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POPULAR COMMUNICATIONS

JUNE 2003

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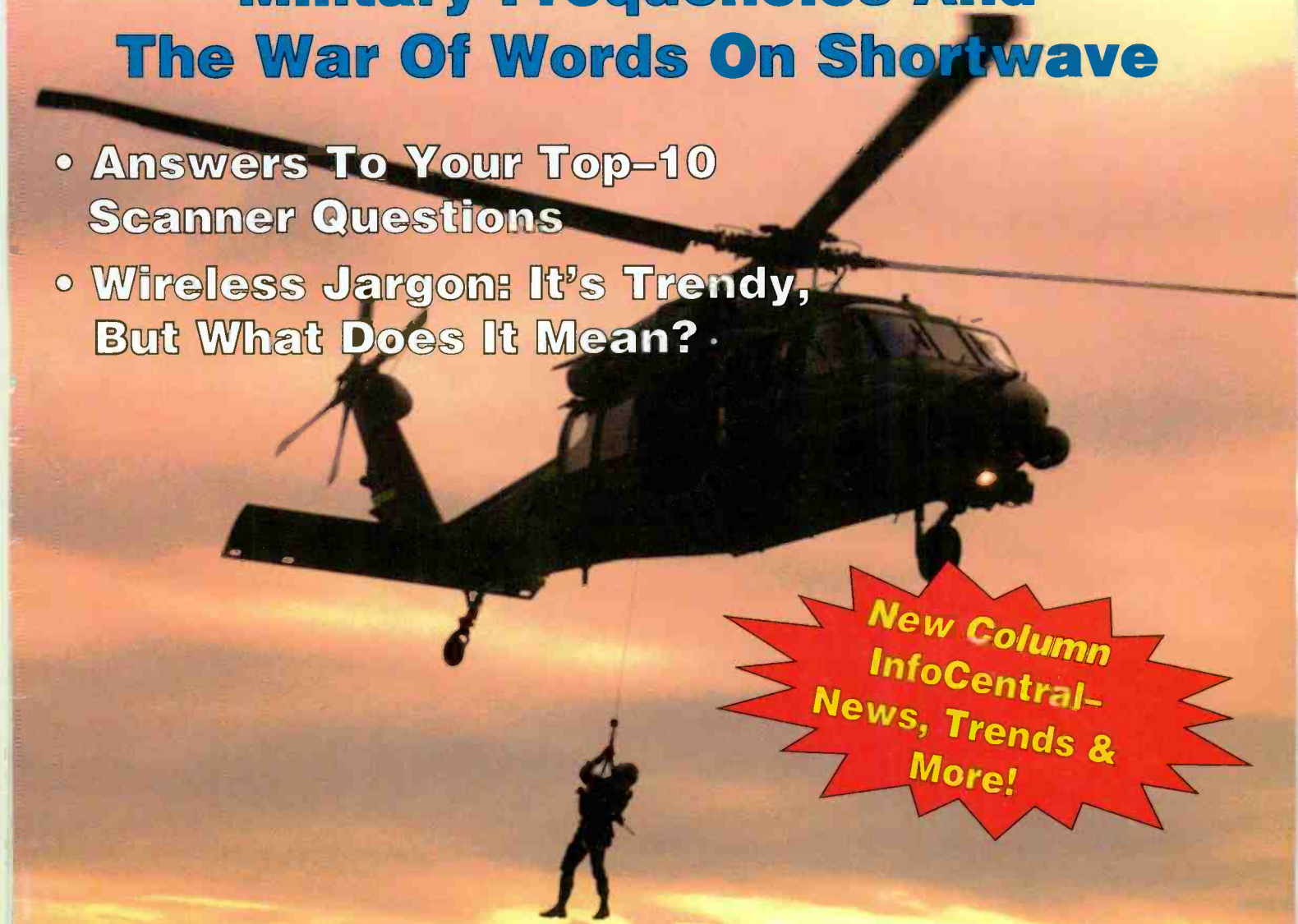
Military Frequencies And The War Of Words On Shortwave

- Answers To Your Top–10 Scanner Questions
- Wireless Jargon: It's Trendy, But What Does It Mean?



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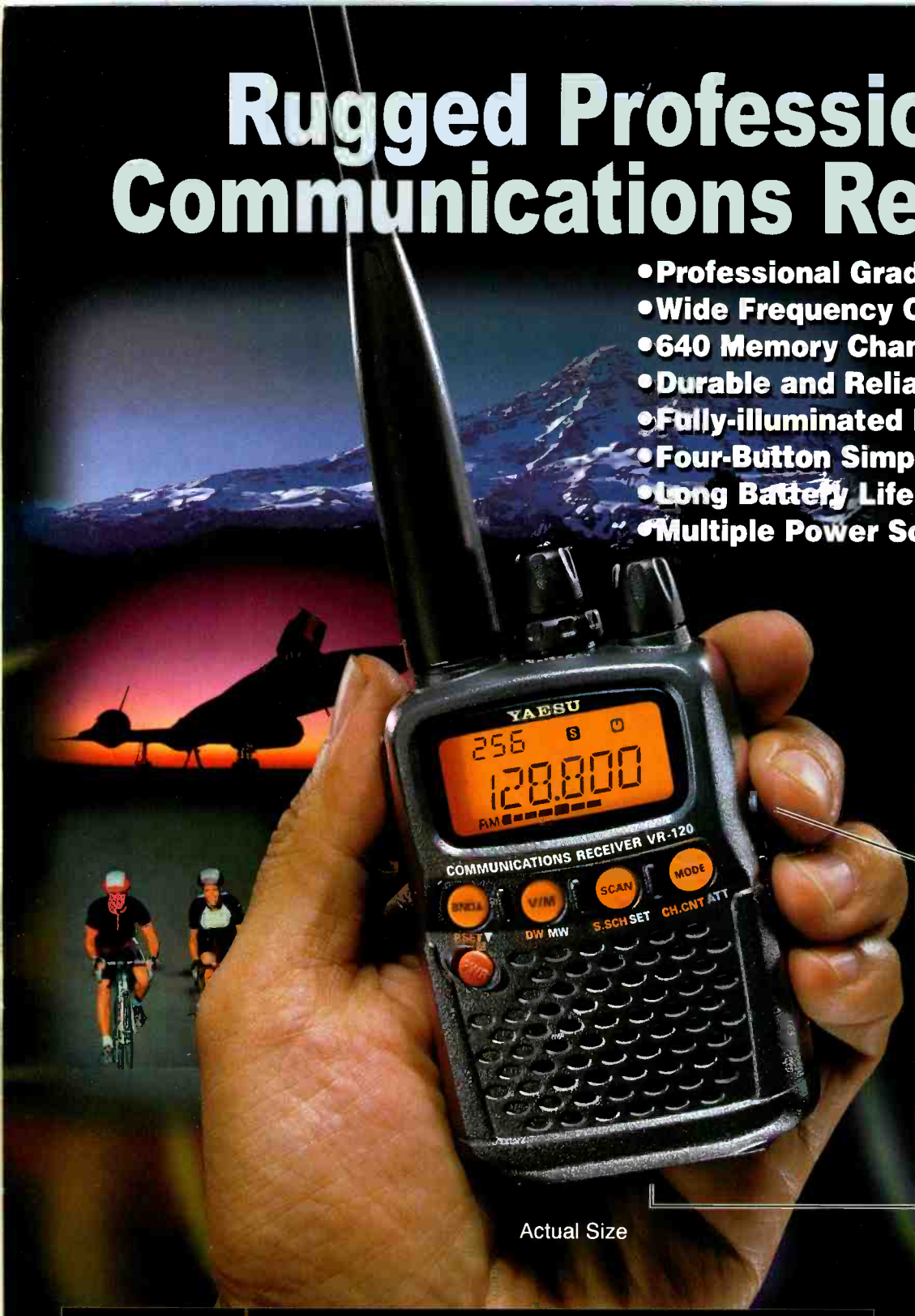

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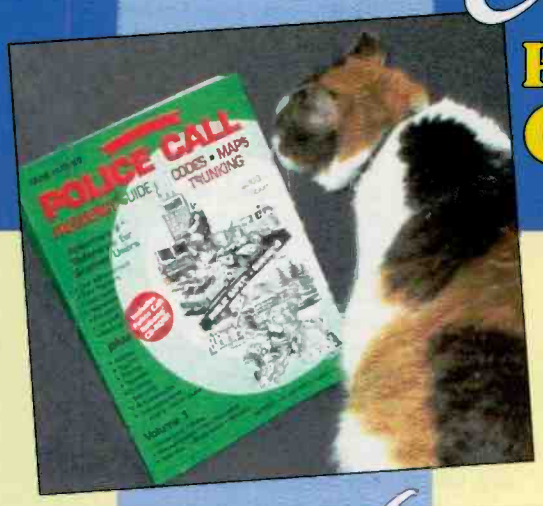

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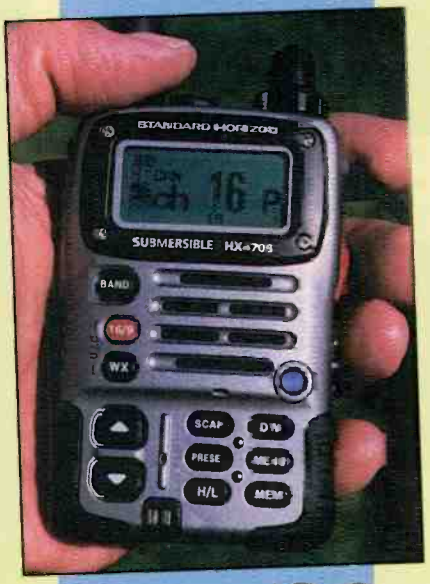

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Departments

On The Cover

Whether you're listening to military operations of Operation Iraqi Freedom, Combat Air Patrols (CAP) over America's cities, or stateside training like the rescue of this airman at Moody Air Force Base, Georgia, we've got you covered. Check out this month's Clandestine Communiqué for Commando Solo Broadcast information, InfoCentral for confirmed CAP frequencies, and the Global Information Guide for news on the British Forces Broadcasting Service. (Photo by Larry Mulvehill)

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tuning in

by Harold Ort, N2RLL, SSB-596

an editorial

Behind The Mic

As this is written, massive numbers of our troops are less than 50 miles from Bagdad. Whatever the outcome, I'm sure when all is said and done (whatever "done" is) we'll look back at one point and wish we had given a little more time for either diplomacy or a surprise coup to oust Saddam. Somehow public opinion changes when the bullets—and Heaven knows what else—begin to fly.

I mention the Iraq situation knowing full well that by the time you read this it will be about 45 days from this moment in time, and, for better or worse, while no one can predict the future, we're certainly knee-deep in the Middle East. Beyond any war, to a great degree we're in charge of our lives and how we interact with *the rest of the world*. When you sit down and think about it, radio plays a very significant part, perhaps more than you realize.

While folks overseas know us by our actions—admittedly sometimes our actions, as history teaches us are less than even-handed—they also know us by what they hear. Think for a moment about the countless hours of shortwave broadcasts from the VOA and all those religious broadcasters. Then there are the many clandestine radio operations funded by our government and entities we support aimed at millions of listeners from Korea to Iran. Minds are changed, new opinions are formed and lives altered. We do it with radio.

On a smaller, but equally important, scale, there is radio's message to the world from the thousands of U.S. amateur operators in daily contact with their counterparts in far-flung countries, places most Americans probably can't find on a map. We've said it before and, at this point in our overseas involvement, it's a good idea to say it again: *we* affect world opinion every time we take a mic in our hand or contact a foreign SW station asking for a QSL or station information.

Ours is the hobby of a lifetime, whether we're hams, SWLs, CBers, or scanner enthusiasts. The radio image we project to the outside world, from home or abroad, is not only vital to the long-term health of our hobby, but to the folks listening to and interacting with us, it's an excellent S-meter of the American psyche.

I have a personal struggle coming to grips with some licensed radio operators openly berate unlicensed operators and, in *some* cases, even other licensed operators. Case in point was a personal observation made just the other day on 20 meters. (I later learned this is apparently a *regular* crowd!) I won't stoop to their level by publicizing their call letters—yes, indeed, a couple of these doofi were brazen enough to actually give their call letters and announce their website. Talk about dumb. Without going on about the gory details, suffice it to say it reminded me of the ranting we've all heard on an unlicensed band. Now, of course, it's important to say that 99.9 percent of the ham community is well behaved and very polite. Frankly, I always get goose bumps when I hear one low-power station emerge from a tremendous DX pileup, with hundreds upon hundreds of operators yielding to a single station called by the distant operator.

Then there's the Internet, with all its free-for-all postings by a cross-section of somewhat sane people. Another bastion of human intelligence? Hardly. Sometimes it's very difficult not to get caught up in the fervor and post a thought in response to another person's momentary lapse of judgment. But my personal experience has taught me a valuable lesson, one my Grandmother used to say: "consider the source and ignore it." That's really good advice, because someone is always listening, and I'm pretty certain they don't all agree with you or me. It's a pretty crazed, cocky world and who wants someone with a frazzled mic or keyboard cord standing at your doorstep? Not me.

Now, I realize this isn't a perfect world (how perfect *can* it be when more than a dozen sober people watch *The Osbournes*?), but for crying out loud, let's at least *try* to stop the bad-mouthing of the good operators of other services and the incessant Internet flaming. I once

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Laura's Top-10 Scanner Questions

Say Good-Bye To Scanner Frustration And Hear A Whole Lot More!

By Laura Quarantiello

Look at all those new scanners in those ads! They sure beat that old 10-channel, crystal-controlled radio you've got on the shelf. But which one is right for you? I've compiled these "top-10" questions for you to ask yourself in the hopes that they'll save you time—and money—as you search for that new scanner.

1. Which scanner should I buy?

This is an age-old question, one that's been around since we had more than two scanners to choose from. The best scanner isn't the one with the most "bells and whistles"—it's the one that meets *your* needs. You should buy the scanner that has the features you need, the frequency ranges you want to listen to, and that carries a price you can afford.

Of course, the "perfect" scanner is another story entirely. Though many consider the Uniden BC780XLT the perfect blend of conventional and trunking capabilities, the new BC785D and its handheld brother, the BC250D, may soon grab the "perfect scanner" title for those of us inundated with digital systems. Then again, every scanner lacks something that someone considers a must-have feature. Remember, the best scanner is the one that does what *you* want it to do.

2. Where can I find the frequencies in use in my city?

Frequencies are the heart and soul of scanning; without them we just hear the hiss of white noise. Getting the right frequencies for your area can be difficult if you don't know where to look. Most of us start out with the bible of scanner frequencies, Gene Hughes' *Police Call*. Updated yearly with input from official sources and actual monitoring, *Police Call*'s nine regional volumes are the first stop for frequency information. If you have Internet access, you can also visit <www.bearcat1.com/free.htm> for links to frequencies, talkgroups, and more. There are many hobby sites containing frequency information—just search for "scanner frequencies" using Yahoo, Google, or your favorite search engine.

But the best source of frequency information is other listeners, those who are actually monitoring the agency or system you're interested in. The easiest way to find these people is through Internet mailing lists, such as the ones found at <www.yahoogroups.com>. There are lists for every imaginable scanning topic, including regional and local lists.

3. How do I program a trunked radio system?

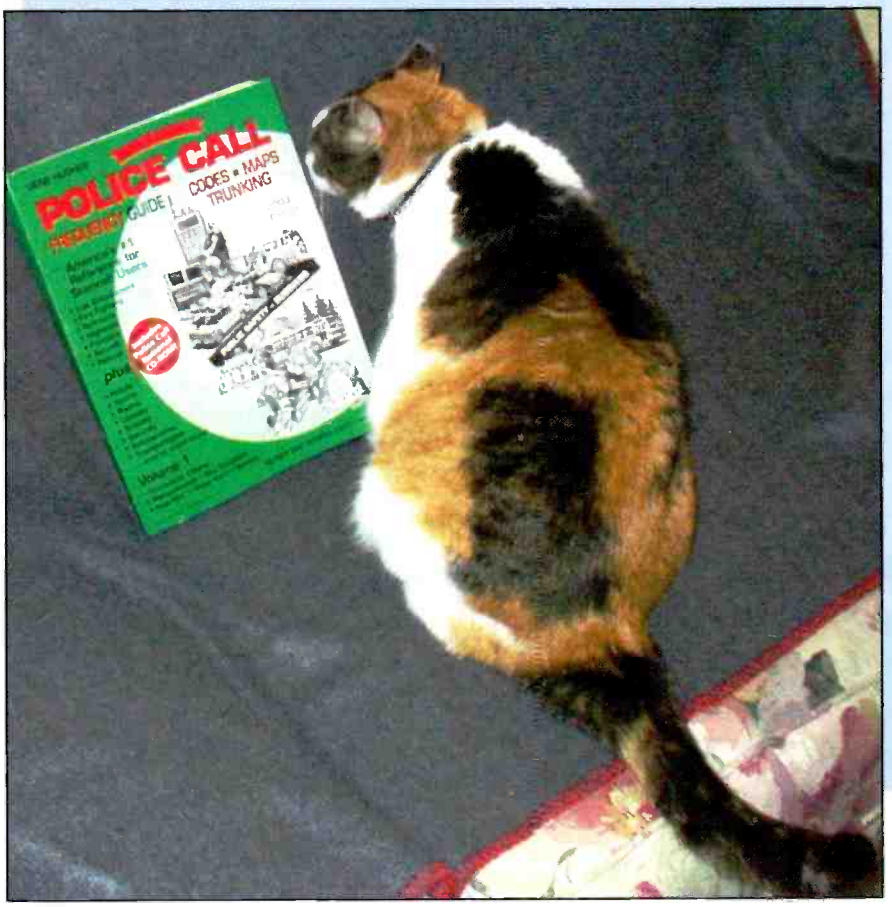
In one way, this question really should be Number 1! With the proliferation of trunking systems in the United States, understanding how to program your scanner to track them is becoming a necessary talent. Unfortunately, in our haste to get things working, we often rush through the programming steps and end up not being able to hear anything. Just one missed step can result in the scanner not tracking properly. Proper entry is critical for any trunked system. Before you succumb to frustration, follow these steps:

• Make certain you have the correct frequencies for the system you're trying to hear. Though this is an important step for monitoring any trunked system, it becomes especially important when you're attempting to track an EDACS system, which requires that frequencies be entered in Logical Channel Number (LCN) order. To determine the correct frequencies for your local trunked system, visit <www.bearcat1.com/free.htm> on the Internet or call the Bearcat Frequency Hotline at 937-299-0414.

Ditch the duck. That's right, toss the "rubber duck" antenna if you're trying to hear more distant stations on your scanner. An outside antenna works much better, whether you're in a vehicle or building.

• Determine the type of system you're trying to monitor, such as Motorola Type I, Type II, EDACS, or LTR. If you're attempting to program an EDACS system using the steps outlined for Motorola systems, you'll be out of luck.

• Follow the steps outlined in your scanner operating guide for programming trunked systems. Make sure you select the correct procedure for the type of system and follow each step in order. It's simple to miss one step, so if things don't work on the first pass, start over and check off each step as you go.



If you're playing cat and mouse with frequencies, get serious with Gene Hughes' Police Call, *which now includes a searchable CD-ROM. It's the cat's meow.*

The brand new Uniden BC250D handheld scanner is a full-featured digital scanner that typically sells for under $400.

4. I've heard that my local police use digital communications. Does that mean I can't hear them?

With many digital trunked radio systems coming on line, this question is becoming a standard among new listeners. A trunked system can be either analog or digital, or a mixture of both. Analog is what we're used to—normal, clear voice transmissions that any trunking-capable scanner can hear. Voices on a digital trunked system, however, sound like noise (unless you have a digital scanner). A "mixed mode" system has both analog and digital talk groups co-existing on the same system.

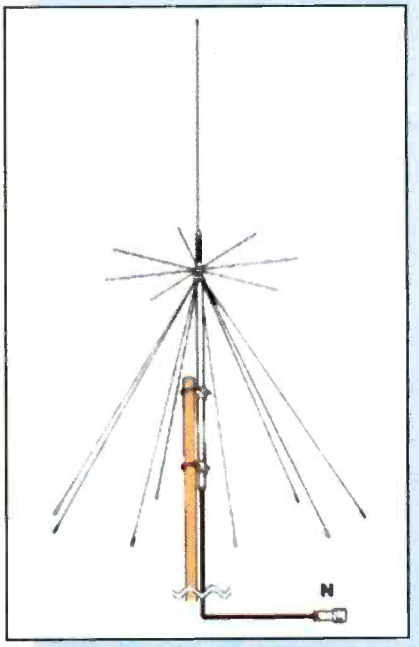
Digital does not mean encrypted. Encryption is a method of protecting talk groups from being overheard by non-encrypted radios. A digital system may have encrypted talk groups—in fact, all of its talk groups can be encrypted—but the two are not the same. No scanner (not even Uniden's digital units) can hear encrypted talk groups, but they can hear digital talk groups.

