frequencies about the Auxiliary, just as other personal or club activities might be discussed. It's also OK to talk to non-members about what the Auxiliary does (the annual ISAR special radio event is such an example), and about boating safety issues. The line is drawn when member-to-member communication becomes "official business".

How do you tell when you cross the line? One metric to apply is if the communication drives you to write down or note some Auxiliary activity, the communication was probably "business" or "official" communication, and the next communication might best be done over email, telephone, or other authorized communications channel. It's a judgment call, but judgment for all listening... including federal government regulators. ♥

**NATIONAL TELECOMMUNICATIONS STAFF**

Edwin "Ned" Kroeker,  
Division Chief  
[ekroeker@seaqueue.com](mailto:ekroeker@seaqueue.com)

Joe Cirone, Utilization Branch  
(usage, protocols, tactical nets, HF)  
[jpcirone@warwick.net](mailto:jpcirone@warwick.net)

Dan Amoroso, Utilization Assistant  
(event management)  
[nn0abp@navymars.org](mailto:nn0abp@navymars.org)

John Dowbachuk, Technical Branch  
(radio specs, narrowband, repeaters)  
[dowb1@comcast.net](mailto:dowb1@comcast.net)



**Why Repeaters?**

Radio repeaters act as range extenders for lower power radios across geographically challenging areas. Repeaters are simply radio receivers that continually listen for a signal, and when received, simultaneously rebroadcast the same signal on a different radio frequency.

Repeaters usually are located at high points in an area, so they can "listen" to a very large area. They often use a higher power than normal transmitter, so the radio output in turn covers a large area.

When used with handheld or low power radios, repeaters effectively provide metropolitan or wide area coverage for the field radio that would otherwise only have a short range.

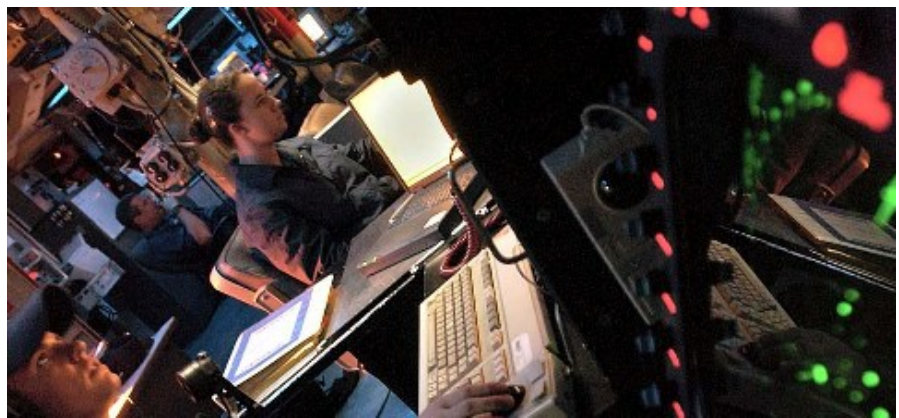
The low power radios must be configured to transmit on the repeater input frequency, and receive on the repeater output frequency.

Another benefit of repeaters is removing the effect of natural topology boundaries. While mountains or ridges or city structures might block low power signals from traveling from one area to another, signal be heard in several areas, areas that otherwise would be blocked (radio wise) from each other. A repeater can be located to hear signals in several areas and in

turn have the repeater output Repeaters in turn can be linked, so any signal received by any of the linked repeaters is in turn rebroadcast by all the repeaters. This can provide a very, very large area of coverage. The technical details of linking repeaters are complex. ♥

"We are what we repeatedly do. Excellence, then, is not an act, but a habit."  
-Aristotle

**MAKE OPERATIONAL EXCELLENCE YOUR HABIT... PRACTICE TO SUCCEED**



<b>NATIONAL OPERATIONS STAFF</b>		
<b>PROGRAM</b>	<b>STAFF MEMBER</b>	<b>E-MAIL ADDRESS</b>
Department Chief	Linda A. Nelson	echopeep@verizon.net
Deputy Department Chief	David A. Elliot	DC-Od@auxop.us
Aids to Navigation	COMO George A. Pendergast	comodone@charter.net
Aviation	Robert Shafer	DVC-OA@auxair.us
Projects and Educational Outreach	Aline (Lindy) Harrison	aharriso@ycp.edu
Surface	Mark Simoni	mark@simonisystems.com
Telecommunications	Edwin (Ned) Kroeker	ekroeker@seaqueue.com
G-OCX Operations Division Chief	LCDR Mikeal Staier, USCG	MStaier@comdt.uscg.mil
G-OCX Aviation Branch Chief	LT Justin Harper, USCG	JHarper@comdt.uscg.mil
G-OCX Surface Operations Branch Chief	MCPO Gary Jensen, USCG	GJensen@comdt.uscg.mil