Narrow Band Radios

Good evening all … as many of you know, John Farris, our District Staff officer for communications asked me if I would make a short presentation on this evening's net session regarding the change over to "narrow band" radios that is coming up on or before 31 December 2007.

The text that I am presenting tonight will be made available to the DSO-CM for posting on the District website, and also, assuming that the normal recording operation works as well as it has in the past, an audio recording of the broadcast will be available by email from, I spell: sierra oscar punctuation hyphen Charlie mike "at sign" Sierra mike bravo Charlie golf alpha punctuation period oscar romeo golf.

BT

This is unfortunately a fairly complex topic because it involves a whole host of bureaucracies as well some complicated technical issues. I will do my best to simplify it while at the same time, ensure that the information I give out is accurate.

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I've organized the presentation into a series of questions that I have heard our members ask and that will be the vehicle for providing the facts.

First of all, What does the change mean to the average member who has a radio used for Auxiliary purposes?

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The bottom line answer is that the "ham radios", that is radios sold for use in the amateur radio service, and mostly used by CGAUX for **AUXNET** will no longer be authorized for use as CGAUX radio facilities after 31DEC07. This applies specifically to VHF radios, those transmitting in the frequency range of 138 megahertz to 151 megahertz.

At the present time, no changes are expected with regard to those radios used for transmitting in the high frequency range, that is between 2 megahertz and 30 megahertz.

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And finally no changes are expected to occur that will affect marine VHF radios for at least a decade.

Now for the next question: Why are “they”making us change, and incidentally who are “they”?

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The short answer is that “they” are the federal government. All federal agencies are required to move to a new standard for VHF (and incidentally Ultra High Frequency) radios. This effort began a long time ago, in the late 1980’s, and deadlines have come and gone, been extended, been applied to different agencies, and been altered multiple times.

BT

The fundamental reason that the change is occurring is because federal agencies, as well as just about all the other users of VHF radio spectrum, have run out of space, that is, available channels. So beginning back in the late 80’s, it was decided to manufacture a way to create more channels for more users. The only way to do this was to put the defined channels closer together since the total overall spectrum space is finite.

BT

It is important to recognize that the CG Auxiliary is not being singled out, but that this change applies to ALL federal agencies and their affiliates such as the Civil Air Patrol and the Military Affiliate Radio System, known as MARS.

And finally, the CG Auxiliary is one of the last agencies to make the change. As we all know, we, the CG Auxiliary, had our VHF frequencies changed about 2 years ago. That change was part of a federal government wide re-allocation of VHF channels and was part of this overall change.

BT

Now, let’s see if we can clear up some of the confusion that exists because of new language. We hear lots of jargon thrown around without a lot of attention being paid to exactly what the phrases and words mean.

The overall phrase used to identify this change is “narrow banding”. What narrow banding means is simply that in this part of the spectrum, the VHF government part, the newly allocated channels will be twelve and one half kilohertz apart. In the past, by the way, channels in this spectrum range have traditionally been twenty five kilohertz apart. So for example, beginning at 149 megahertz, in the “old days”, there were channels at 149.000, 149.025, 149.050, 149.075, 149.100 and so on. Under the new “narrow band” scheme, there are channels at

149.0000, 149.0125, 149.0250, 149.0375, 149.0500, 149.0625, 149.0750, 149.0875, and 149.1000.

BT

So wonder of wonders, where once we had **five** channels, now we have **nine** channels.

But like all things in life, “there’s no such thing as a free lunch”. In the old days, an FM signal could be as wide as 10 kilohertz, and since the channels were 25 kilohertz apart, there was still enough room between channels to avoid what is called “adjacent channel interference”. But now since the channels are only twelve and a half kilohertz apart, a 10 kilohertz wide signal has a very good chance of interfering with the next channel over. And therefore, a second part of the standard for “narrow banding” says that the widest a signal can be is **five** kilohertz.

BT

I’ll talk about where the standards come from in a bit, but first let me dispel some myths and urban legends. If you talk to some of the “radio heads”, you’ll hear lots of other jargon thrown around like “digital radios”, APCO 25, P25, trunking at 800 megahertz, and on ad nauseam.