5. Do I need an outside antenna?

Absolutely! Remember, your scanner's reception is only as good as the antenna attached to it. If the transmitter you want to listen to is nearby, the antenna that came with your handheld or desktop scanner will work just fine. However, if you're interested in more distant signals, you will definitely need to connect an outside antenna. Since most of us develop scanning targets beyond those we originally purchased a scanner for, an outside antenna will become important at some point in our listening lives. You don't need to erect a huge antenna tower to get results—either a ground plane or a discone should do the job. Don't forget that if you're subject to homeowner's regulations or live in an apartment, erecting an antenna may get you into trouble. Ask first, or go for something low profile.

6. My local police and fire departments have disappeared from their regular frequencies. Where did they go?

They may have made the switch to an 800-MHz system. Public safety agencies



A discone scanner antenna requires a mounting pole and coax cable. Many readers report excellent results by simply placing the antenna on the floor in the attic and routing the coax down to the scanner.

all over the country are embracing 800-MHz trunked technology and leaving behind their old frequencies. Even small departments may be tagging along when nearby larger cities implement a trunked radio system. If fire or police frequencies in your area have suddenly gone silent, check for them on the nearest county or city trunked system. They may also have migrated to VHF or UHF frequencies abandoned by another agency. Check the common public safety ranges.

7. How do I use the Priority feature on my scanner?

The Priority feature is probably the most misunderstood button on the keyboard. It's been around on most models of scanners for years, but no one seems to use it much, simply because they don't know how to use it correctly. The Priority feature allows you to monitor one frequency and have the scanner periodically check another channel (the priority channel) for activity. If it finds activity there, it monitors until the transmission ends. The scanner actually switches away from the channel you're monitoring in order to check the priority channel. It does this quickly, but most listeners can detect the switch, especially if it happens during a transmission, and the interruption can be annoying.

The Priority feature is helpful if you're monitoring a police dispatch, for instance, and you want to keep an ear on a tactical channel. It doesn't work so well when the channel you set as Priority is full of activity, continually switching you away from your primary channel. With trunked systems, Priority can be set to work in much the same way, only the Priority channel will actually be a Priority talkgroup. Priority has its uses, but most listeners never find the need for it.

8. Why do scanners have a data skip button and when should I use it?

If you've spent any time searching through the radio bands, you've undoubtedly come across some odd beeps and blats on various frequencies. These can be anything from paging systems to trunked system control channels to water department data networks. They all cause annoying sounds that none of us want to hear. The data skip feature can eliminate them by causing the scanner to skip over anything that isn't a voice transmission. You'll want to use data skip anytime you're searching through a range of frequencies.

9. I'm monitoring a trunked system, how should I set the squelch knob?

Most of the literature I've read says that squelch settings do not affect listening to trunked systems, but I beg to differ. I've turned the squelch all the way down to zero and had static break through, forcing me to turn it up again. In other cases, I can turn the squelch all the way down with no problem. A good position for the squelch setting is halfway, usually with the indicator pointing straight up. Just remember that it may need to be reset when you listen to conventional frequencies.

10. I have a question you didn't answer, how can I contact you?

You can e-mail me at <lauraq@cox.net> or write me in care of *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801. You can also write any of the other columnists at their respective e-mail addresses. ■

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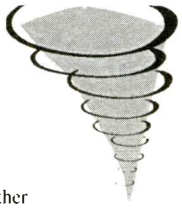

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RADIO EMERGENCY ASSOCIATED COMMUNICATIONS TEAM

computer-assisted radio monitoring

by Joe Cooper <joe@provcomm.net>

Using Virtual Components To Enhance Your Monitoring—Part II

The use of computers and software in radio application is not new, and you can find many examples that stretch back into the earliest days of the personal computer. Even before the IBM PC was introduced in the early 1980s, ham radio operators had been experimenting with various applications using a variety of computers.

Back about 30 years ago, in my university days, I belonged to a campus ham radio club. The members were using an obsolete PDP-type of computer that was about as big as a home refrigerator and used paper tape with punch holes to program it to do some experimental work with the radio station. Frankly, many of today's good programmable pocket calculators could out perform that dinosaur.

The fact of the matter is that today we are beginning to see a real convergence of hardware, software, and good ideas that are going to be making some really important changes in the way we use our monitoring radios. It is not just logging stations that will be affected—most likely we'll see entirely new methods of communication become available, particularly in the digital modes.

The bottom line is that the next year's worth of columns will be devoted to getting you ready for the exciting times ahead.

Looking Again At SkySweep

Last month, I introduced you to one example of this new phase of computer-assisted radio monitoring: the SkySweep integrated software package.

As I mentioned before, there are many good software packages on the market that specialize in an individual task. Some, such as digital signal processing (DSP) can be used to overcome interference by sampling an audio signal and removing the noise. Likewise, there are many packages that will demodulate various digital signals (Morse code, radio teletype, or a variety of new modes).

However, you cannot use these programs concurrently. So even though they may be very good individually, you can't chain them together to achieve an enhanced result.

This is where the SkySweep program is very different. It allows you to "build" virtual devices by adding together different building blocks of software components. What is particularly nice about the program is that you can do this without having to know computer software programming, complex commands, or a lot of theory.

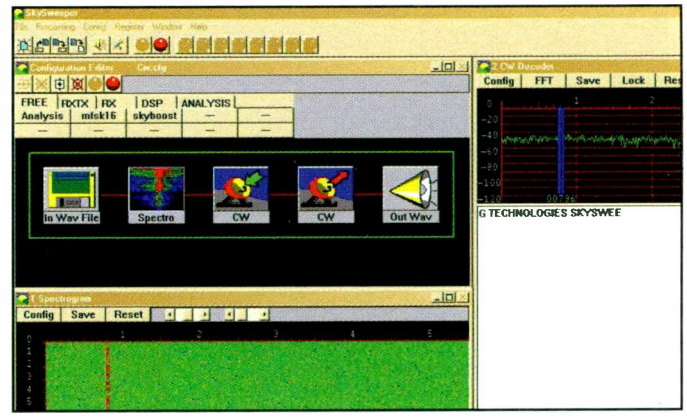

Photo A. This shows the main interface for SkySweep. The controls that allow you to build and control the virtual device are in the upper left corner. The interface contains four separate windows that are used to display important information.

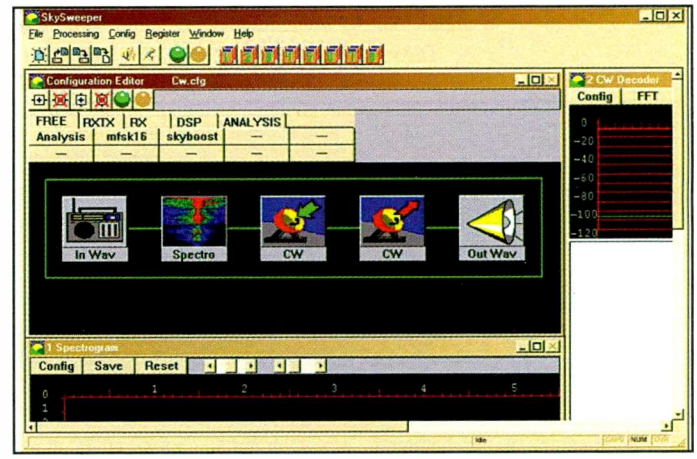

Photo B. This shows the schematic for the CW demodulation device. In this case a radio, rather than an audio file, is the input device. Additional elements are spectrum analysis, CW input (demodulation), CW output (tones to a transmitter), and the audio output to the computer's speakers so you can hear the receiver.

The User Interface

The program uses a simple graphic interface that presents each of the components in a common-sense way. **Photo A** shows the interface set for CW (Morse) monitoring (and transmitting if you have a ham radio license and the appropriate transceiver). What you see is four windows situated inside the main software interface. The upper left corner of the screen is the control panel for the software where the various components can be selected (see last month's column for an explanation on how a device is created). The remainder of the screens are the actual device that has been created.

In **Photo B** the window in the upper left corner is a schematic representation of the actual device that has been "built." In this case, the screen shot is taken from the demo mode, so rather than a radio, the input device is a recording. However, you can substitute a radio, a text file (for certain applications), and a connection to the Internet (which I will talk about later).

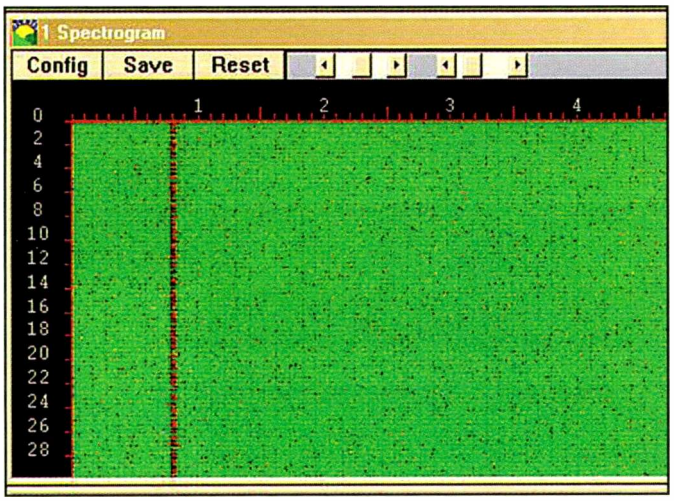

Photo C. This shows the spectrum display using what is known as a "waterfall" mode. The image is dynamic in that it flows from the top to the bottom of the display area, looking a bit like water falling. The CW signal is displayed as the line, which is broken due to the on/off nature of CW signals. If there were more signals there would be more lines. Each mode of signal has its own identifying "footprint" for easy identification.

Photo D. This is the tuning aid, and it shows a strong CW signal that is being demodulated. Note that the signal is 796 cycles above the tuned frequency. The display shows roughly 3500 cycles of upper sideband, which corresponds to the standard bandwidth for a receiver set on upper sideband.

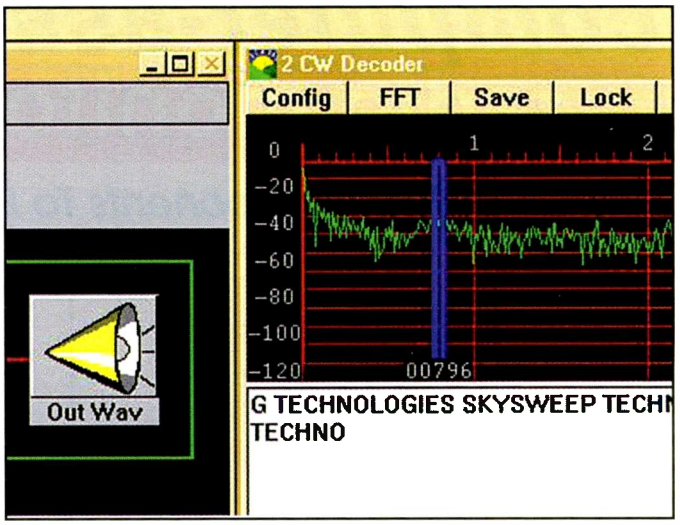

Photo E. The intelligence (message) found in the demodulated signal is now being decoded and displayed on the screen shown in the lower right of the picture.

In addition to the device itself, you also have two other screens that are used to view a tuning device as well as the radio spectrum you are monitoring.

The radio spectrum is viewed using what is called a "waterfall," which provides a real-time view of a range of frequencies (see **Photo C**). Each time a signal appears it is shown as the dynamic red line. As you can see, the line is broken, as would be expected with the dot and dash nature of a CW signal. Other modes have their own distinct "footprint" on the waterfall, so you can distinguish one type of signal from another.

The window in the upper right corner is used to tune in to an individual signal once it appears on the waterfall (see **Photo D**). What is rather useful is that the software program itself tracks the strongest signal and then locks onto it.

Once the signal has been found, tuned, and locked in, it is a simple matter of decoding the intelligence found in the signal, which is displayed in the third window located on the right side of the screen (see **Photo E**). Again, if you have a ham radio license and transceiver, you'll be able to use the transmit function. To do so, you'll need audio output cables attached to the speaker output of the computer soundcard, which you'll then have to attach to the microphone input on the transceiver using an appropriate plug (you will have to solder that yourself).

Demodulating Signals

The nice thing about the program is that it comes with many of the more popular modes already configured for you. If you go back to **Photo A**, you'll notice a series of tabs, numbered one to eight, located across the top of the user interface. These are used to access pre-built modes that you can use as is or modify to suit your own monitoring needs.

This is where the skill factor comes in to play because the program does provide a wide range of accessories that can be plugged in or removed as is required. You have the three main groups of components: demodulation, DSP, and analysis.

In the demodulation mode alone, you have 17 choices, including seven digital modes that can be transmitted (with slow scan TV, for instance). The receive-only modes include HF FAX,

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UHF/VHF aircraft, and LF/HF naval digital modes (ACARS and SITOR), as well as HF Mil-ALE (Automatic Link Establishment). Military, diplomatic, government, and commercial networks use this latter mode.

The art of using software like SkySweep is putting together each of the three components as required in order to monitor a particular station. It's important to understand that, as is all things, you need to aim for the proper combination that does the right job. You cannot simply add everything possible from the "tool kit" and get the best results. Each component takes up a certain amount of processing time in the CPU as well as other computer resources, such as memory and video card overhead. Yes, you can create the biggest, most complicated device your imagination will allow, but you may find that your computer becomes so slow and sluggish that it no longer works.

What you need to do, as I have said before, is decide what your particular mission will be for each project. It's best to plan first, then put the system together. Take a piece of grid paper and work out the component blocks ahead of time, then build it, putting a check mark beside each part you've completed.

Frankly, the absolute worst way to use the program is to create virtual devices on the computer screen and then just "see what happens." You really have no way of measuring your results except in a subjective "well it seems to sound good" kind of way.

This will become even more apparent when you begin to move into more complex ways of using your software, such as controlling a remote radio over a network or the Internet. That's the real bottom line for this type of software.

Don't forget that there is a demo version of the software located at the "Computer Aided Technologies" website at <www.scancat.com>. You don't have to have a monitoring radio hooked up to your computer to be able to run the demo. You will, however, need a Pentium-based computer running one of the Microsoft Windows operating systems, as well as a Soundblaster-compatible sound card installed (a couple of speakers would be nice, too, so you can hear the sounds of the different digital modes). The demo version will let you build some basic configurations and see the software in action in the various modes, giving you some real hands-on experience working in its virtual environment.

Coming Next Month

Next month I'll show you how to use this software in different ways. You will be surprised how easy it actually is to connect to either a small network or the Internet using the existing components of your Windows operating system. And if you are a Macintosh user, don't worry, I'm going to be addressing your needs in a future column.

Don't forget that I'm looking for reports on how you have set up your computer-assisted monitoring stations. I've already received some reports that I'll be sharing with you in upcoming columns.

Remember that you can e-mail or write to me with ideas, comments, and suggestions. The e-mail is <joe@provcomm. net> and my mailing address is "Computer-Assisted Radio Monitoring," c/o Joe Cooper, PMB 121, 1623 Military Rd., Niagara Falls, NY 14304-1745. While I can't answer general questions about computers, software, or operating systems, I will do my best for any questions about the content of the columns or computer-assisted radio in general. ■

technology showcase

new product performance analysis

by James Careless <jamesc@tjtdesign.com>

CCRadioplus and Justice Antenna – A Potent AM DXing Combo

"The Best Radio for Long Range AM Reception" and "the best compact antenna for a portable radio or home stereo"? Well, that's how C. Crane Company describes its CCRadio*plus* and its Justice AM antenna. But are they? Well, "best" is a very hard term to quantify. However, when compared to the venerable Panasonic RF2200—a legendary AM Ding machine in its own right—the combined CCRadio*plus*/ Justice Antenna more than hold their own.

Basic Descriptions

Both the CCRadio*plus* and the Justice Antenna come from the fertile brains at C. Crane Company. Located in Fortuna in northern California, C. Crane is a family-run firm dedicated to building and selling innovative electronics.

In this case, the CCRadio*plus* is the second generation of the company's CCRadio. Designed by C. Crane chief engineer Chris Justice and Sangean's Mr. Pai, the CCRadio*plus* is meant to be the ultimate AM receiver for talk radio. The reason: C. Crane owner/president Bob C. Crane adores talk radio—he just can't get enough of it. Trouble is, when he moved from Silicon Valley to Fortuna some years back, Bob couldn't tune in his favorite talk radio shows reliably on AM. That's what led him to develop the CCRadio, which is manufactured for C. Crane by Sangean (as is the Justice Antenna).

Of course, even the best DXing machine can have trouble picking up signals. In this case, Bob wanted to improve the CCRadio's performance in his home with an external antenna. The answer, as devised by Chris Justice, was the Justice AM Twin Coil antenna.

Now the Justice Antenna isn't the only tunable AM antenna on the market. However, what makes it stand out is Chris Justices' patent-pending "twin coil" design. What he's done is wrap coils at either end of the Justice's ferrite bar antenna in order to boost signal gain.

As Chris Justice told *Pop'Comm*,

> When I was playing around with the ferrite bar, I noticed that it had magnetic anomalies. This means that both ends have an energy field; one positive, and one negative. I got the idea to put coils on both ends to capture both fields and sum them—with the aid of a tuning transformer—into a higher gain signal. The result is that the RF is effectively doubled,, or better at the receiver.

The Nitty-Gritty

Okay, before we talk performance, let's get a better overall picture of both the CCRadio*plus* and the Justice Antenna.

Available in either black or silver, the $159.95 CCRadio*plus* covers AM (extended band to 1710 kHz), FM, TV audio Channels 2 through 13, and the NOAA Weather Band (WX). At 3.9 pounds without batteries and with a form factor of 6.5 x 11 x 4 inches (HWD), it's not a small radio. However, the CCRadio*plus*' ample dimensions allow room for a 5-inch loudspeaker and a large LCD clock/frequency display with on/off backlight.

Underneath the LCD display on the right hand side (the speaker takes up the left and center of the CCRadio*plus*' front) you find separate up-down slewing buttons for tuning (both Manual and Auto Scan). Below them are separate dials for bass and treble; to the left are buttons for setting the clock, the clock radio, and a programmable timer for recording your favorite shows. (To do this, C. Crane offers a special 1/4 speed VersaCorder cassette player for $109.95.)

On the right side of the CCRadio*plus* is a large rotary tuning dial for manual tuning, a smaller audio volume dial, a lock

switch to prevent the set from inadvertently switching on when packed, and a headphone jack (mono for AM/TV/WX; stereo for FM). On top are the five memory preset buttons (five presets per band), the Power/Sleep button, the Weather Alert button (it monitors for severe weather alerts 24 hours a day and sounds an alarm when one is issued), and the Band/Aux button, so that you can port another device into the CCRadio*plus*.

On the back are connections for an external AM antenna, an LED lamp, AC power (cord supplied), an external 6-volt solar panel charger (available with an LED light from C. Crane for $99.95), plus Line Out, Timer Control, and Aux In miniature input jacks.

Finally, the CCRadio*plus* comes with a built-in whip antenna and a carrying grip molded into the set case. Power comes either from AC, the optional solar panel, or four "D" batteries.

Now let's look at the $99.95 Justice Twin Coil Antenna. It consists of a battery/AC adaptor-powered Tuner Control box with both Fine Tune and Coarse Tune controls, the twin coil Antenna Element which connects to the Tuner Control with an included 5-foot coaxial cable, an RCA female patchcord with two bare wire ends for connecting to terminal screws, a 1/8-inch mono-to-RCA connector patchcord mini plug for connecting the Antenna Element to the Tuner Control, a power adaptor, and a Ferrite Stick.

The Ferrite Stick is a neat little device designed for radios with internal ferrite antennas (the Justice can be used with any AM set—not just the CCRadio*plus*). Plug it into the RCA connector on the 1/8-inch mono/RCA patchcord, put it on top of your radio's case, and the Ferrite Stick allows you to couple the Justice Antenna's output inductively to your radio's internal ferrite antenna.

The Justice Antenna Element is weatherproof. With a remote mounting patchcord (a 25-foot kit costs $19.95, while a 50-foot kit costs $29.95), you can mount it outside. However, for my tests, I used the antenna element in a second-story window, about five feet away from the CCRadio*plus* and Justice Tuner Control. (The house is wood frame, in a residential area with relatively little RF interference.)

Checking The Performance

Right off the bat, I have to say that the CCRadio*plus* is an incredibly enjoyable receiver to use. Its tuning is highly selective, enhanced by the manual dial's ability to tune by single kHz steps on AM. Meanwhile, the CCRadio*plus* provides sensitivity to the max. It's almost too sensitive, in fact, since I reliably picked up BBC 5975 as an image on 655 kHz without the Justice Antenna even being attached.

Finally, there's sound quality. Bob Crane told me a while back that the CCRadio*plus* was engineered to produce optimal voice quality on AM, and I believe him. This radio makes AM pleasant to listen to—something you don't find in many radios today. In short, this is an extremely fine receiver, both electronically and in quality of manufacture.

Add on the Justice Antenna and the CCRadio*plus*' *already* considerable Ding ability is enhanced. However, what really impressed me is the Justice Antenna's selectivity. When you're tuned to a specific channel, the Justice tuner lets you literally home in on the best part of the signal. First you turn the Coarse Tuning dial to eliminate interfering stations and maximize the signal (helped by the CCRadio*plus*' Signal Strength meter, on the right side of the LCD display). Then you clean it up further using the Fine Tuning dial, which sits on top of the Coarse Tuning control.

"Right off the bat, I have to say that the CCRadio**plus* **is an incredibly enjoyable receiver to use. Its tuning is highly selective, enhanced by the manual dial's ability to tune by single kHz steps on AM."

For me, the Justice's tuning came through in two very different situations. First, if tuning the AM band, I came across two or three stations which were all over each other, I could often tune *between* them using the Coarse Tuning control. It was like having a radio within a radio, with each channel being a separate tunable band. Second, if I found a location cluttered by local station images (something that happened regularly with the CCRadio*plus*, given my proximity to certain transmitter sites) the Justice Tuner Control usually let me null out the offending locals effectively—often completely. A case in point: I like to listen to WCBS 880 in New York. On the CCRadio*plus*/Justice Antenna combo, I found the station being pounded by locals on 580 and 1200 kHz. However, if I tuned carefully using the Tuner Control, I was able to get WCBS in the clear. (By the way, this is where I found having the Antenna Element within reach very handy, since I was able to rotate it manually to boost WCBS' signal while nulling out the locals.)

Now for the big test: how would the CCRadio*plus*/Justice Antenna stack up against the Panasonic RF2200, the analog multiband which features an external, rotatable ferrite rod antenna? As it turned out, very well indeed. Scanning across the bands, there were times when the RF2200 pulled in a station better, but there were other times when the CCRadio*plus*/Justice Antenna combination outperformed. In fact, on a head-to-head basis, I'd have to rate the two as essentially tied, at least in terms of sensitivity and selectivity.

Where the RF2200 had a slight edge was in audio quality, thanks to its deeper case. Also, the RF2200's manual RF Gain control allowed me to optimize signal strength—just enough to get the station I wanted, while denying access to those I didn't. This said, the CCRadio*plus*' 1-kHz tuning steps often allowed me to eliminate background whine—something I just couldn't do with the RF2200, despite its analog tuning. In short, although the RF2200 sounded better on clearer channels, the CCRadio*plus* was often better for listening to cluttered ones.

The Final Analysis

As an AM Ding machine, the CCRadio*plus*/Justice Antenna combo is hard to beat, especially for the price. They're good quality, nicely finished components that perform well. That said, either the Justice or the CCRadio*plus*—or both—could really benefit from some form of manual gain control. I know that the CCRadio*plus* has AGC, as do most high-end radios these days; however, being able to disable AGC in favor of manual gain control would be a big plus for AM Ding.

For more information on either the CCRadio*plus* or the Justice Antenna, contact C. Crane Company at 800-522-8863 or online at <www.ccrane.com>. Be sure to tell them you read about these two great products in *Popular Communications*! ■

on-the-go radio

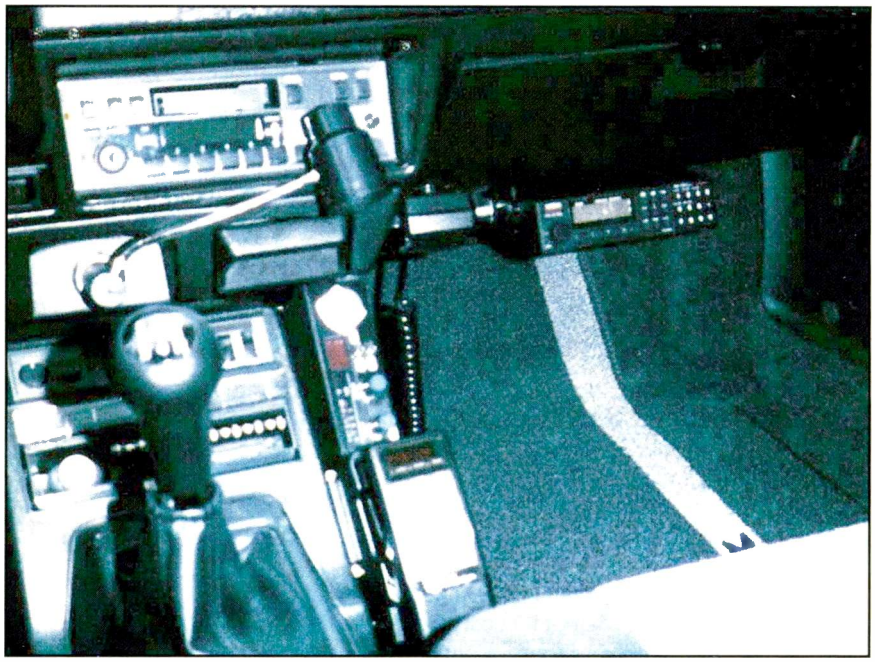
around the block, around the world-personal radio keeps YOU in touch

by Alan Dixon, N3HOE / WPUC720 / KST8678

What's Going On With "Wireless"? Plus A Look At All That Jargon

Every once in a while we need to take a step back from what we are doing, take a deep, slow breath, and contemplate our direction. This goes for any field of interest, but is especially true for radio communications and wireless technology. We really should take a look, from time to time, at where we have been and where we are going. Doing so helps keep us focused and organized in our efforts. It helps us manage our knowledge of the topics and technologies at hand, enabling us to "connect the dots" in comprehending newer information and in relating this to older information with which we are already familiar.

And if radio communications happens to be an obsession for you, then pausing to reflect just might help save your sanity, too. There is an awful lot of new information concerning the accelerated evolution of communications technology. And it truly is challenging not only to keep up with but, more importantly, to understand how recent developments will or will not affect our own radio communications interests.



A 1987 Honda CRX telematics installation view from driver's seat. (All photos by N3HOE)

Have you been wondering about all the changes going on within the world of wireless—changes occurring so quickly that you can hardly keep up with the endless stream of emerging technology and the inevitable related jargon? Really! What has been going on in wireless technology, anyway?

We need to understand that even though radio technology has existed for well over one hundred years, sophisticated and powerful personal wireless communications services were, for the most part, not available to everyday folks. It's amazing to realize that, just a generation or so ago, only government and public service agencies and personnel, businesses, and licensed amateur radio operators had access to powerful and reliable radio communications. For the rest of us, not so long ago, a "wireless" phone meant a relatively low-tech cordless phone for use around the house. And having a two-way radio in the car meant having a CB installed under the dash, with its typical mobile unit range of perhaps four miles or so. Neither of these was, or is, good for phoning home from afar. And depending upon location at any given moment, CB has sometimes been less than totally reliable for summoning help in an emergency while on the road.

These simpler devices definitely have their advantages, though. We here at *Pop'Comm* have illustrated this a number of times in our recent issues, both here in "On-The-Go Radio" and in our "Homeland Security" column. The point remains, however, that we have more technological innovations in wireless devices to captivate our interest now, by far, than we did not so very many years ago.

The technological boom of the last 15 years or so has created enormous interest in newly introduced consumer electronics devices and high-tech *toys*. Does this surprise anyone? Telecommunications, wireless communications in particular, has benefited greatly from these recent developments. And it has become quite evident that there is a nearly magical *personal* appeal to so many of the radio devices and wireless services available. For example, small handheld communications devices now enable anyone to be personally connected to colleagues, friends, family, and home—wirelessly—from just about anywhere. Cost issues aside, few people can resist the safety and security offered by this kind of ubiquitous connectivity.

This technology that reaches the home, and even touches the heart, was certain to generate interest in many people. Your own personal interest in radio communications virtually assures that you are going to have high-tech communications devices in various aspects of your world. Even among those who use wireless devices mainly in job-related settings—you know, the company cell phone and the beeper—it's more than merely a business relationship with communications tools. That is to say, you likely won't be using *only* a cellular telephone and you won't be using it *just* to check in with your business or employer.

Most of us who are wrapped up in the business world find our lives far too busy and diverse to keep *any* aspect of it from being strictly business. As it is, you businesspersons among us are prob-

ably already carrying a couple of different wireless devices on your belt or in your handbag. You may have a pager or text messaging device, a portable cellular phone, or perhaps a handheld two-way radio, depending upon your needs and uses. You arm yourself with whatever variety of communications tools you feel you need. You're connected, and you love it!

Now, if you are like most folks, including many seasoned radio hobbyists, you're probably just a bit bewildered by the multiplicity of wireless technologies and products touted in technical journals and hobby magazines. You've seen them in various consumer advertisements, trendy technology retail stores, and catalog sales-order outlets. As radio enthusiasts and hobbyists, we do need to develop at least some concept of the various newer radio technologies in use or under development. Only then we will be able to see just how some of this technology fits in with more traditional, established communications modes, and how various technologies and modes can be useful to our specific needs and interests as radio operators and enthusiasts. Therefore, we will be looking at some of the newer consumer wireless technologies in upcoming "O-T-G Radio" columns. (And we *will* continue to examine developments in our traditional radio modes, of course!)

Remember, it is essential that radio communications enthusiasts always pay close attention to promotional literature as well as magazine and newspaper articles on any and all newer wireless technologies. Improvements and advances are occurring at an incredibly fast pace, and this is the best way to keep up with the latest happenings.

What's Your Interest?

Take a moment to think about what specifically your own particular interest in radio communications happens to be. How involved are you? Are you simply a *consumer* of wireless services and devices, or do you consider yourself to be a wireless technology buff or enthusiast? Some folks are simply wireless device users—which is fine—while others are radio *enthusiasts* who are truly in touch with the technology and allure of radio communications operation. Too often though, *hobby radio* is used to refer strictly to licensed amateur radio operators. Nevertheless, if you operate, collect, or even just play around with radio equipment, don't be hesitant to think of yourself as a radio enthusiast or hobbyist, particularly if that is *in reality* what you happen to be.

Passenger-side view of the CRX telematics installation.

Because the common denominator among regular *Pop'Comm* readers is *radio communications*, a number of you will happen to be telecommunications professionals as well. You may be working with wireless services either directly, as in the case of the network engineer, or incidentally, as in the case of the public safety official. To the credit of your career dedication, as well as to the credit of your own intellectual diversity, it is obvious by your presence here (as a reader) that you, too, share this *personal* interest in radio communications technology and operation. This is outstanding and highly commendable, certainly!

In any case, I prefer to avoid the terms "amateur" and "professional" as much as I reasonably can. Why? These words are commonly misused and misunderstood. For example, *amateur* is most often used in conversation to refer to incompetent or marginal performance, work, or service. And it is used to imply that *amateurs*, in any given activity, are untrained and unskilled. However, nothing could be further from the truth in describing licensed amateur radio operators. Hams, as they are informally known, are indeed trained, often highly trained, and typically display sophisticated operating skills that would shame even some public safety communications dispatch operators I've dealt with over the years.

Check your dictionary. *Amateur* simply means that the activity in question is done for the *love* of it and not for financial gain. That's it, nothing less and nothing more. And trust me, the word did not originally imply poor performance or anything derogatory, in spite of the way some folks have come to actually use the word. So to avoid misconceptions, I have pretty much stricken "amateur" from my vocabulary—with one important exception. Whether we care for it or not, licensed hams are officially called "amateur radio operators" by federal law, and that is that!

Likewise, "professional" is commonly used to mean someone who conducts a particular activity or service in the course of that person's employment. And it can imply that the work done or the service rendered can be expected to be done perfectly. Right. Sort of. Go back to your dictionary. A *professional* is indeed someone eminently qualified to render a particular product or service. However, a professional may or may not be compensated for his or her activity. That's right, amateur radio operators can be, and often are, thought of professionals in their avocation.

As with "amateur," I have somewhat limited my use of the term "professional." You may want to do the same. Appropriate alternative terminology for those engaging their *professional* skills *for a living* may be "commercial" or "career," depending on the context. I refer to my own FCC commercial licenses as exactly that: *commercial*. I could just as well call them *professional* licenses (except for engineering purposes), but I generally don't. The fact is, nowhere on these FCC licenses do these terms appear. The purpose of any such license is simply established by the regulatory requirements and intent of the license class in question.

While we are on this subject, let me say that I find "vocation" and "avocation" to be interesting and perhaps underutilized

words. In simple terms, a *vocation* is a career and an *avocation* is just the opposite: a hobby or a side interest. It has occurred to me though, that "enthusiast" seems to be a good, broad term to describe anyone with a special interest in any particular activity, whether or not they earn a living in performing that activity or in pursuing that interest.

In any case, my intent is not to establish some sort of political correctness, but simply to avoid confusion. I always try to use terminology that may not be trendy, but that gives an appropriately descriptive picture. There is already enough confusing terminology being used in discussing radio communications technology and operation!

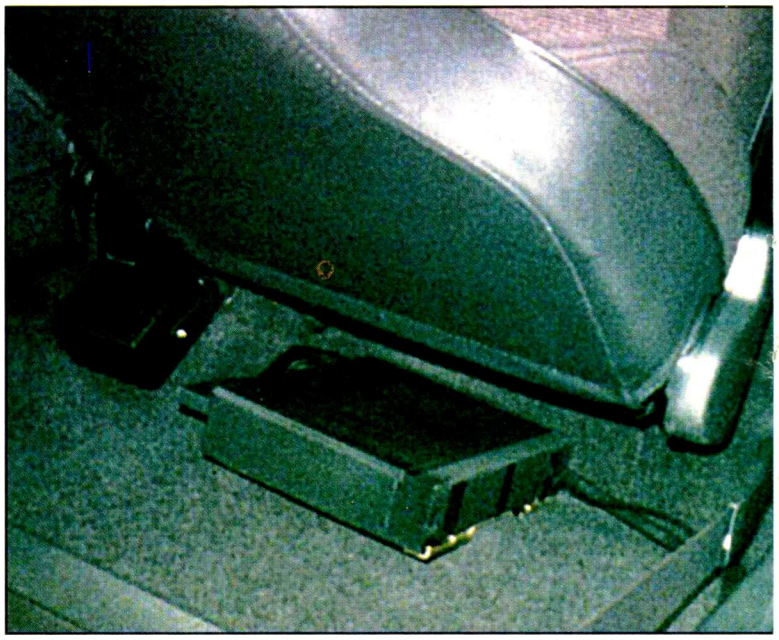
Defining Our Terms

Now, just what do we mean by "wireless," anyway? And how is it different from "radio"? Well, generally, the two terms are synonymous. *Wireless* includes radio communications and a few non-radio devices, such as the infrared remote control for your television set. It's really that simple. Unfortunately, though, telecommunications marketing folks with their marketing hype have come to use the nouveau-chic *wireless* to refer to the various mobile telephone services, such as cellular. Likewise, these same folks have unilaterally relegated the more mundane "radio" to mean our familiar AM and FM broadcasting, as well as conventional push-to-talk two-way radio, which some in the industry would have you believe is obsolete. This hip terminology is all baloney, of course, because these two words simply mean what they say, nothing more and nothing less.

While we're coming to terms with some basic concepts, you should know that there are a significant number of popular misconceptions about radio technology and operation. And there are areas of radio technology that I have rarely seen adequately explained. Oh, yes, there is also a noteworthy body of *disinformation* spread by both industry marketing types and by government policy wonks. Much of this puffing and hype is being spewed forth by commercial interests seeking to push their products and services to unsuspecting consumers. These untruths seriously need to be deflated. You and I are not fools, and we deserve better than to be given confusing technology claims and unrealistic performance expectations.

We really ought to define a few other terms here. Or, perhaps I should say *eliminate*. Many of these terms come from the realm of commercial wireless services and have found their way into the radio enthusiasts' avocation, as well. The trendy techno-terminology and marketing hype that you will find in the high-tech world is mind numbing. Trendy jargon has little informative value and is used primarily to attract the attention of those using such language and to inflate their invariably insatiable egos. So, here again, I tend to avoid the overuse of sales-force doublespeak. The jargon of the day is just like any other fad. It comes and it eventually goes, though never any too soon. In fact, some of the high-tech jargon we have been hearing in recent years is already fading. Thankfully.

Two of the terms I find most annoying and, frankly, useless are the illegitimate antonyms "legacy" and "enterprise." Computer geeks, in particular, have long been using these absurdly patronizing words. *Legacy* is the politically correct way of calling a particular technology, product, or device *obsolete*. It is precisely the political correctness of shunning a word so curt and blunt as "obsolete" that reeks of being sickeningly patronizing. We wouldn't want to label something to be what it in fact appears to be, would we?



Here's a professional-grade cellular mobile phone transceiver box.

As an example, in the business world, how do you describe justifying the costly software upgrade that you insisted your company needed just last year? Are you going to admit that it *might* just possibly have become *obsolete* already? Not if you want to save face. "Our focus group consensus indicates that this year's *enterprise* software version acquisition can be leveraged to strategically align itself with last year's *legacy* version investment!" Translation, minus the bovine excrement: "We wasted some serious big bucks buying last year's software upgrade. We realized it was already obsolete the week after we bought it, and the vendor refuses to give us a price break on buying this year's upgrade, which, by the way, we really have to purchase in order to continue to justify last year's foolish and shortsighted expenditure!" You get the picture.

Conversely, as shown in the example above, *enterprise* is used to characterize the *latest* (though *not* necessarily the *greatest* technology, product, service, etc. You will hear this especially in the business world, where we want to appear forward-looking and productive. If making a capital expenditure on a new generation communications system or making a costly "upgraded" information systems procurement makes us appear to be on the leading edge of productivity and efficiency, then we must certainly go for it, right? What an effective concept to induce both businesses and consumers into parting with yet *another* sizable chunk of their money! You've got to move up to the latest *enterprise* equipment. We *do* want to appear to be *enterprising*, don't we?

So, are you laughing yet? You should be. Always bear in mind that *newer* is not always better. Likewise, and perhaps even more important, please remember that *older* is not necessarily something bad or obsolete, by any means. *Newer* is simply newer, and *older* is simply older. Quality, desirability, and function of devices and products are independent of the age of the design or technology.

Analog And Digital!

Now, there are two more terms that are too often abused and misused. In fact, these are overused entirely, whether used cor-

Typical on-glass mobile cellular antenna installation on the CRX.

rectly *or* incorrectly. Beware of the adjectives "analog" and "digital." These are valid and legitimate technical terms that have been "illegitimized," if you will, by marketing and sales people and politicians alike.

Digital has become one of the most misunderstood words in our language. This is because it is has been used to describe everything from coffeepots to musical instruments. The term has become a stamp of approval for telecommunications equipment and systems for the new millennium. As absurd as this is, *digital* has come to be nearly synonymous with *enterprise*. If a technology, device, or product comes from the latest-generation technology, if it is the newest and most advanced, then it must be *digital*, right? Marketing people seem to believe this. And most of those politicians who are the key telecommunications policy-setters actually put their faith (and *your* money) in this misconstruction of the word!

Wait a minute. What if something new and desirable and good and functional has no digital technology component? Oh, horrors! Perish the thought. It simply isn't possible, is it? If it's not *digital*, then it can't possibly be worth adopting or promoting. It simply can't be good technology, and it shouldn't be used any longer than necessary. If it's not *digital*, then (gasp!) it must be (shudder!) *analog*. And anything *analog* is surely obsolete.

You see, the same mindset that has illegitimized "digital" has also illegitimized "analog," and it now means anything that is *not digital*. And since all things *digital* are exalted, conversely, *analog* has come to mean all things condemned to obsolescence. Here again, marketing people seem to believe this stuff. And these same politicians who are the key telecommunications policy-setters likewise put their faith (and again, sadly, *your* money) into the misconstruction of *analog*, as well.