None of these, I say again NONE OF THESE, are relevant to the requirements that are imposed on the CGAUX to change radios. They are all true, they are all accurate, but they are all also IRRELEVANT to our discussion tonight.

BT

Now, specifically, who sets these standards? The primary organization that manages radio spectrum for the US federal government is called the National Telecommunications and Information Administration, known familiarly as “NTIA” (usually said with a grinding of teeth). The “bible” is called the NTIA Red Book, and yes the cover really was red at one time. If you want to be put instantly to sleep, I recommend checking out the Red Book … it’s a total of 948 pages of jargon and lawyer talk … But unfortunately, we have to live with it. Just be grateful that, unlike me, you don’t HAVE to read it.

BT

You’d think that with all those pages, every possible contingency of rules and regulations would be covered … but no … you see the Red Book is like the other “bible”. It’s not just what’s written down, it’s also a whole bunch of people who are anxious to tell you what it means.

So … the bottom line of application to the real world is subject to some interpretation and negotiation between NTIA and federal agencies like the Coast Guard and the Department of Homeland Security. That's both the bad news and the good news. I'll come back to that.

BT

Of course, NTIA is not the only agency that sets rules for radios and spectrum. In fact, NTIA itself does NOT certify radios as meeting it's own standards. There's another agency that does that and it's called the Federal Communications Commission, the FCC.

And that brings us to the key question: **What standards apply to CGAUX?**

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The short answer is that CG Auxiliary is, FOR VHF AUXNET RADIOS, subject to the standards for "narrow band" radios that are codified in the FCC Regulations, Part 80, which is for marine radios and Part 90, which is for commercial radios. NOTE that these are somewhat less stringent than the NTIA standards, but they have the major advantage of being documented in the sense that if you are considering a particular radio, you can go to a web site and check to see if that radio meets these standards. In "bureaucratic speak", it's called being "certificated".

Now, I won't go into all the details, but almost a year ago, I and my boss in the Auxiliary, met with the Spectrum Management group at CG headquarters and successfully made the case to them that the NTIA standards were way beyond what was necessary for the CGAUX and would impose a serious economic burden on our members. They took our position to the NTIA and reached an agreement that we would be allowed to use radios that met the FCC standards I mentioned just a moment ago.

BT

Now, let me get rid, I hope, of some further confusion … most of us have friends and colleagues who are part of Civil Air Patrol, MARS, or other federal volunteer agencies. Those people tell us, "No, you have to have an 'NTIA compliant' (another piece of jargon) radio.

The answer simply is "No we don't … You, CAP member or MARS member, might have to but we do not."

BT

OK … now we've gone through all the why and wherefore's, but we still face the fundamental question: **So what do I do?**

Here's the answer in as few words as I can make it:

FIRST, If you are using a "modified" ham radio for AUXNET, that radio must be replaced on or before 31DEC07.
SECOND, our repeaters must be either replaced or "narrow banded" on or before 31DEC07. (some repeaters have kits available to them for narrow band "upgrades")

THIRD, Marine VHF radios do NOT require any change.

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FOURTH, after 31DEC 2007, new, or re-inspected facilities will have to list an FCC Part 80 or FCC Part 90 certificated radio for AUXNET in order to be approved as a facility.

FIFTH, what's this all going to cost me? At the moment, there are several radios from each of three manufacturers which will meet the FCC standards. For a handheld radio, expect to pay around $200 to $250. For a "mobile" radio (used either as a mobile or a fixed base radio) expect to spend around $300 to $350.

Those numbers may seem high, but keep in mind that only 10 years ago, you would have spent that much for a "ham" radio which much the same capability.

BT

In the interests of time, I have simplified many of the details behind this situation. I will be glad to entertain questions here on the net for at least a little while until the radio bursts into flame, or if you wish, you can send me your questions via email at, I spell: whisky figures one hotel india juliette charlie whisky "at sign" alpha oscar lima "punctuation period" charlie oscar mike.

This is Coast Guard Auxiliary Echo Echo, OVER.