Well, are you crying yet? You should be, at this point. Somewhere deep within the bowels of the wireless world of engineers, marketers, regulators, and politicians, this massive misconception has evolved and propagated. Look, *analog* and *digital* simply describe different technical methods of accomplishing a particular engineering objective. We will not examine the specific technical definitions of these terms here. What we do need to understand at this point, though, is what these words *don't* mean. First, neither carries any connotation (trust me) of anything good or bad, workable or not workable, expedient or useless. Second, these terms are *not* antonymous—they are *not* opposites. "Analog" and "digital" are no more opposites than are "salt" and "pepper." As the latter are simply different spices rather than opposites, so are *analog* and *digital* different methods rather than antithetical.

I could write an entire book, a glossary of sorts, on the hip but useless wireless high-tech jargon being mindlessly tossed around these days. And I am thinking primarily of the *trendy* stuff here, not the *useful*, descriptive, and recognized technological terminology used in proper context. So, for the sake of simplicity and clarity in talking about our radio communications interests, let's leave behind the buzzwords as much as we can. As for my part, please keep in mind that I'm here to inform and enlighten, not to baffle and bamboozle. After all, radio technology is great! We're into it, so let's have fun with it, and let's make it work for us.

Retro Telematics— An Example To Ponder

How about a brief blast from the past? Not way, way back, but just about 15 years or so. Take a look at our photographs this month to see the state-of-the-art in *telematics* as it was circa 1987. Mind you, the term "telematics" didn't exist then, but that does not mean that telematics technology and products have not existed all along.

You are looking at the interior of a factory fresh 1987 Honda CRX, with its electronics upgrades installation completed. Look this over and see how far we have come in little more than a decade. Take a look at the one photo taken from the driver's seat perspective. You can see the upgraded digitally tuned AM-FM-cassette in-dash unit just above the center console. Less expensive car radios still had the old inaccurate dial-pointer variable capacitor tuners.

Automotive mobile CD player/ receivers were not available for all car models as yet, and the units that could be found were often unreliable. Many had a real problem maintaining laser tracking when subjected to potholes and other suspension-challenging road obstacles. A factory-option seven-band graphic equalizer is barely visible at the top of the center console, behind the massive five-speed shift knob. Those were real illuminated slider pots, not a "virtual" (ugh, more mindless jargon!) EQ display on an LCD or plasma screen. Notice also the small 12-volt gooseneck map light, a perennial favorite from RadioShack, plugged into the lighter socket. Most of the telematics items in the CRX are also visible in the companion photo, taken from the front passenger seat angle.

The CRX was also outfitted with a still rare (in 1987) high-end item. A Motorola 2000X full 3-watt cellular mobile phone handset is mounted on the right of the console. This was no wimpy 1/2-watt (okay, 600 mW, to be exact) hand portable phone in a cheesy plastic "car kit" holder. No sir. This unit had a full-size handset that you could really get your hands around. And, although it's hard to find today, it is still the preferred style telephone in livery limousines, government staff cars in Washington, and in motor homes.

Another photo here shows the phone's bulky, but rugged, transceiver box mounted behind one of the seats. This Motorola box had a solid cast metal body and heat sink on a keyed lock-down mounting plate. These true mobile phones were, and still are, professional-grade equipment, not at all like the consumer-

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grade handheld phones exclusively sold to consumers and to most businesses today. You just couldn't beat having maximum legal power and a hardwired handset that actually spanned the reach between the ear and the mouth. And it couldn't become lost or—oops!—left behind. The top of the handset, showing the DTMF pad and LED display, can be seen in both of the interior dash/console photos. The bottom of the handset is obscured by the passenger seat cushion.

Look carefully at the exterior rooftop photo and observe an original Antenna Specialists On-Glass 3-dB gain antenna. This "no holes" permanent mount antenna was once the prime choice of mobile cell phone owners. As shown on the CRX, this antenna was mounted on the right rear side window. The rear louver precluded a more typical rear window top-and-center mount location. Since the window on which the antenna was placed could not be opened that location was an excellent choice.

A compact 40-channel CB set is visible, mounted just above and forward of the cell phone handset. This was a readily available discount store model, possibly a Kraco, and had a rotary channel knob and digital channel display. The two slider switches may have been ANL on/off and instant Channel 9. The two knobs are on/off/volume and squelch, of course. The original metallic gray knobs had been replaced with the blue/black knobs, in favor of the replacements' more functional white indicator lines. (Can any of our sharp-eyed and knowledgeable readers identify this particular CB set?). This is one item in the CRX that is little different from today's compact CB radio models.

CB radios and cell phones serve entirely different purposes and cannot be logically compared to each other, with the primary exception of calling for help in an emergency. In 1987 and for another three or four years to come, cellular service was available only in metropolitan areas. Once a person had cruised beyond the suburbs and was out on the Interstate highways (or rural two-lane highways, for that matter), the "No Service" LED would come on, and the phone was then dead until AOS (acquisition of signal) upon returning or reaching another city. Most folks today have never even seen the No Service indicator on their phones, but, for a few years, a number of early 800-MHz cell phone users became rather adept at cellular DX and hill-topping techniques. (Sadly perhaps, this has already become a lost art.) For the most part, though, unless you happened to be a licensed ham operator, if you had an emergency out on the open road, you needed CB radio to get a message through. The CRX's CB rig was more than just a cute accessory.

You can't miss the CRX's programmable scanner, neatly tucked under the glove box. This unit was the popular Uniden Bearcat BC-760XLT 800-MHz model. The owner of this car was a firefighter in a metropolitan county, in one of the first jurisdictions to make the switch to a trunked 800-MHz radio system. In 1987, this was about the only way to monitor the 800-MHz public safety channels. TrunkTracker scanners were still years away. This Bearcat was considered advanced for its time, not only for its 800-MHz coverage but also because it was keypad programmable. Many scanners produced in 1987 were still rock-bound, and most electronics stores still carried all of the most popular local crystals in stock. Others were programmable, but required punch cards or complicated binary codes for DIP switches hidden away inside or on the back panel of the receiver. The BC-760XLT was a solid, well-performing radio sold by Uniden for a good number of years. Early units were easily modified to receive cellular frequencies. Depending upon your use and locality, the unit is not obsolete, even today.

Incidentally, that first-generation Honda CRX itself was a solid, well-performing sports car. I have driven the CRX and, as claimed in its owner's manual, it effortlessly did 70 mph in only second gear without redlining the tach! I'd like to see this particular CRX today. If its owners took only moderate care of it and didn't bang it up, it likely looks and runs like new. It was nearly impossible to destroy a Honda engine or drive train of that era, and the predominately plastic body would never rust.

Lesson Over

So, that's a brief look at where we have been with telematics in the last 15 years. Consider for yourself, then, how much has changed and how much has not. How many of the changes we see are real improvements? How many changes are merely *different*, with no significant improvement? Have some alleged improvements or advancements resulted in products that turn out to be less desirable, lower in quality, too complex, or unnecessarily expensive? Some people feel that certain newer products have more bells-and-whistles than they want, or are willing to pay for.

Are progress and the telecommunications and telematics industries taking us backward or forward? I imagine we would all agree that we are headed forward, but perhaps not *straight* ahead, or perhaps we are being pushed ahead a little faster than we would like to be. Sometimes it seems that progress takes one step backward for every two steps forward. Perhaps it should.

Our lesson for the month is to remind ourselves to question new technology, advancements, and particularly any purported improvements in communications products and services. Learn what they are actually about and the principles of how they operate. Cut through the bull, the jargon, and the "sales-speak" happy talk and get right to the heart of the matter at hand.

For next month, no more "lessons." I promise! The seasons are changing, and it will be time for us to get right back into the nuts-and-bolts of the personal radio services we love: FRS, GMRS, 11-meter CB, and (hopefully!) MURS, in addition to any interesting telematics news developments. Until then, remember that summer is coming, so enjoy the spring air and use the warmer weather to check on your outdoor antennas and to check over your mobile station as well—under the hood and under the dash. And pick up that mic and get on the air on that CB! Send me your comments at <n3hoe@juno.com>.■

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Bearcat Sportcat 180B handheld sports scanner	$139.95
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AOR® AR8200 Mark IIB Radio Scanner

AOR8200 Mark IIB-A wideband handheld scanner/**SPECIAL $539.95**
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Frequency step programmable in multiples of 50 Hz.
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The AOR AR8200 Mark IIB is the ideal handheld radio scanner for communications professionals. It features all mode receive: WFM, NFM, SFM (Super Narrow FM), WAM, AM, NAM (wide, standard, narrow AM), USB, LSB & CW. Super narrow FM plus Wide and Narrow AM in addition to the standard modes. The AR8200 also has a versatile multifunctional band scope with save trace facility, twin frequency readout with bar signal meter, battery save feature with battery low legend, separate controls for volume and squelch, arrow four way side rocker with separate main tuning dial, user selectable keypad beep/illumination and LCD contrast, write protect and keypad lock, programmable scan and search including LINK, FREE, DELAY, AUDIO, LEVEL, MODE, computer socket fitted for control, clone and record, Flash-ROM no battery required memory, true carrier reinsertion in SSB modes, RF preselection of mid VHF bands, Detachable MW bar aerial. Tuning steps are programmable in multiples of 50 Hz in all modes, 8.33 KHz airband step correctly supported, Step-adjust, frequency offset, AFC, Noise limited & attenuator, Wide and Narrow AM in addition to the standard modes. For maximum scanning pleasure. you can add one of the following optional slot cards to this scanner: **CT8200** CTCSS squelch & search decoder $89.95; **EM8200** External 4,000 channel backup memory, 160 search banks. $69.95; **RU8200** about 20 seconds chip based recording and playback $69.95; **TE8200** 256 step tone eliminator $59.95. In addition, two leads are available for use with the option socket. **CC8200A** personal computer control lead $109.95, **CR8200** tape recording lead $59.95. Includes 4 1,000 mAh AA ni-cad batteries, charger, cigarette lighter adapter, whip aerial, MW bar antenna, belt hook, strap and one year limited AOR warranty. For fastest delivery, enter your order on-line at http://www.usascan.com.

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by Shannon Huniwell

Shannon's Broadcast Classics

a look back at radio & TV's golden years

The Short Life Of American Superpower AM

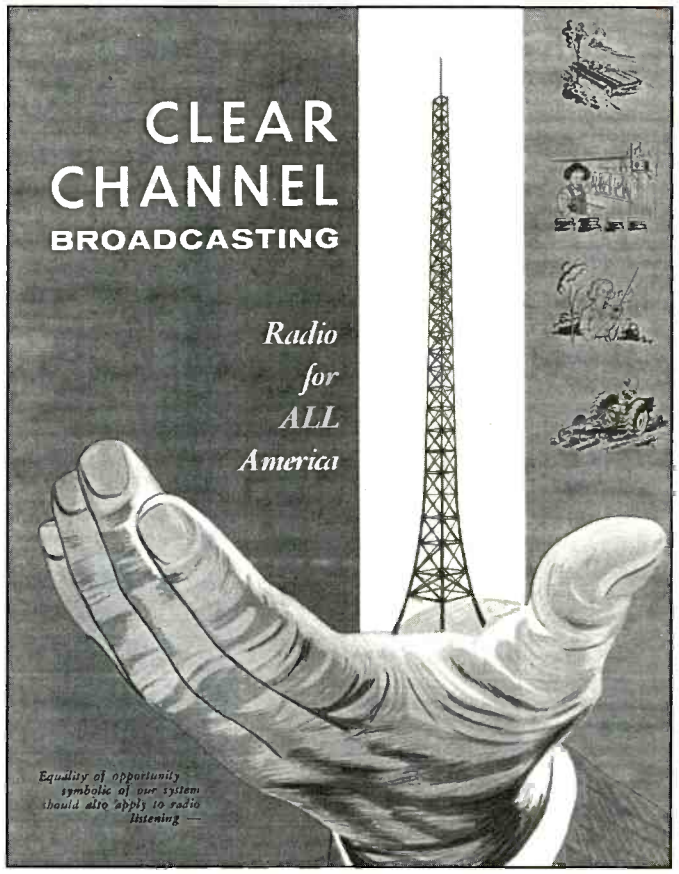
There's a radio term that some insiders use to describe powerful stations—*flamethrower!* Typically, it's a euphemism for any 10,000- to 50,000-watt AM, but the nickname has also been loosely assigned to FM outlets with mountaintop antenna height and at least 50 kW of effective radiated power (ERP). To be sure, there have long been "big" stations pumping all kinds of AM radio frequency energy into some handicapped directional array that shoots a pencil thin pattern or sends much of the signal out to sea. New London, Connecticut's now defunct WNLC (see *Pop' Comm*, November 2002) serves as a case in point. Ideally, though, a flamethrower projects through a single, non-directional stick, or via a couple of towers' worth of RF, typically yielding a simple pattern (such as a huge figure "8"), and blankets at least several states at night.

The Nation's Station

Nowhere in American radio broadcast history is there a better example of an AM superpower than Cincinnati's WLW. Dubbed "the nation's station" during the Great Depression, WLW ran a blazing half-million watts over its assigned 700-kilocycle frequency from the spring of 1934 until early 1939.

Powell Crosley, the famed baseball team owner, appliance/radio maker, and car manufacturer who owned WLW secured Federal Radio Commission (and later FCC) permission to transmit *10 times* the power of any other maximum facility (50-kW) U.S. stations. As you can imagine, coverage was extraordinary. At night, the 500 kW was so potent that regulators, bowing to pressure from radio officials in other countries, soon told Crosley he could only use his giant RCA transmitter during daylight hours when skywave propagation was at a minimum. Even Adolph Hitler could get it. The evil dictator was reportedly annoyed with WLW blasting into Berlin and, incidentally, entertaining Germans with its quintessentially wholesome American programming.

While the "Big 700's" footprint was indeed impressive, making it a sort of single-station network, the issue of massive coverage by one or, potentially, an elite cadre of several privileged AM licensees never gained sufficient political support to convert the Ohio half-million-watter's permit into a permanent authorization. Small and medium size stations held a good deal of lobbying sway in the late '30s and '40s through the National Association of Broadcasters (NAB). NAB's coolness to the superstation concept, combined with NBC and CBS concerns that outlets like the 500-kW WLW didn't particularly need network clout

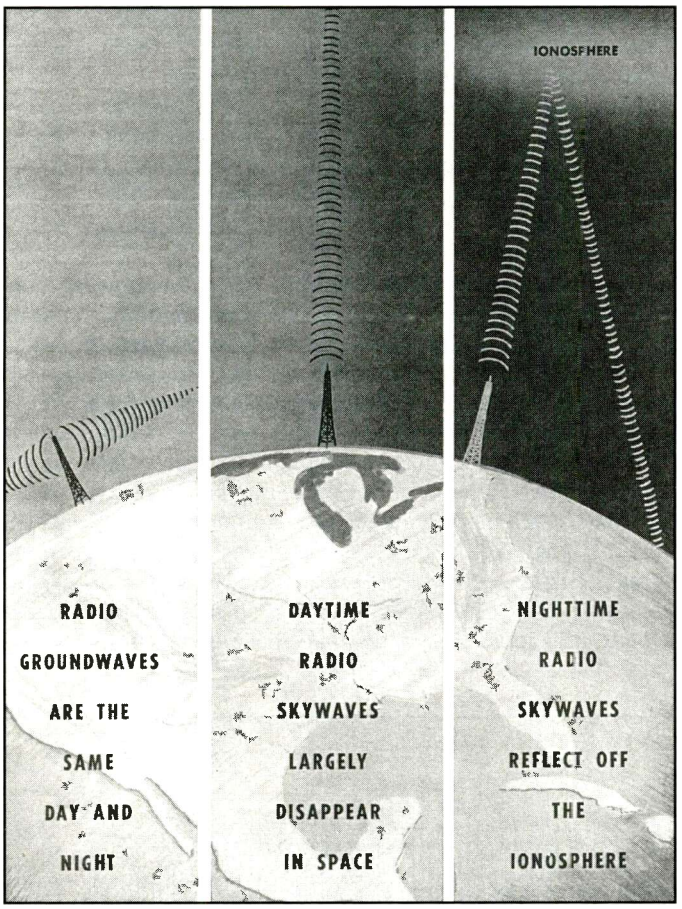


In the tradition of a Cold War civil defense brochure, the Clear Channel Superpower pamphlet hinted that the fate of many should be in a few dependably strong hands. Note that the listeners depicted in the upper right are all rural.

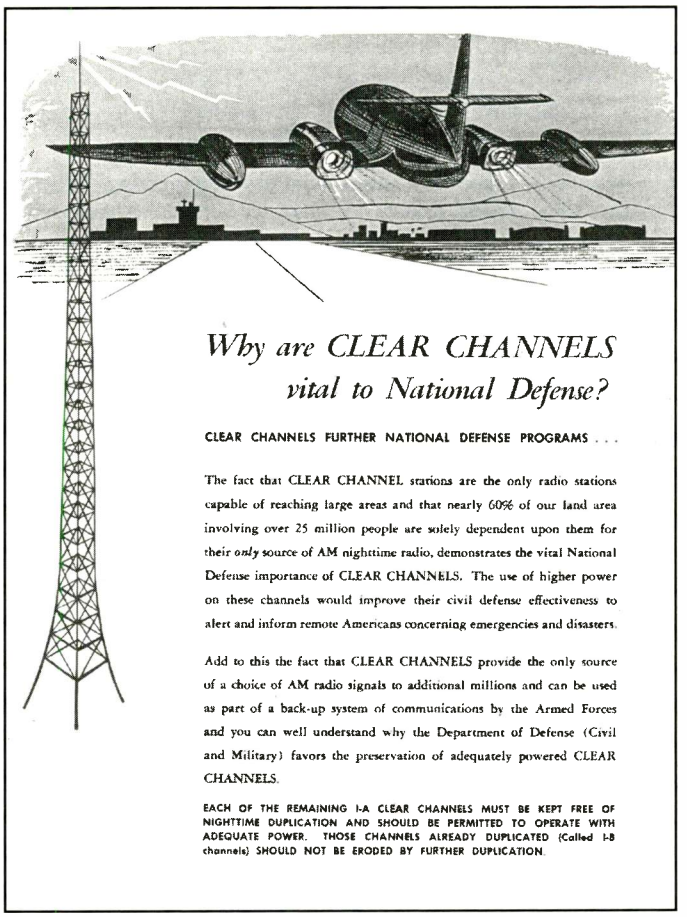
to get lucrative national advertising contracts, likely caused the FCC bigwigs' rebuff of Crosley's push for permanent "super power." After February 1939, they gave him only a cursory extension of the giant power license, which only allowed for 500,000 watts to be sent during an experimental period (midnight to 1 a.m.) Even that meager extension ended in December of 1942. Regulators figured Crosley could do fine with 50 kW and his 700 kilocycles, a spot on the dial which for decades the FCC granted to no other broadcast property (within the continental U.S.).

The '60s Flamethrower Revival

By the late 1950s the influence of radio networks had vastly eroded. These erstwhile "radio-active" organizations were hap-



"Simple, but effective"—that's how the agency that prepared this radiowave propagation explanation chart might describe its effort for the Class I-A broadcasters who authorized the educational material.



Why are CLEAR CHANNELS vital to National Defense?

CLEAR CHANNELS FURTHER NATIONAL DEFENSE PROGRAMS . . .

The fact that CLEAR CHANNEL stations are the only radio stations capable of reaching large areas and that nearly 60% of our land area involving over 25 million people are solely dependent upon them for their *only* source of AM nighttime radio, demonstrates the vital National Defense importance of CLEAR CHANNELS. The use of higher power on these channels would improve their civil defense effectiveness to alert and inform remote Americans concerning emergencies and disasters.

Add to this the fact that CLEAR CHANNELS provide the only source of a choice of AM radio signals to additional millions and can be used as part of a back-up system of communications by the Armed Forces and you can well understand why the Department of Defense (Civil and Military) favors the preservation of adequately powered CLEAR CHANNELS.

EACH OF THE REMAINING I-A CLEAR CHANNELS MUST BE KEPT FREE OF NIGHTTIME DUPLICATION AND SHOULD BE PERMITTED TO OPERATE WITH ADEQUATE POWER. THOSE CHANNELS ALREADY DUPLICATED (Called I-B channels) SHOULD NOT BE ERODED BY FURTHER DUPLICATION.

Circa 1963, when this graphic was sketched, the artist understood that a bomber takeoff and radio tower positioned over text about National Defense would probably gain even a casual reader's attention.

pily pulling resources from the aural medium to devote to TV. As local radio programming made post World War II icons of stations that went independent of ABC, CBS, NBC, et al, in order to feature strong regional news and dynamic local air-personalities spinning hit records, the WLW experiment edged back into the minds of some key radio broadcasters.

One of those broadcasters was a now-forgotten official at Rochester, New York's WHAM. He and his 50-kW flamethrower helped pay for a lobbying effort designed to resurrect superpower AM licensing for a handful of stations dominant on the standard broadcast band's FCC designated clear channels. If it hadn't been for the discovery of a small stack of promotional brochures by a fledgling radio engineer helping clean out a WHAM storage room in the 1980s, this attempt might have silently passed into the historical mist.

While undated, it appears that the 12-page booklet, *Clear Channel Broadcasting—Radio for All America*, was published around 1963. This "case for the clears" states that the "pamphlet is dedicated to achieving strong listenable radio signals" for every person in the United States. Also noted as a goal is "equality of opportunity—symbolic of our [American] system that should [also] apply to radio listening."

Essentially, this group of Class I-A clears, a category once afforded wide-ranging interference protection by generous FCC allocation definitions, saw the Soviet threat of nuclear war as an opportunity to push for enlarging their coverage areas. They accurately noted that, prior to 1980s' and 1990s' explosive FM station growth, over half the area of the United States had no local station with nighttime service. Of course, some would argue that many daytime-only AMs in rural America had to sign-off at sunset to protect the clears. But in the pre-FM-dominant broadcast environment, it was true, as they put it, that "clear channel stations (not to be confused with the corporation which took its name from this genre, *Clear Channel Communications*) were the only radio stations capable of reaching large areas and that nearly 60% of our land area involving over 25 million people [who] are solely dependent upon them for their ONLY source of AM nighttime radio." That proved, the publicity went on to assert, "the vital National Defense importance" of clear channels.

The pamphlet also did an extremely nice job explaining the system of radio frequency spectrum usage, comparing clears to "a radio expressway, making long distance travel between cities safe and practical." Regional channels, it noted "are similar to urban arteries, carrying signals to large metropolitan areas including the nearby countryside."

Finally, the document gave a nod to local channels, comparing the then-predominantly 250-watt service, "to the residential streets of a community." Only a clear (especially a Class I-A facility broadcasting solo on a particular frequency) could reliably touch the sparsely populated nooks and crannies of America. At issue was radio's once-vast "white area," or the scores of lonely square miles where only skywaves from the clears were of any service to bucolic expanses. Travelers and

long-haul truckers often found themselves in such electronic whiteouts after sunset. (This, before car tape players could ease the monotony.) How would these drivers or backcountry denizens know, the literature hinted, if the U.S. had come under attack?

As an impassioned wrap-up, the group urged that

> ...millions of small town people who face a continuing challenge [because they] depend [solely] on skywave service for their nighttime radio listening take an interest in their radio destiny and demand what is right, equitable, fair, and in the public interest. And that is—AM nighttime radio service more nearly on a par with that enjoyed by urban residents.

Then the clears that held to the hope of super power recommended that the newly motivated country folk could help the cause by:

- Developing an understanding of the problem
- Educating others
- Formulating organizational positions in favor of the preservation of radio Clear Channels adequately powered
- And mobilizing the machinery necessary to provide an opportunity for rural and small town Americans to listen to acceptable radio service at night, thus enabling the Federal Communications Commissions to meet the mandate of the Communications Act itself by making it possible to provide RADIO FOR ALL AMERICANS.

So, What Happened To This Patriotic Cause?

In a word, *nothing*. In retrospect, it seems that the scattered millions in AM's distant audience who were able to benefit most from superpower clears were pretty tough to motivate. While more easily rallied, the urban and suburban crowd could already get a dial full of reception, so superpower AM was a complete ho-hum to them. Apparently, our featured pamphlet didn't effectively register with any population, except the I-A owners.

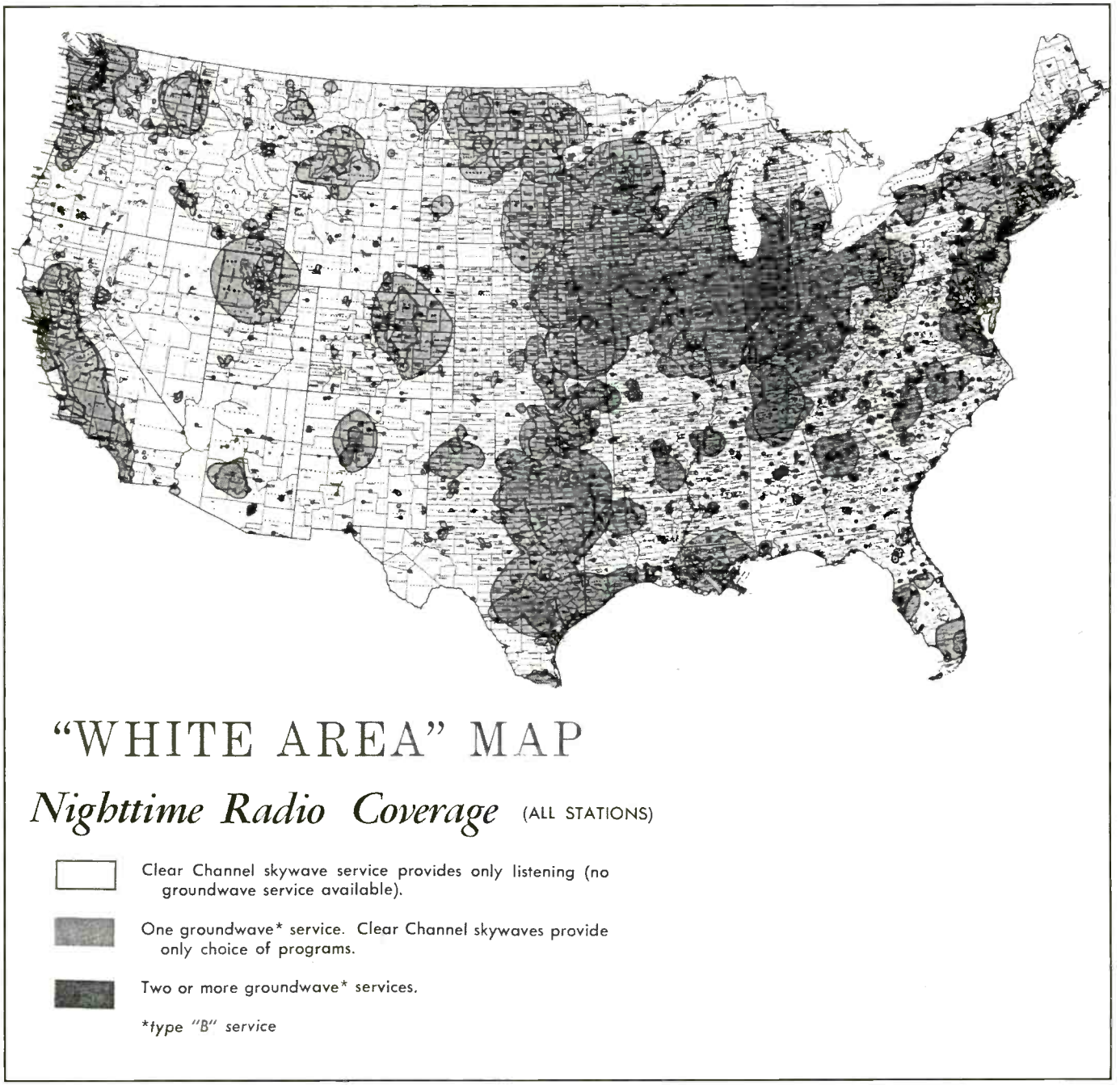
A couple of rural radio buffs (one from Montana and the other in northern Maine) admitted to me that 40 years ago AM skywave provided their sole after-dark reception. Neither, however, felt the need to complain. In fact, though both active DXers who wrote many a reception report to clear channel AMs and collected related QSL cards, they don't recall hearing (or reading) about the 1960s' drive for high-power transmission. The fellow from New England pointed out that, while DXers are the group most likely to lobby in favor of a robust radio service, few particularly wanted giant AM signals blocking out the real DX prizes: small stations bubbling up from beneath a co-channel or adjacent frequency of some 50-kW regular. "Can you imagine how cantankerous the middle of the AM band would behave," the DXer from Montana asked, "if the Commission had approved half-million-watt outputs for a whole row of Class I-A stations like WJR Detroit 760, WABC New York 770, and WBBM in Chicago on 780 kHz? What a mishmash that would have produced!"

Especially during the mid to late 1960s, the FCC encouraged broadcasters and would-be station operators to apply for the many vacant FM channels. Those new frequency modulation outlets (often activated as "nighttime extensions" by owners of small AM daytimers) began coloring-in the old white areas. Most folks verified that it was local radio they'd wanted anyway. Being able to hear their hometown varsity basketball games on the local AM daytime broadcaster's new (albeit maybe only a few-hundred watts) FM station far exceeded any desire to pull in programs from some flamethrower 2,000 miles away. Besides, TV was what most circa-1963 night audiences wanted.

For many a rural resident, the early 1960s were still void of a full compliment of ABC, CBS, and NBC television affiliates. Given a choice of crystal-clear distant nighttime radio reception or a black & white picture from a proposed UHF-TV operation or cable system, surveys found a much greater preference for video among respondents.

Like their push for FM, the FCC was promoting the construction of stations on the then-significant number of empty UHF television channels. AM clear channels were important Commission staffers would admit, but they diplomatically suggested that the future of broadcasting/ cablecasting was elsewhere. Government regulators of this era were also focused on ameliorating old broadcast monopolies in which a few organizations exercised large influence. Quite the opposite of today, in many media markets the FCC sought broadcasters' divestiture of AM/FM/TV combos. This was particularly urgent around 1970 when such triple licensees also owned the city-of-license's daily newspaper. Giving a 50-kW heritage station owner (and more than a few had those connections to their

As a nation of AM consumers, most Kennedy-era people knew what interference on their radio sounded like. The Clear Channel/Class I-A group linked this picture of "garbled hash and crosstalk" bugging a nighttime radio listener (see his afternoon paper?) to what would happen if the remaining clears and related distant coverage were further watered down with more stations—instead of having just one superpower AM per clear channel frequency.



Here's radio's famous January, 1962 "White Area" map. Anyplace without shading was void of nighttime service, except for clear channel skywave. The Class I-A/Clear Channel AM owners proposed upwards of a megawatt to reliably reach such remote venues. The FCC countered, covering the holes with FM instead.

region's press) 10 to 20 times more wattage obviously contradicted the spirit of diversifying the airwaves.

The Class I-A lobby kept its dream alive through the late 1960s. According to Jim Hawkins' nice WLW history website, it was WLW that proposed leading the charge for a second era of AM superpower. Officials at the Cincinnati flamethrower promised the FCC to revitalize WLW's old 500-kW transmitter with modern tubes that would yield 625,000 watts. That might sound excessive, but in actuality the WHAM booklet told the Commission that a full *million* watts was needed to really blot out white areas! Instead of acquiescing to any behemoth figure, though, the FCC denied all requests for any AM level greater than 50 kW. To add insult to injury, the government eventually (by the 1980s) reduced skyway protection on the clears, giving some co-channel daytimers full-time authorization or granting construction permits for brand new stations on long-sacred clear channels like 640 and 1200 kHz, as well as WLW's 700 and WHAM's 1180.

Perhaps it's most appropriate to conclude that the required public sentiment for American superpower AM *flamethrowers*, as the expression goes, never truly *caught fire*. ■

info central

by Harold Ort, N2RLL, Editor

news, trends, short takes, and other things radio

Top Prize Winner Photo And War Monitoring Oddities

Editor's Note: Welcome to InfoCentral, the little corner of Popular Communications *where you'll find all sorts of radio news, photos, and tidbits that...well...don't have a good home elsewhere in these pages. This is where you'll find those short takes every month.*

Once again, a special congratulations to the four prize winners of our **20th Anniversary Contest**—they're are all enjoying their prizes! We heard from **Bill Miner** of Sacramento, California: "My subscription has started...the third prize, the Optoelectronics Digital Scout was delivered by UPS today. This is a very nice prize and a great addition to my radio shack." Bill says he'll be sending a photo. Please do, Bill!

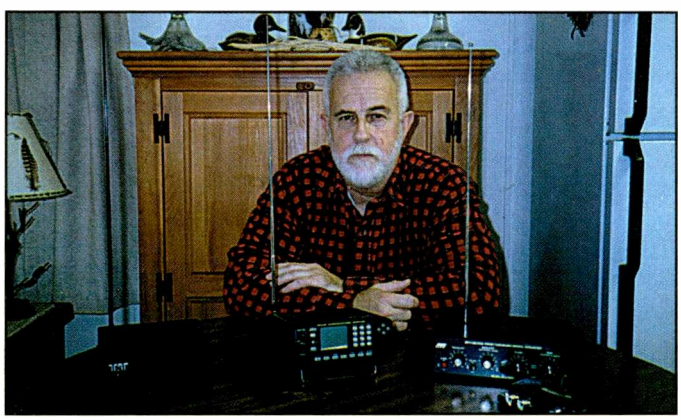
In the meantime, we also heard from the Grand Prize winner, **Dave Cameron** of Whitehouse Station, New Jersey. Dave sent along his photo with all those new radio goodies: the AOR AR-8600 Mark II, Ten-Tec RX-320 PC Radio, MFJ Enterprises, Inc., Deluxe Noise Canceling Signal Enhancer and Heavy Duty Coax Antenna Switch.

Our 30th Anniversary Contest is only about 3,500 days away!

Who's On First—And Who's Just Plain On?

Perhaps it's a little too early to tell just what's going on with those international shortwave broadcasters, but with the Iraqi war only a week old as of this writing, some of the goings-on across the bands are unusual, to say the least. Take, for example, the **Skyking** message we heard on **11244** about 45 minutes before all TV networks went live with news of the invasion. Well, the fact is, while Skyking messages are of the highest priority notifications you'll hear on the military HF system, there's no way to tell. Let's just say I'll remember it for a long, long time.

Directly from CENTCOM's official website (<www.centcom.mil>) are the frequencies for "**Information Radio**" broadcasts in Iraq—or more appropriately, over Iraq. Check **9715** and **11292** (AM mode) and report what you hear to us right away by e-mail at <popularcom@aol.com>.



Pop'Comm's 20th Anniversary Contest Grand Prize Winner, Dave Cameron of New Jersey, with all those brand new radio goodies.

Sometimes, especially during a war such as this one, everything isn't always as it seems—or at least as it's scheduled. Take, for example, the regular English broadcast at 1800 UTC from **Radio Kuwait** on **11990**. We've listened every day since the bombs began falling and have only heard Arabic. Anyone hearing anything different on another frequency?

Then, of course, there's the usual fare of anti-American signals. **Radio Jordan**, Amman, was heard in English at 1605 on March 20 on their usual **11690** frequency. And let's not forget **Baghdad**, where their faithful **11785** frequency (typically varies to **11787**) has been reported having everything from a low-power carrier with no modulation to a fairly strong carrier with background chatter. At our monitoring post, we've heard nothing but the first—a very, very weak carrier and nothing more. In case you're wondering why the station hasn't been taken out, it probably won't be. In the "rebuilding" of the country, its infrastructure (like radio stations, highways, bridges, and communications facilities) will be crucial to a new Iraq, whenever that officially happens.

Speaking of "official," the official HF Control Center frequencies for **Baghdad** are **5667** and **8918**; **Kuwait Area** frequencies include **5658**, **8918**, **10018**, and **13312** (all USB).

Wartime Monitoring: Aircraft And SW Broadcasts

While the war in Iraq evolves on there's plenty to hear, at home and from the Middle East. Here's a list of confirmed Combat Air Patrol (CAP) frequencies you can plug into your scanner. Of course you need a scanner that covers the 225-400 MHz military airband. These "best bets" are but a few of the dozens of UHF AM frequencies.

252.0	276.65	282.6	295.8	320.9	364.8
261.0	279.4	285.9	298.3	324.0	387.0
262.4	282.425	288.4	300.125	364.2	397.25

The international shortwave broadcasting scene sometimes changes as fast as the bullets fly. In addition to the previously mentioned Radio Kuwait and Radio Iraq International (Baghdad) broadcasts, check out the following English broadcasts:

Country	Freq.	Time (UTC)	Country	Freq.	Time (UTC)
Egypt	9475	0200	Syria	12085	2000
Egypt	9900	2300	Syria	13610	2000&2110
Iran	6120	0030	Turkey	6020	0400
Iran	9580	0030	Turkey	7240	0400
Iran	6120	0130	Turkey	9655	2300
Israel	6280	0600	United Arab Emirates	12005	0330
Israel	9435	0600	United Arab Emirates	13675	0330
Israel	11605	1730	United Arab Emirates	13630	1600
Israel	13720	2000			
Oman	15355	0300			

Potpourri, Please

That's it for this month. Remember, any radio tidbits, photos, and ideas you'd like to share with our readers are always welcome. While our regular columnists also invite your input, we realize that sometimes there just might be something on your mind, your film, or your digital camera disk that doesn't quite fit neatly in one of our usual columns. This is the place for those "other things radio." Send 'em on in! ■

A Warning About Deep-Discount CQ Subscriptions

A Note From the Publisher...

We've been hearing from hams who claim they "won" an auction on E-Bay for a 3-year CQ subscription for $27, or found some other online source of a 1-year subscription for $10 or $15. *These are not authorized by CQ and you are very likely getting ripped off!*

The prices cited above barely cover our postage costs for mailing 12 or 36 issues of the magazine, to say nothing of printing expenses, cost of articles, staff salaries, overhead and all the other expenses associated with running a business.

Some sellers are abusing relationships we've established with firms that do school fund-raisers (we make nothing on those but hope you'll enjoy the magazine enough to renew at the regular price); others are *just plain crooks*—they'll take your money, never submit an order and leave us scratching our heads when you call asking why you haven't started getting your magazines yet.

Please deal with known, reputable firms -- there are plenty of legit companies on the internet selling legit CQ subscriptions (generally at full price, though) -- or subscribe through us directly, either on our web store, by phone at our toll-free number, or by mail. As for the deep discounters, remember the basic warning about any scam: *If it seems too good to be true, it probably is.*

73,

Dick Ross

Dick Ross, K2MGA
Publisher, CQ

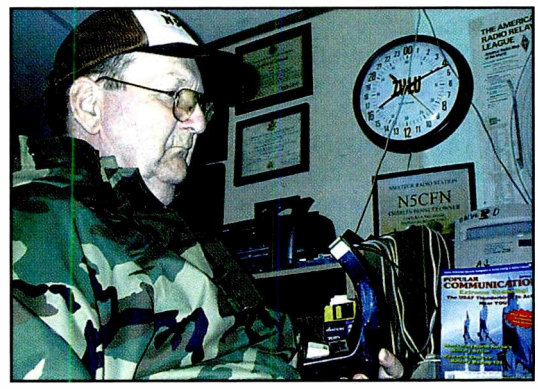
v.i.p. spotlight

Congratulations To Charles Bennett, N5CFN/WPE5SW, Of Mississippi!

Popular Communications invites you to submit, in about 300 words, how you got started in the communications hobby. Entries should be typewritten, or otherwise easily readable. If possible, your photo (no Polaroids, please) should be included.

Each month, we'll select one entry and publish it here. Submit your entry only once; we'll keep it on file. All submissions become the property of *Popular Communications*, and none will be acknowledged or returned. Entries will be selected taking into consideration the story they relate, and if it is especially interesting, unusual or even humorous. We reserve the right to edit all submitted material for length, grammar, and style.

The person whose entry is selected will receive a one-year gift subscription (or one-year subscription extension) to *Popular Communications*. Address all entries to: "V.I.P. Spotlight," *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801 or e-mail your entry to <popularcom@aol.com>, letting us know if you're sending photos. Please print your return address on the envelope if using the postal mail system. Not doing so will delay your submission being processed. If you're e-mailing photos, please send them in a separate e-mail with your name in the "subject" line.



Charles Bennett at his monitoring station in Hattiesburg, Mississippi.

Our June Winner: Charles Bennett

Pop'Comm reader Charles Bennett of Hattiesburg, Mississippi, says,

I'm an "old hand" at SWLing, having started back in the late '40s. My Dad bought a large floor model Majestic Monarch of the Air AM radio. It had one "overseas" band which went up to about 12 megacycles (I know it's megahertz now, but I love the old terms, so allow me a little nostalgia, please).

I listened to that radio when Dad didn't have it tuned to WSM's "Grand Ole Opry" and became quite interested in the strange languages and sounds I was hearing. Later I bought a Sears Silvertone portable—with shortwave bands—of my own. From there I became a CBer and official SWL with QSLing and all in the late '50s. I was able to obtain a Lafayette HE-10 receiver which was my first really nice radio set. It was large, with six tubes, and had good sensitivity and excellent selectivity.

In the meantime, I joined the Army and became an Army Radio Operator and went to every electronic school I could get into, learning all I could about electronics. I also got into CBing. My first license was 8Q0093, then KIJ-3750 (it's true that I even had to swear by affidavit that I would not try to overthrow the U.S. government before I was allowed to operate a CB transmitter!).

I was also able to build my first transmitter and use a converter to allow my car receiver to receive CB while I talked on my homebuilt transmitter. It used three tubes and put out 3.5 watts at 80- to 90-percent modulation. I was able to QSL several hundred stations and, in 1974, got my first ham ticket (Advanced class) as N5CFN, a callsign I still have today. I have 295 countries confirmed for Amateur DXCC.

I spent over 40 years in the military active and reserve components and have a 28-year career as an electronics technician for the Department of Defense. I was also a "sometimes" reporter for *Popular Electronics* magazine. My reporter callsign was WPE5SW. ■

homeland security

power, and products

by Rich Arland, K7SZ

The Ultimate Mobile Installation

This month we're going to continue our quest for the "Ultimate Mobile Installation" by tackling several issues relevant to today's vehicles, namely gear selection and where to hang the radio equipment.

In my particular situation, for instance, I need to have transmit capability on HF as well as 2-meter amateur radio and 27-MHz CB. Since I also need to keep current on breaking developments locally, I need a scanner. For me, this is my "Ultimate Mobile Installation." Undoubtedly your mobile requirements will be different from mine. This series of columns is designed to help you qualify and quantify your mobile comms requirements and provide hints to do a professional installation in your own vehicle.

Before proceeding, though, I'd like to digress for a moment and cover a couple of important issues regarding mobile communications stations (COMSTAs). Last month I indicated that mobile radio communications operation is on the increase. This is due to several reasons. For one thing, we are a "mobile society." As a nation, we are constantly on the go and by adapting our radio hobby to our lifestyle we can further enjoy the hobby. Also, those of us who are involved in emergency communications (EMCOMM)—either by our association with Amateur Radio Emergency Services (ARES), Radio Amateur Civil Emergency Service (RACES), or REACT, or as a member of a local, county, or state Emergency Management Agency (EMA), fire/EMS volunteer, etc.—*need* to be able to communicate quickly from almost any place we might find ourselves. Let's not forget those individuals who want to keep abreast of developments in their communities. In today's unsettled world, vigilance, preparedness, and personal safety are primary concerns.

Why go to all the trouble to build a custom mobile COMSTA? Why not rely on a cell phone? Over the last several months I have painted a dismal picture of the vulnerability of the cellular telephone infrastructure and, unfortunately, it has not improved. Articles regarding constant interference and reliability problems plaguing 800-MHz trunked Public Safety communications systems across the country find their way into my e-mail inbox all the time. To rely upon the cellular infrastructure is asking to be without critical communications in a time of crisis.

The intent of this series is to provide you with useful information on how to go about correctly installing mobile radio gear in your vehicle. I realize that some of you will have no use for an HF SSB/CW transceiver, but many will; therefore, I have included the details of this installation in my own vehicle to help you do it right the first time. Same with the CB radio gear.

Mobile Scanning

Almost everyone should have a mobile scanner in their vehicle. However, there are certain Draconian local/state regulations that might preclude this type of installation. Therefore, before you charge ahead *be sure you read and understand your local, county, and state laws regarding the installation of scanning equipment and/or any apparatus that is capable of receiving Public Safety (police, fire, and/or EMS) transmissions.* Certain exemptions might apply ***IF*** you can show affiliation with a local EMA/EMCOMM group like ARES, RACES, or REACT. At any rate, *Popular Communications,* CQ Communi-cations, nor I will be held responsible for improper or illegal equipment installation in your vehicle.

Here's the Midland 75-822 CB walkie-talkie. It's chock full of bells and whistles, including NOAA weather receive and instant Channel 9 and 19 access.

Why Go Mobile?

What happens if there is a major disaster, either man-made or natural, or terrorist act in your local area and you are required to evacuate your home (and leave much of your radio gear behind)? This happened to me and my family in 1996 when the threat of severe flooding of the Susquehanna River forced the evacuation of much of Wilkes-Barre, Pennsylvania, and surrounding communities. Thankfully, the dykes held and flooding was kept to a minimum, but we were required to relocate as a precaution. I had to leave the great majority of my radio gear during this phase of the emergency. This got me thinking about my own communications requirements for HF voice operation in addition to VHF/UHF FM and CB radio. I decided to upgrade my mobile station far beyond the normal 2-meter VHF transceiver.

One thing's for sure, there is no shortage of communications equipment that will run on 12 VDC. Virtually any piece of gear that can be powered directly from 12 VDC can be used in a mobile environment. That's the good news. The bad news is a question: With the tremendous amount of portable equipment available, how do you pick and chose the gear you want inside your mobile COMSTA?

This phase of the "Ultimate Mobile Installation" is critical and you must have a game plan. Start by listing the frequencies and modes you want to cover, both transmit (provided you

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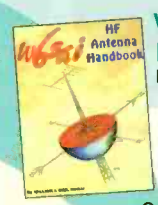

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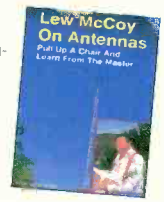

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are properly licensed and/or authorized) and receive. If you are an emergency communicator (ARES/RACES/EMA/Public Safety) then you have a good idea of your mobile communications needs.

"Regular folks" who don't have an EMCOMM affiliation are going to possibly want CB, FRS, GMRS, and a scanner, or some combination of these personal radio services. Knowing the areas of the frequency spectrum and modes you want to operate on or monitor allows you to make some intelligent decisions regarding the gear you're going to purchase. Armed with your list, start canvassing the Internet, reading the pages of *Popular Communications*, *CQ*, and the catalogs to find the gear you need. Product reviews contain a wealth of information, so don't forget about them.

Some radio gear can pull double-duty: many newer CB radios have Weather Alert and NOAA weather receive capabilities along with Highway Info reception. Most of the current models of ham radio VHF/UHF transceivers have an extended

This is entitled "How Not to Do It!" This is the first installation I did when I got the truck. I needed 2 meters and CB fast so I just jammed them in and let the wires fall where they may. Ugly and cluttered are two words that jump immediately to mind. Too many wires in the way. We can do better.

This is a shot from the passenger's side of the cab after I had cleaned up the installation, routed and dressed the wires and coaxial cable, and added the Alinco DX-70T HF rig (rear of center console). Notice how nice things look now. The spiral wrap coming down on the right side of the dash has both speaker wires along with the in/out for the HF SWR/power meter.

Here is a console shot from the driver's side after the clean up. The rig in the center of the dash is the ICOM IC-2100H 2-meter transceiver. To the right, on end, attached to the side panel of the console with Velcro is my old RadioShack PRO-2026 VHF/UHF scanner. The Alinco DX-70T HF rig is below the shift lever. Actually, that is only the control head, the actual radio sits under the passenger's seat. The mic for the HF rig, along with the antenna tuning control, sits in the cup holder in the console.

This is a direct overhead shot of the gear and console area. The ICOM 2-meter rig is at the top of the picture, the PRO-2026 is to the right of the console (heavy duty fasteners are great, aren't they?), and the Alinco HF rig is at the bottom. The CB set (a small RS unit that was on sale about four months ago) has been removed pending installation of a Midland 75-822 CB set, which saves even more space.

receiving range to accommodate Public Service frequencies, thereby negating the need to purchase/install a separate scanner (more on this later). There are mobile FRS radios (check out RadioShack). The same goes for mobile GMRS equipment (and remember on GRMS frequencies you can use repeaters and up to 50 watts of RF output!). Scanners come in all shapes and sizes with more features than you can possibly need, but they are *really neat!* Do some comparison shopping, find a good deal (the "Big Three"—Kenwood, Yaesu, and ICOM—often have factory incentives for the purchase of specific pieces of gear), and make a purchase. Time spent planning rather than grabbing the first piece of gear that catches your fancy assures you of getting the biggest bang for the buck on gear you *really* need.

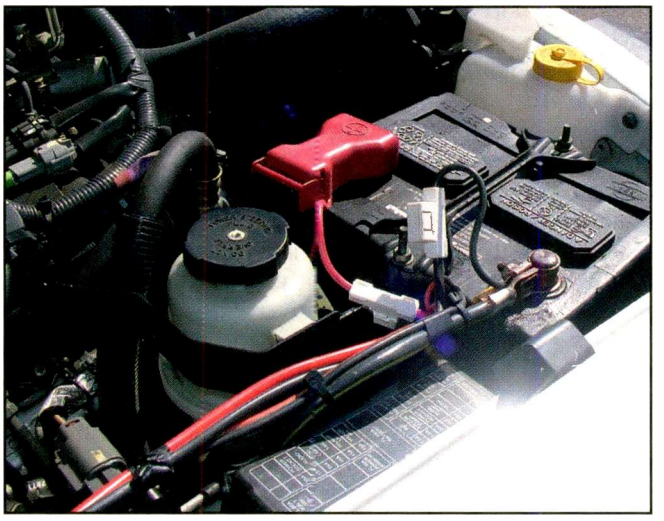
Here's a look at the dual speakers (one for the HF rig and the other for the 2-meter rig) that I found at RadioShack on sale for about $10 for the pair! In the middle is the Diamond cross-needle SWR/Power meter for the HF station. This type of unit is small, saving space, and nice to have to accurately tune the motorized antenna on the rear of the truck.

Where Are You Going To Hang This Stuff?

I really don't know who sits up late at night designing the interiors of newer vehicles, but I would certainly like to have them alone in a back alley for about five minutes to show them the errors of their collective thinking! The trend in today's vehicles is lots and lots of curvy lines, padding, plastic, and no wasted space (the latter being translated to mean "room for radio equipment").

My personal mobile installations have included my father's 1958 Buick Century, my 1956 Ford Crown Vic (I don't know which I liked better: the T-Bird engine with the Glass-Pac mufflers and the three-speed Drag Fast shifter *or* all the comm gear and antennas I had installed!), a 1966 Ford Galaxy, a Toyota Corolla wagon (the right-hand drive version used in Japan), a 1978 VW van (that *was* fun!), my wife's Dodge Colt, two Subaru Outbacks, a Pontiac Montana van, a Ford F-150 pick-em-up truck, and my current Nissan Frontier pick up. With out exception, every installation was different and I learned something new each time I installed radio gear. The earlier vehicles had room to spare for adding radio gear. Starting with the Dodge Colt, I had to become innovative when it came to positioning radio equipment.

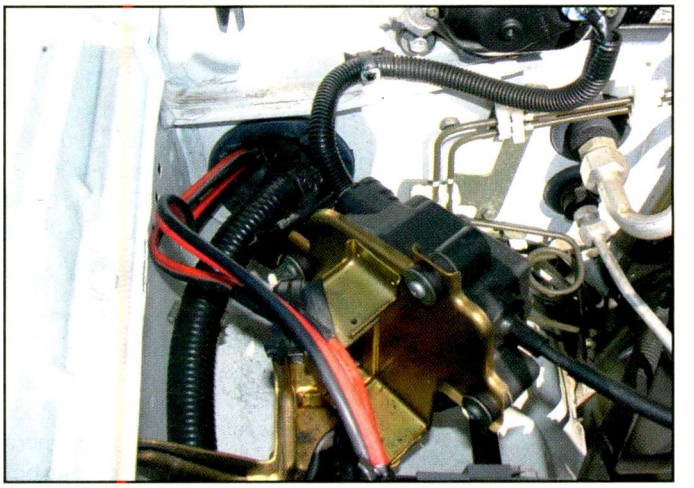
While duct tape may bind the universe together, double-sided sticky foam tape is our best friend. Once you have selected your gear (with an eye toward compactness), it's time to select a space inside the vehicle to mount it. Obviously, the more gear you intend to use mobile, the more space you're going to require to mount it.



Shown here is a close-up of the interior of the Frontier's engine compartment. The 12-volt battery is at the right. The DC power bus cable connects to the battery terminals, and each side is fused with a 20-amp ATC/ATO automotive-style blade fuse. This assures that, should the normal ground cable in the vehicle ever break or corrode, the entire current load of the vehicle would not go through your radio gear.

Skip The Smokes—Fire Up A Radio!

If you don't smoke, the first obvious space to be used is the ashtray area. All ashtrays are designed to be removed, so whip



The 12-volt power cable is run directly through the firewall at a convenient grommet hole. Notice that there are two cables here: one for the HF rig by itself and the other for the RIGRunner DC power distribution panel.

that puppy out of the dash, throw it away, and use the space for radio gear! There are often blank plastic panels in the dashboard and/or center console that can be removed and used to mount gear. The big trick here is getting into the dashboard area or center console without destroying the interior of the vehicle! The same guys who design these radio-restrictive interiors also put the screws and plastic hold-downs for access to the consoles/dashboards in the most inaccessible areas possible. I swear it's a conspiracy!

If all else fails, take your vehicle to a dealer, explain the situation to them, and have the head of their body shop show you how to get into the dash/console areas. This option makes more sense than trying to pry, bend, fold, staple, and mutilate the interior in an attempt to gain access to the various nooks and crannies.

Get The RIGrunner!

After you have successfully managed to mount your piece of radio gear, don't forget to run the DC power cabling along with the antenna and speaker/mic leads while you have access to the dash/console areas. Here is where using the West Mountain Radio RIGrunner power distribution system comes in handy. One heavy set of power leads coming directly from the vehicle battery terminates on the RIGrunner, and each piece of gear has its own fused connection to the battery via separate power leads. The RIGrunner is the most flexible DC power distribution system I have seen, and it really makes setting up a quality mobile installation a breeze. The RIGrunners use Anderson PowerPole connectors that, once properly installed on the DC cables, cannot be reversed polarized, thereby protecting your valuable equipment. Also, each output of the RIGrunner is fused, offering over-current protection. Check out West Mountain Radio (<www.westmountainradio.com>) and go with their RIGrunners. You'll be glad you did.

Dress the power, audio, and RF leads down either under the carpet or beneath the trim. Try to keep any coaxial cable used for transmitting physically isolated from DC and audio leads to minimize RF pickup and feedback. Dressing the leads makes a professional looking installation and keeps passengers from becoming entangled in the wiring. One word of caution: Any coaxial cable that is used for transmitting must be run as far away from electronic modules and on-board computers as possible. This is where working with the dealer/manufacturer can save you some heartache. Have them identify these sensitive areas inside the vehicle and route your RF cabling accordingly. Try to keep any bends in the coax to a minimum.

External speakers for all comm gear are almost mandatory in a mobile environment for several following reasons. First, the tiny speakers that are mounted in most comm gear face the wrong direction. They face downward and, when you mount this gear inside a console or dashboard, the sound has nowhere to go. Increasing the audio gain only makes the problem worse, since most of these rigs do not have good AF amps and, when driven to excess, they will distort like crazy. The obvious answer is to place external speakers around the inside of the cabin for your listening pleasure.

Check your local RadioShack since they frequently close-out small speaker systems used with Walkman tape and CD players. I picked up a nice set of five-inch external speakers for about $10 several years ago. They have a small footprint and, using double-sided foam tape, I can mount them virtually anywhere. RadioShack also has several versions of their mobile "communications" speakers that will work as well.

The point is that you will need these external speakers, so plan ahead and route the associated audio cables (normally you can get away with #22 or #24 AWG speaker wire which is very easy to work with) when you install the equipment. Mount the speakers so they are unobstructed, and position them so they face your direction when you operate the vehicle. This puts the sound "in your face" and you will use much lower volume levels, thereby avoiding audio distortion. Don't forget to dress the leads down into the trim to make a professional looking installation.

Trim Hint

My Nissan pickup has an overlapping trim that is almost impossible to pry up to bury wiring under. My solution was to borrow a commercial heat gun, heat up a section of plastic molding (being very careful not to overheat it and melt the plastic), gently pry the edge up, and run the wiring. As the molding cools, it regains its shape and the wire is hidden. Don't rush the dressing process and you shouldn't have a problem. A little common sense goes along way right about here. *One More Time: When in doubt, consult your owner's manual, the dealership, and/or the vehicle's manufacturer for help and direction, cuz I'm not gonna be held responsible for you melting your dashboard.*

Mounting Hints

Finding a spot for your comm gear is only the first phase. Mounting it so that the equipment stays put while driving can be a challenge. Here is where a liberal application of double-sided foam tape and/or the "super strength" fasteners sold at RadioShack are life savers.

The foam tape is great for securing small, lightweight things, like mobile speakers and SWR meters. The "super strength" fasteners (they look like strips of Velcro on steroids with a super-holding adhesive on the back) will hold the heavier radio gear. I have successfully used this stuff to hold a mobile scanner on the bottom of an ICOM 2-meter rig inside my F-150 for four years!

The secret to using this stuff and the foam tape is to insure that both of the surfaces you are attaching are extremely clean. Prior to applying either the foam tape or fasteners, clean the entire area and the gear case with rubbing alcohol to remove any protectants or sealants used by the auto dealership or car detailing shop. The alcohol also cleans up any tar/nicotine residue that might be on the surfaces. Allow the alcohol to air dry, and then do it all again, to insure an ultra-clean surface.

Once the surfaces have been prepped, it's time to apply the double-sided foam tape or "super fasteners." Be sure you have things aligned properly and that the gear will sit properly with easy access when you are driving. Strip off the protecting paper on the foam tape or fastener and apply it to the console or dashboard surface and the radio gear. Allow the gear to set without being moved or disturbed for at least a couple of hours. This will "cure" the bond. Most of the "super fasteners" will take about 24 hours to reach optimal strength (the foam tape usually cures in a couple or hours), so try not to rush the process.

One word of caution: *Do not apply the foam tape or "super fasteners" if the ambient temperature is below 50° F.*

You can use a heat gun or hair dryer to locally increase the temperature prior to affixing the foam tape or fasteners—just be careful not to over heat the gear or plastic trim.

My "Ultimate Mobile Installation" Gear

Here is a quick run down of my mobile COMSTA:

An Alinco DX-77T HF SSB/CW/AM/FM transceiver running 10/50/100 watts output. This radio is also capable of QRP (under 5 watts output) operation using a battery bias on the ALC jack on the back of the rig. This rig covers all the ham bands—160 through 6 meters—using all modes. In addition, it features a wideband receiver that covers 100 kHz to 30 MHz for utility and SW broadcast DXing.

An ICOM IC-2100H 2-meter transceiver takes care of the 2-meter FM band and also doubles (for now) as my VHF scanner. This rig puts out 10, 25, and 50 watts from 144 through 148 MHz, with the option to extend the transmit range to cover CAP and MARS frequencies as well. In addition, it receives from 134 through 174 MHz to cover the majority of the Public Service radio frequencies in my area.

CB radio coverage is provided by a Midland model 75-822, which sells for $139.95. It's an ultra-small CB set that can be quickly converted from a mobile to a 40-channel, 4-watt handheld transceiver for portable use. This tiny set is the answer to my prayers because the rig is so small that it requires only a very small space to hang the "mic," which, in reality, is the entire radio package! The bottom is removable and a battery pack is snapped on along with a short flexible antenna, and viola!—a portable CB set for those times you need to operate on foot or from another vehicle.

A multiband (including LASER) RADAR detector rounds out my mobile installation.

My future plans call for the addition of a VHF/UHF scanner since the IC-2100H is not the greatest when it comes to "scanning." The scanning rate on the ICOM is extremely slow and there is a nine-second "stop time" on an active channel before the radio begins scanning again. Although I have a RadioShack PRO-2026 that I can install, there are much smaller, more fully featured scanning receivers available on today's market. Prices run about $130 to $150 for a new non-trunk tracking scanner, which is well within my price range.

One more word on scanners: If you are in an area serviced by 800-MHz trunked systems, it would behoove you to procure a trunk-tracking mobile or handheld scanner for your "Ultimate Mobile Installation." Since here in Northeastern Pennsylvania we still rely on VHF/UHF for 99 percent of our Public Safety communications, I don't need to spend the extra money for a trunktracker.

When funds become available, I fully intend to upgrade the ICOM 2-meter rig and replace it with a dual-band VHF/UHF transceiver covering 2 meters and 70 centimeters. One feature that is a requirement for my installation is that this dual-band rig be capable of simultaneous receive on VHF and UHF *and* be capable of operating as a cross-band repeater for remote base use.

For those unfamiliar with remote base operations, this is where your mobile rig operates as a cross-band repeater, receiving on 70 centimeters (UHF) and repeating out on 2 meters (VHF) to extend the range of handheld transceivers. A well-positioned remote base in a mobile unit can be used for search and rescue (SAR) operations, enabling search parties using UHF handhelds to operate into local 2-meter repeaters. In essence, the dual-band VHF/UHF transceiver in the truck would operate like a mini-repeater and would interface with local 2-meter repeaters for continuity of communications into and out of remote areas not serviced by local repeaters.

Next Up: Antennas

Well we are at the end of our column for this month. Next month we'll look at mobile antennas and methods of mounting them.

Until then, stay alert: Preparedness is *NOT* an option. ■

by Gordon West, WB6NOA

Standard Horizon Handheld Hopes For FCC Blessing

The new Standard Horizon submersible tri-band marine VHF handheld transceiver falls under Part 80 and Part 15 rules. But this same radio contains 14 Family Radio Service (FRS) channels, falling under Part 95. It also contains all five Multi-use Radio Service (MURS) channels. A brand new addition to Part 95, they were formerly from the land mobile Part 90 service. Add in Part 15 aircraft receive, plus AM and the FM music broadcast band reception, and submit this one radio with tri-band capabilities to the FCC lab for approval.

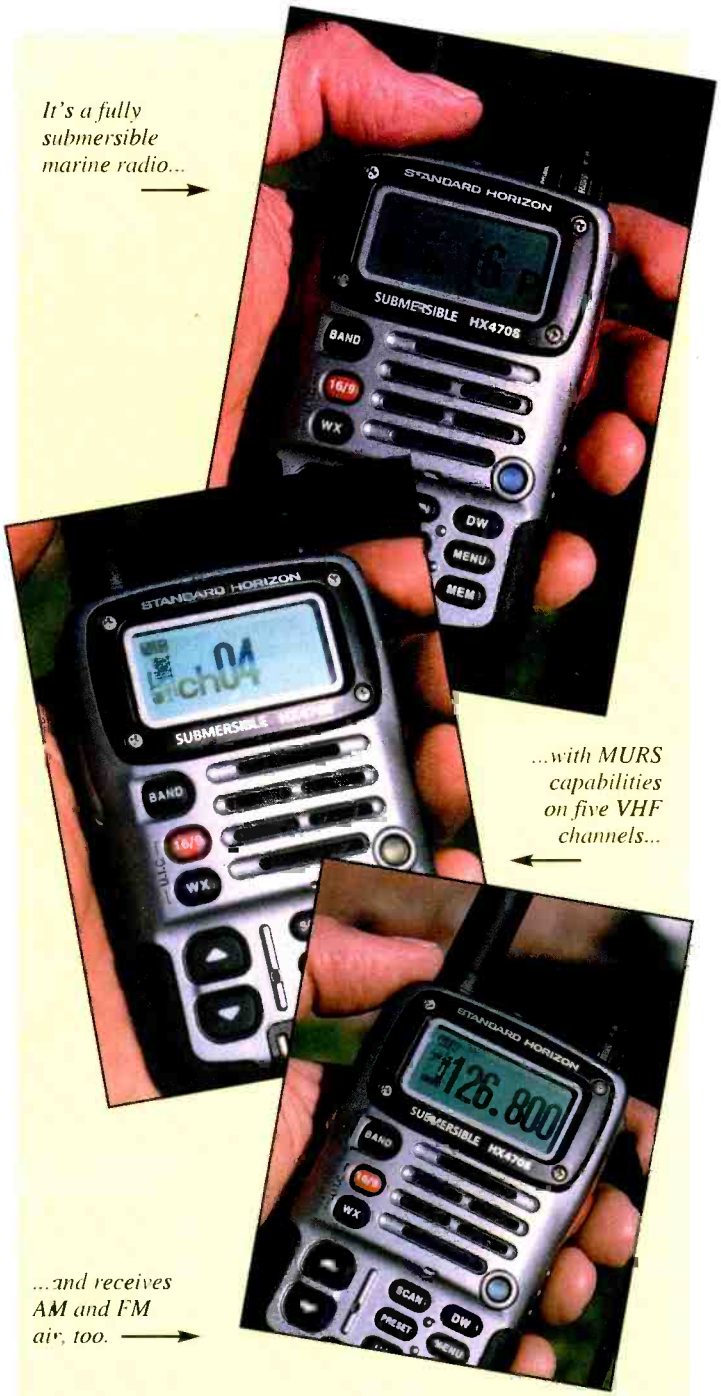
"We are optimistic that the Federal Communications Commission will see this radical new design in a multi-purpose handheld achieve their approval," commented the technical crew at Standard Horizon, the same company that manufactures Yaesu amateur radio products and Vertex land mobile radio products.

It makes perfect sense that the marine division would want this type of handheld, with its added legal land capabilities, because most recreational boat owners have been asking for a multi-use, two-way handheld marine radio. "We are encouraging the legal use of our equipment, whether on land or at sea," added Todd Crocker of Standard, pointing out that manufacturers of radio equipment are *very concerned* when they hear that their marine radio gear is ending up on ski slopes or with trucker caravans rolling down expressways.

The stand-alone marine VHF handheld and 25-watt transceiver is designed specifically for on-the-water use and, except for specialized marine coast station licenses, may not normally be operated on transmit after you step foot on land. A few years ago, the Federal Communications Commission slapped a heavy fine on a marine VHF user who was transmitting aboard his boat as it sat on a trailer in his driveway. A marine VHF radio was intended for on-the-water use, not land use—well, until this new concept radio from Standard Horizon hit town.

As a full-fledged marine VHF, it covers all 55 domestic channels and 78 international channels, plus both U.S. and Canadian weather broadcast frequencies. It also includes the National Weather Service S.A.M.E. regional alert capabilities. The marine VHF side of this tri-band radio also includes Digital Selective Calling on VHF marine data channel 70, 156.525 MHz. This same radio can also accept an upload of GPS position information to send out over DSC channel 70. This makes this handheld unique with its built-in Digital Selective Calling transmit capabilities in a maritime emergency. Most DSC capabilities are ONLY found in larger 25-watt, fixed-mount radios and on marine single sideband.

It was technically easy for Standard Horizon to also build in the five MURS channels: 151.820 MHz, 151.880 MHz, 154.600 MHz, 151.940 MHz, and 154.570 MHz. Transmit power is the same as on marine VHF, transmit deviation and frequency tolerance identical to marine VHF, and the nearby frequency spread for MURS is well within the VCO lock range of the transmitter and receiver from marine VHF 156/162 MHz region. Providing AM and FM broadcast band reception was also technically easy because the same capabilities already exist in the popular Yaesu ham radio, VX-7R, a quad-band transceiver. In fact, if you look at the ham VX-7R and the new, marine, non-yet-approved handheld, they appear almost identical, down to their silver and black cases and that fascinating strobe LED that will even signal SOS optically if you're treading water after the boat sinks! So AM and FM broadcast reception was a snap. Since the VX-7R also receives the AM aero-



nautical band, so will the new marine HX-470S. It tunes AM from 108 MHz through 137 MHz in 25-kHz steps.

Includes All 14 FRS Channels!

It was no doubt easy to also add all 14 FRS frequencies since this is probably the same circuitry as in the VX-7R, which offers amateur radio 420- to 450-MHz capabilities. And any good ham would also modify this equipment for emergency transmit just outside of band edges, too. (*Important: Hams transmitting beyond ham band edges must hold proper authorization from MARS, USCGA, or CAP.*)

So 14 channels of FRS gets its technology from the similar-looking ham set, and the UHF internal board drops the power to a 1/2-watt out and 2.5 kHz restricted deviation. I'm not sure how they're going to get around the non-removable antenna rule, but maybe it gets put into the Commission as an FRS/GMRS radio that will go through the process with a detachable antenna.

Enter The Bureaucracy

So the big question is...Will the Federal Communications Commission look at the big picture of how boaters might use a common radio on shore and remain within the law with a single multi-purpose handheld? My thinking is Standard Horizon will be very lucky to even get a few seconds of consideration on this new communications product. Even though this radio could very well save lives on land as well as at sea, with all its capabilities, it may be simply too much equipment for the FCC to accept in one nice, neat package.

Yet ICOM America has recently been selling an FCC-approved marine VHF handheld, the IC-M88. With 22 land mobile radio expansion channels available for computer upload, it is indeed something new in the marine market. Quite possibly the "one radio, one radio service" thinking is now out the window with deregulation and emerging black box technology that might hold one or many different radio services on a single circuit board. It appears that the technology is here, but the bureaucracy still must be dealt with when something innovative comes down the line, even if it absolutely makes good sense for operating and for safety on land and in the water. I'm holding my breath on this one! ■

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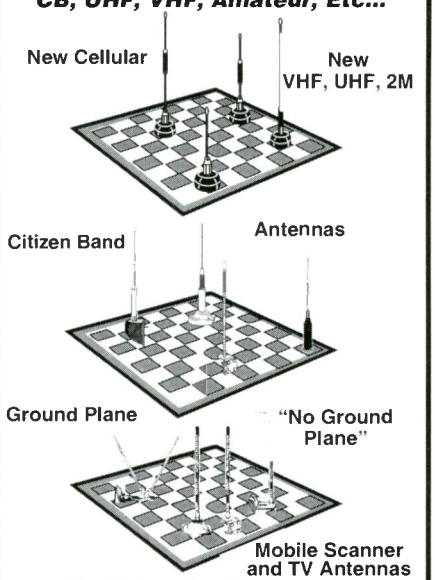

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June 2003 Survey Questions

My main reason for using a scanner is: (mark all that are appropriate)

1. To stay on top of local events by listening to the police, fire, and medical frequencies
2. To get a sense of excitement from listening to the police, fire and medical frequencies
3. Because my job requires monitoring of the public safety frequencies
4. Monitoring aircraft (civilian or military) communications
5. Searching for seldom-heard, "secret" comms
6. Listening to skip
7. Listening to railroad comms
8. Listening to amateur transmissions
9. Listening to maritime comms
10. Monitoring government comms (including military)
11. I don't use a scanner - most of my radio monitoring is on shortwave
12. I'm new to the radio hobby and need more information about scanning first

The main reasons why I don't have a new (within the past 18 months) scanner are: (mark all that are appropriate)

13. Too expensive
14. My current scanner is just fine
15. Too complicated to use
16. My monitoring interests aren't trunked, so my older scanner is still OK
17. There are far too many channels for my needs
18. They're too broadbanded and don't perform as well as my older scanner
19. I already have more than one scanner
20. I'm just not that interested in scanning
21. I'm more interested in amateur radio
22. I'm more interested in shortwave

I live in an antenna restricted area

23. Yes
24. No
25. Not sure

by Bruce Conti <baconti@aol.com>

DXing Canada, And Another Mediumwave Country Goes Dark

Bid adieu to St. Pierre et Miquelon on mediumwave. The relay of Radio Francaise d'Outre-Mer (RFO) in French on 1375 kHz will be signing off permanently in the coming weeks, if not already. This is according to the chief engineer in a verification of reception reported by the Medium Wave Circle DX club. St. Pierre's only mediumwave outlet on 1375 is also the only station in the *world* on the frequency. St. Pierre et Miquelon are two tiny islands governed by France, located off the south coast of Newfoundland, Canada. RFO AM outlets worldwide were recently upgraded to 20 kW, including St. Pierre, so this comes as a surprise to many. It's unlikely that broadcasting would be resumed locally. The exotic DX target will be sorely missed.

DXing Canada

Last month, "Broadcast Technology" featured favorite AM broadcast DX targets in each of the 50 United States. Now let's aim our antennas north to Canada. Here are some top picks from each of the Canadian provinces.

Alberta

The stampede is to Calgary for an Alberta radio roundup of 660 CFFR "66 CFR, Calgary's home for great oldies," 770 CHQR news/talk, 1010 CBR "CBC Calgary" Radio One, and 1060 CKMX "Great music, great memories" parallel 6030 CFVP shortwave. The shortwave signal is actually quite good in the early morning hours since a new transmitter was installed to replace equipment damaged by lightning back in 1999. Cool 880 CHQT Edmonton is another favorite for oldies music.

British Columbia

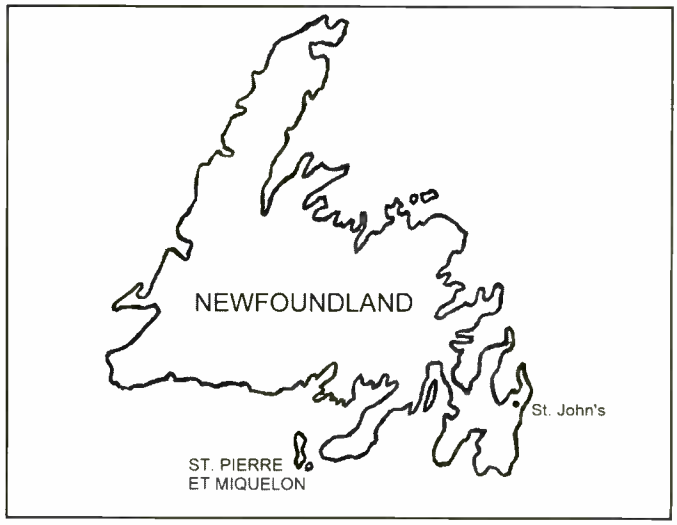
Like radio stations in Oregon and Washington, the most powerful signals are beamed over the Pacific Ocean to protect signals to the east. CBU Vancouver 690 with CBC Radio One is often received in the east when conditions are right. CHMJ Mojo Radio 730 and News CKWX 1130 round out Vancouver's top three 50-kW DX targets.

Manitoba

Probably the most challenging of the Midwestern provinces as most DXers will log Alberta and Saskatchewan first. Try 880 CKLQ Brandon, "Your country connection," with agricultural news and country music, or 990 CBW Winnipeg with weather for Winnipeg and southern Manitoba during local breaks from the CBC Radio One network.

New Brunswick

CBA Moncton 1070 is definitely the top choice at 50-kW omnidirectional. Everything else is at lower power and beamed away from the states. CKHJ Fredericton "KHJ" 1260 country is often received well inland. "The Bay's best music" 1360 CKBC Bathurst is another one that seems to get out fairly well. The other CBC station, 970 CBZ Fredericton is moving to 99.5 FM.



Here's a look at Newfoundland, with St. Pierre et Miquelon down south.

Newfoundland and Labrador

The primary CBC Radio One signal in St. John's is 640 CBN at 10-kW omnidirectional and parallel 6160 CKZN shortwave. The 740 CHCM relay of 590 VOCM St. John's is heard most often in the northeastern United States. CBGY Bonavista Bay 750 is another good CBC Radio One signal. CBT Grand Falls 540 is a popular target, although easily confused with CBK Saskatchewan on the same frequency as both carry CBC Radio One. Listen for Newfoundland and Labrador weather on the half-hour. Remember that Newfoundland time is 3.5 hours behind UTC, so the top of the hour occurs at what is the bottom of the hour for most of us. The best time to listen might be during Newfoundland sunrise when transmitter site dawn enhancement takes place.

Nova Scotia

This maritime province beams all its high-power signals north/northeast to protect stations to the west and south. Try for Halifax's 920 CJCH news/talk, or Oldies 960 CHNS. The 6130 CHNX shortwave relay of CHNS has been off the air due to transmitter problems and will likely not be restored. CBI Sydney 1140 with CBC Radio One is a more powerful signal at 10 kW but is a rare catch with a deep null to the southwest.

Ontario

Listen for 530 CIAO Brampton, the single broadcaster on the frequency in Canada and the United States. The only major sources of interference might be from Radio Vision Cristiana, Turks & Caicos, Radio Rumbo, Costa Rica, or local HAR/TIS signals. Primetime 740 CHWO Toronto broadcasts from the facilities of the former CBC AM outlet CBL. Primetime 740 has outstanding audio and great nostalgic music including the "Rockin' Robin" oldies show on Friday nights. CFRB Toronto

1010 news can be heard parallel with 6070 CFRX shortwave. CHWO and CFRB are DXer-friendly, with reception report forms online via the Ontario DX Association at <www.odxa. on.ca>. CHUM Toronto 1050 is another fun oldies station and a DXer favorite, recently returning to its musical roots after a brief shot at sports radio. Cruise on up to the high end of the dial for one of the few remaining CBC AM stations in the region, 1550 CBE Windsor with Radio One, and soon 1580 CHUC is moving here from 1450 to fill the void left by CBJ.

Prince Edward Island

CFCY 630 and CHTN 720 Charlottetown are Prince Edward Island's only two AM broadcast stations. CFCY is "the home of the island's country favorites," and on CHTN 720 you'll hear "Good Time Oldies".

Quebec

CINF 690 and CINW Montreal 940, two former CBC outlets, are now commercial all-news stations and still good DX targets. Like the former CBF on 690, CINF is in French. Listen for frequent "Info 690" IDs. Formerly CBM, the English counterpart CINW IDs as News 940. Radiomedia flagship 730 CKAC Montreal is another good target with news/talk in French. Canada's first AM expanded band broadcast station, 1610 CJWI Montreal, has been logged out to the Pacific coast with its unique mix of French and Spanish tropical music on a relatively clear frequency. Listen carefully as CJWI will ID in French as CPAM Union Radio.

Saskatchewan

At 50-kW omnidirectional, 540 CBK Watrous-Regina definitely represents the best chance of receiving this province. Listen for local news and weather during the CBC Radio One "Snap, Crackle, and Pop" morning show at sunrise. Listen to 800 CHAB Moose Jaw for "the greatest hits of all time."

Yukon Territory

This is a tough one to catch, no matter how you look at it. Try for Whitehorse stations 570 CFWH carrying CBC Radio One, or 610 CKRW relaying 90.5 FM. Both are only 1 kW nights. The few remaining AM signals available from the territory are 40-watt CBC relay stations. Good luck!

QSL Information

620 CKRM Regina, Saskatchewan, partial-data letter and business card in 15 days, signed Willy Cole, Program Director. Address: 2060 Halifax St, Regina SK S4P 1T7. (Griffith, CO)

900 KZPA Fort Yukon, Alaska, a beautiful QSL card with a map of Alaska and letter with tourist flier about Fort Yukon in 150 days for typed and taped report, signed Roberta Thomas, Station Manager, and the letter was from Shirley Thomas, Office Personnel. Alaska QSL #53. At 5 kW, I am really pleased with this one! (Martin, OR)

930 KAFF Flagstaff, Arizona, handwritten partial-data letter on colorful KAFF Route 66 stationery plus business card in 72 days, signed Peter Bruce, AM Music Director. Address: PO Box 1930, Flagstaff AZ 86002. (Griffith, CO)

1150 KSAL Salina, Kansas, partial-data hand-written letter on KSAL stationery, coverage map of six-station cluster, fold out Kansas weather map, two KY94 stickers, and a full-size metal KY94 "Love my country" license plate in 14 days for report and $1 (returned), signed Jerry Hinnihus, VP/GM. Address: 131 North Santa Fe, Salina KS 67402. My first QSL on 1150 with local KCUV temporarily dark. (Griffith, CO)

1670 KHPY Moreno Valley, California, full-data hand-written letter on KHPY 1530 stationary in 21 days. Letter confirms they are directional to the west with 10 kW day and 9 kW night. Says they took the Harris DX-10 transmitter for 1530 off the air, retuned it and the existing three-tower array to 1670. Also says they are transmitting in stereo. Signed D.L. VanVoorhis, Owner. Address: 24490 Sunnymead Blvd., Suite 215, Moreno Valley CA 92553. (Griffith, CO) QSL letter in 130 days for a taped report. Mentioned they are one of two x-band stations running a directional pattern with higher power at night. They are using the old KHPY 1530 three-tower system with the pattern aimed west. The only US x-bander I still need QSLed is 1630 KNAX Texas. I have all the rest. (Martin, OR)

The original plan was for all x-band stations to run 1-kW omnidirectional at night. The FCC has made a few exceptions to the rule in terms of power and pattern.

Broadcast Loggings

Not to steal any thunder from Gerry Dexter's column, this month's selected logs include some appropriate shortwave reports, plus additional Canadian targets. All times are UTC.

540 CBC Quebec French-language station, poor to fair at 2045, identifying on the hour as "Radio Canada." No discernible station ID, but given the network affiliation, time of day, language spoken, and proximity to my location, best guess is CBEF Windsor, Ontario. Sounded like an NPR-type program (I don't speak French), with a male announcer talking. No music and no apparent commercials—the only break in the discussion was a short clip of birds chirping just before the top of the hour. Propagation has been rare, as this is my first mid-day logging of any Canadian station on this frequency. (Smith, IN) CBGA1 New Carlisle, Quebec is another possibility, also on the CBC French service.

640 YVQO Union Radio, Puerto La Cruz, Venezuela heard at 0254 with items about Hugo Chavez, followed by a news about narcotrafficants in Rio de Janeiro (almost the same news as RCN carried few minutes earlier). Good signal, but with moderate co-channel interference. (Chiochiu, QC)

760 HJAJ RCN Barranquilla, Colombia at 0243 a good strong signal with "Informacion para Nocturna de RCN...." Very dominant signal with WJR nulled—the best South American signal on the MW and SW bands at the time! (Chiochiu, QC)

837 COPE Las Palmas, Canary Islands at 0338 Spanish commentary between rustic-sounding whistling with acoustic guitar, then teletalk. Loud at times. Comparatively weak 882 parallel. (Clang, MA)

900 WOTW Nashua, New Hampshire at 2300 *USA Radio Network* news, then Bill O'Rielly "No Spin Zone" show. Fair, under WJAB. (Clang, MA)

920 CJCH Halifax, Nova Scotia at 2101 the Rick Howe "Hotline" program, guest Mike Fleming's "anti-bully" program, then news. Fair, WHJJ phased. (Clang, MA)

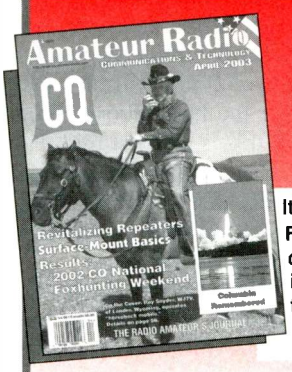
930 CFBC St. John, New Brunswick at 2208 "Good time oldies" ID, then "Sunshine" by John Edwards. Fair, under WGIN New Hampshire. (Clang, MA)

940 CJGX Yorkton, Saskatchewan at 1029 C&W music with frequent "GX94" IDs, weather with temperature at –25° and windchill at –39°! Promo for "GX94 Star Search" with station Web address, telephone number, and mailing address. Good for about 25 minutes then gone. (Griffith, CO)

980 KMIN Grants, New Mexico at 0659 ID with mention of <kmin980. com> and KD Radio. ID said they play 50s thru 80s but all songs heard were 60s. Very weak but little fading over/under KFWB. 250 watts. I checked out the Web address and Web page had an e-mail link so I sent them a message letting them know that I heard them here 363 miles distance. I also mentioned that I would be sending them a reception report. I received this nice e-mail reply: "I have recently done some work to repair our tower and improve the ERP. Thanks for the e-mail. I will confirm your report when I receive it. Derek Underhill, KMIN Grants 980." (Griffith, CO)

1150 KDEF Albuquerque, New Mexico at 0540 "Sporting News Radio" programming, "This is the home of high school hoops, AM eleven fifty, KDEF." Good in null of KSAL with local KCUV still dark. (Griffith, CO)

1557 France Bleu, Nice, France at 0041 reggae-flavored dance music, fair, followed by romantic guitar-based songs.



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CHANGES

New Call	Location	Freq.	Old Call
WIST	Thomasville, NC	790	WTNC
KDZR	Lake Oswego, OR	1640	KPBC
WLOA	Farrell, PA	1470	WPAO
KSQP	Pierre, SD	1450	New
KMXM	Colorado City, AZ	107.1	KZNZ
KCDU	Carmel, CA	101.7	KBTU
KBXO	Coachella, CA	90.3	New
KBTU	Hollister, CA	93.5	KCDU
KLHV	Fort Collins, CO	88.3	KWWY
KXWA	Loveland, CO	89.7	New
WXLM	Stonington, CT	102.3	WUXL
WTLQ-FM	Punta Rassa, FL	97.7	WYPT
WSJZ-FM	Sebastian, FL	95.9	WINT
WWSG	Pavo, GA	90.5	New
KPHL	Pahala, HI	90.5	New
WSPV	Greencastle, IN	90.5	New
KNUF	South Fort Polk, LA	95.7	New
WBUV	Moss Point, MS	104.9	WBUB-FM
WZKM	Waynesboro, MS	89.7	WKVW
KZPL	Lee's Summit, MO	97.3	KCZX
KNDZ	Billings, MT	105.1	KBEX
KRYZ	Great Falls, MT	100.3	KFLL
WAIV	Cape May, NJ	102.3	WMID-FM
KBMK	Bismarck, ND	88.3	New
KRMP	Anadarko, OK	103.7	KRPT-FM
WOWY	Pleasant Gap, PA	98.7	WOJZ
WWQS	Pastillo, PR	90.1	New
WGZR	Bluffton, SC	106.9	WWVV
WWVV	Ridgeland, SC	104.9	WGZR
KTXX	Karnes City, TX	103.1	New
KMHT-FM	Marshall, TX	103.9	KZEY-FM
KBGO	Waco, TX	95.7	KCKR
KLYK	Kelso, WA	94.5	KUKN
KUKN	Longview, WA	105.5	KLYK
WKVW	Montgomery, WV	93.3	WZKM

French male, then time signal at 0100. (Clang, MA)

1640 KDZR Lake Oswego, Oregon at 1658 "AM 1640, KDZR Lake Oswego-Portland." New calls. They are indeed Radio Disney now. (Martin, OR)

1700 KQXX Brownsville, Texas at 0600 an unusually good signal in a very narrow null between KBGG and adjacent splatter from local KDDZ. Pop oldies with "KQXX, Brownsville-Harlingen-McAllen, Oldies Radio, 1700 AM" at top of the hour. Also a three-minute promo for "Oldies Radio" with several mentions of 800-833-9211 request line. Station rarely heard here at this signal level. (Griffith, CO)

5010 Radio Cristal Int'l, Santo Domingo, Dominican Republic at 2320–2345 merengue music, local ads (one was for TV station "Canal 25"), Radio Pueblo Ids, which announced to be on 1510 and on SW followed by a Radio Cristal Int'l ID. Very good reception. (Chiochiu, QC)

6070 CFRX Toronto, Ontario at 2119 a traffic report, frequent CFRB 1010 IDs, the strongest (and the only strong) 49-meter band signal at this early time. (Chiochiu, QC)

Thanks to Bogdan Chiochiu, Stephen Clang, KA1BTI, Patrick Griffith, Patrick Martin, and Brian Smith, W9IND.

For now, 73 and Good DX! ■

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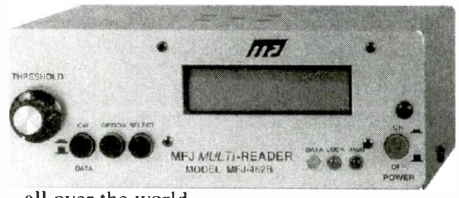

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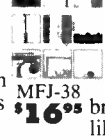
Easy-Up Antennas



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world band tuning tips

your monthly international radio map

This listing is designed to help you hear more shortwave broadcasting stations. The list includes a variety of stations, including international broadcasters beaming programs to North America, others to other parts of the world, as well as local and regional shortwave stations. Many of the transmissions listed here are not in English. Your ability to receive these stations will depend on time of day, time of year, your geographic location, highly variable propagation conditions, and the receiving equipment used.

AA, FF, SS, GG, etc. are abbreviations for languages (Arabic, French, Spanish, German). Times given are in UTC, which is five hours ahead of EST, i.e. 0000 UTC equals 7 p.m. EST, 6 p.m. CST, 4 p.m. PST.

UTC	Freq.	Station/Country	Notes
0000	17675	Radio New Zealand Int'l	
0030	4052.5	Radio Verdad, Guatemala	SS
0030	4935	Radio Capixaba, Brazil	PP
0100	6458	Armed Forces Network, Puerto Rico	
0100	11735	Voice of Korea, North Korea	
0100	6195	Voice of Vietnam, via Canada	
0100	7230	Radio Slovakia Int'l, Slovak Rep.	
0100	4915	Radio Nacional Macapa, Brazil	PP
0100	5040	La Voz del Upano, Ecuador	SS
0100	9480	Voice of Russia	SS
0130	15575	Radio Korea Int'l, S. Korea	KK
0130	9440	Radio Slovakia Int'l, Slovak Rep.	
0130	11900	All India Radio	Tibetan
0130	6155	Radio Telefis Eireann, Ireland, via England	
0130	4832	Radio Litoral, Honduras	SS
0130	11780	Radio Nacional, Brazil	PP
0130	9400	Radio Bulgaria	
0130	7115	Radio Yugoslavia, Bosnia-Montenegro	unid
0200	9605	Vatican Radio	SS
0200	9890	Norwegian Radio	NN
0200	6973	Galei Zahal, Israel	HH
0200	11585	Kol Israel	HH
0200	4799	Radio Buenos Nuevas, Guatemala	SS
0200	9650	HCJB, Ecuador	
0200	6200	Radio Prague, Czech Republic	
0200	9320	WINB, Pennsylvania	
0200	11955	Radio Nacional Angola	PP
0230	7380	Radio Rossii, Russia	RR
0230	9495	Radio Sweden	
0230	4845	Radio K'ekchi, Guatemala	SS/vern
0230	9595	Radio Farda, USA via Morocco	AA
0230	6085	Bayerische Rundfunk, Germany	GG
0230	7400	Radio Bulgaria	FF
0230	4885	Radio Clube do Para, Brazil	PP
0230	9890	Sadaye Kashmir - clandestine	unid
0230	7160	Radio Tirana, Albania	
0230	11710	ERAE, Argentina	SS/EE
0230	7210	Radio Minsk, Belarus	
0300	5026	Radio Uganda	
0300	6185	Radio Educacion, Mexico	SS
0300	4800	Radio Lesotho	
0300	6139	Radio Unamsil, Sierra Leone	EE/other
0300	11800	RAI Int'l, Italy	II
0300	4819	La Voz Evangelica, Honduras	SS
0300	6135	British Forces Broadcasting Service	
0300	4820	Radio Botswana	
0300	5010	Radio Misiones Int'l/HRMI, Honduras	SS
0330	3240	Trans World Radio, Swaziland	vern
0330	6055	Radio Exterior de Espana, Spain	SS
0330	11765	BBC via South Africa	
0330	13675	UAE Radio, Dubai	
0330	11885	FEBA Radio, Seychelles	Th/Fri/Su
0330	9860	Radio Netherlands relay, Madagascar	undi
0330	7300	Voice of Turkey	
0330	6940	Radio Fana, Ethiopia	Amharic
0330	6140	Radio Melodia, Colombia	SS
0330	6010	La Voz de tu Concencia, Colombia	SS
0330	9835	Radio Budapest, Hungary	
0345	6985	Voice of the New Sudan, clandestine	AA
0355	6350	Voice of the Tigray Revolution - cland.	vern
0400	6265	Zambia National Bc. Corp.	
0400	6000	Radio Havana Cuba	
0400	4919	Radio Quito, Ecuador	SS
0400	15310	BBC relay, Oman	
0430	12060	Radio Voice of Hope via Madagascar	unid
0430	7285	Voice of Croatia, via Germany	Croat?EE
0500	7190	RT Tunisienne, Tunisia	AA
0600	6100	Radio Liberia Int'l	
0600	4915	Ghana Broadcasting Corp.	
0600	11710	Radio France Int'l, via Gabon	
0630	6080	VOA Relay, Sao Tome	
0630	5470	Radio Veritas, Liberia	vern/EE
0700	4845	Radio Mauretanie, Mauritania	AA
0700	3945	Radio Tampa, Japan	JJ
0900	6115	Radio Union, Peru	SS
0930	4805	Radio Difusora Amazonas, Brazil	PP
1000	5020	Solomon Is. Broadcasting Corp.	EE/Pidgin
1000	4890	NBC, Papua New Guinea	
1000	12085	Voice of Mongolia	
1000	4960	Radio Federacion, Ecuador	QQ
1000	3310	Radio Mosoj Chaski, Bolivia	QQ
1000	11755	HCJB - Australia	
1030	12020	Voice of Vietnam	

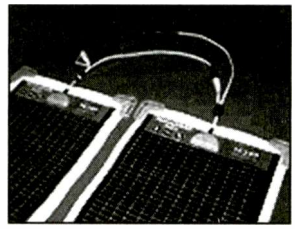
UTC	Freq.	Station/Country	Notes
1030	4790	Radio Atlantida, Peru	SS
1030	4825	Radio Mam, Guatemala	SS
1030	4782	Radio Oriental, Ecuador	SS
1030	4876	La Cruz del Sur, Bolivia	SS
1030	4930	Radio Barahona, Dominican Republic	SS
1100	9650	Radio Korea Int'l, S. Korea, via Canada	KK
1100	9740	BBC relay, Singapore	
1100	4775	Radio Tarma, Peru	SS
1100	4824	La Voz de la Selva, Peru	SS
1100	4725	Radio Myanmar (Burma)	BB
1100	11935	Voz Cristiana, Chile	SS
1100	11710	Radio Japan/NHK	GG
1100	6195	BBC via Antigua	
1130	4830	Radio Tachira, Venezuela	SS
1130	3220	Radio Morobe, Papua New Guinea	
1130	5005	Radio Nepal	
1130	4754	Radio Republik Indonesia, Makassar	II
1200	7285	Radio Corp. of Singapore	
1200	6140	Radio Rebelde, Cuba	SS
1200	3345	Radio Republik Indonesia - ternate	II
1200	4450	Voice of National Salvation, clandestine	KK
1230	7430	Radio France Int'l, via Russia	FF
1230	9645	Faro del Caribe, Costa Rica	SS
1230	4900	Voice of the Strait, China	CC
1300	7455	Central Bc. System, Taiwan	CC
1330	11960	Radio Sweden	
1330	17815	Voice of Turkey	
1330	11950	Voice of Islamic Rep. of Iran	Farsi
1330	17630	Africa Number One, Gabon	FF
1330	17660	YLE/Radio Finland	Finnish
1400	11785	Voice of America relay, Thailand	CC
1400	15435	Radio Jamahiriya, Libya	AA
1400	9725	University Network, Costa Rica	
1500	17550	Radio Exterior de Espana, Spain	SS
1500	21600	UAE Radio, Dubai	FM relay
1500	18940	Radio Afghanistan, via Norway	Pashto/Dari
1500	15530	British Forces Broadcasting Service	
1515	15425	SLBC, Sri Lanka	
1530	9875	Voice of Russia	
1530	15330	Trans World Radio/KTWR, Guam	
1530	9435	Radio Farda, USA via Morocco	
1530	15190	BBC relay, Antigua	
1530	17895	Radio Africa International via Austria	
1600	9525	Channel Africa, South Africa	
1600	13630	UAE Radio, Dubai	EE/AA
1600	15570	Vatican Radio	Swahili
1600	11570	Radio Pakistan	
1600	18950	Norwegian Radio	NN
1600	9975	Voice of Korea, North Korea	
1600	11980	Radio New Zealand Int'l	
1600	11690	Radio Jordan	
1600	11980	Adventist World Radio/KSDA, Guam	
1600	21660	BBC relay, Cyprus	
1630	11550	CBS/R. Taipei int'l, Taiwan	
1630	15255	Radio Cairo, Egypt	AA
1700	17870	Channel Africa, South Africa	
1700	11605	FEBA, Seychelles	unid
1700	15605	Radio France Int'l	
1700	15670	Voice of Democratic Eritrea	Tigre
1730	11940	Radio Romania Int'l	
1730	11730	Radio Pilipinas, Philippines	Tagalog
1730	11850	Voice of America relay, Northern Marianas	
1730	15630	Voice of Greece	GG
1800	9780	Republic of Yemen Radio	
1800	13790	Swiss Radio Int'l, via Germany	FF
1800	13605	All India Radio	
1900	15275	Deutsche Welle relay, Rwanda	
1900	17680	RDP Int'l, Portugal	PP
1900	11990	Radio Kuwait	
1930	11625	Vatican Radio	SS
1930	11695	Voice of Islamic Rep. of Iran	
1930	12125	Voice of Biafra Int'l, clandestine	
2000	12005	RT Tunisienne, Tunisia	AA
2000	15295	Adventist World Radio, via South Africa	
2000	17660	Swiss Radio Int'l	
2000	15120	Voice of Nigeria	
2000	17605	Radio Netherlands relay, Bonaire	DD
2000	11785	Voice of Indonesia	
2000	15150	Voice of Indonesia	
2000	17705	Voice of Greece, via Delano	GG
2000	11760	China Radio Int'l	FF/EE
2000	15400	BBC relay, Ascension Is.	
2000	11775	Caribbean Beacon, Anguilla	
2030	9535	Radio Thailand	
2030	11905	Radio Tashkent, Uzbekistan	
2030	11820	BSKSA, Saudi Arabia	AA
2030	11605	Kol Israel	unid
2030	15240	BBC via Morocco	
2030	11880	RAI Int'l, Italy	
2030	17895	Voice of America relay, Botswana	
2030	9960	Voice of Armenia	
2100	13610	Radio Damascus, Syria	
2100	11855	Radio Japan/NHK	
2100	21740	Radio Australia	
2115	7590	Swat al-Islah, clandestine	AA
2130	11915	BSKSA, Saudi Arabia	AA
2130	15240	Voice of America relay, Morocco	
2130	9990	Radio Cairo, Egypt	AA
2130	13650	Radio Canada Int'l	
2130	7325	Radio Wales Int'l, via England	
2200	11620	All India radio	Hindi
2200	17705	Radio Havana Cuba	SS
2230	9580	Africa Number One, Gabon	FF
2230	7345	Radio Prague, Czech Republic	
2230	13700	Radio Vlaanderen Int'l, Belgium, via Germany	
2300	17820	Voice of America relay, Philippines	
2300	15540	RDP Int'l, Portugal	PP
2330	9840	Voice of Vietnam	
2330	9770	Radio Mexico Int'l	SS
2330	9875	Radio Vilnius, Lithuania	
2330	17510	KWHR, Hawaii	
2330	17835	Radio Imperial, El Salvador	SS
2330	17550	China National Radio	CC
2330	13640	Radio Canada Int'l	
2330	17680	Voz Cristiana, Chile	SS
2330	6715	Full Gospel Las Palmas Church, Canary Is.	USB KK

power up: radios & high-tech gear

by Harold Ort, N2RLL

review of new, interesting, and useful communications products

ICP Global Technologies Introduces BatterySAVER FLEX



ICP Global Technologies' new BatterySAVER FLEX solar panel is available in 5,- 10-, or 20-watt output.

It's billed as the "world's most flexible solar panel" and is available in 5-, 10-. or 20-watt outputs. ICP Global Technolo-gies, based in Montreal, Canada says the new BatterySAVER FLEX incorporates NASA and military technologies with non-breakable solar cells to create a lightweight, flexible, and durable solar panel that can be installed anywhere.

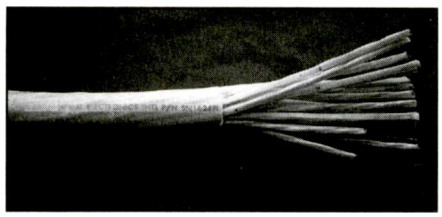
This new super-flexible panel is composed of non-breakable solar cells, making it ideal for radio enthusiasts, boaters and RV, users. The cells are CIGS (Copper Indium Gallium Diselenide), a material proven to be very stable and long-lasting, even when subjected to the rigors of extreme radiation in space. Thin as 10 sheets of paper, and just as flexible, the BatterySAVER FLEX rolls up neatly into its handy storage/carrying container when not in use. It can be used to charge solar batteries or directly power portable electronics, such as GPSs, cell phones, radios, and laptop computers, using the optional 12-volt power socket.

"The FLEX not only offers the very best in solar technology, but is also a huge step forward in terms of innovative packaging. These panels are so flexible that each of the 5-, 10-, and 20-watt configurations can be rolled up and merchandized in a reusable environmentally friendly bottle. We call it the Solar Panel in a Bottle," said Chris Warnock, Product Manager at ICP Global Technologies.

The BatterySAVER FLEX includes 10-feet of wire and an internal reverse current blocking diode. For more information, contact the company at 6995 Jeanne-Mance, Montreal, Quebec, Canada H3N 1W5, or visit them on the Web at <www.icpglobal.com>.

Nemal Electronics International's New Audio Snake Cables

Nemal Electronics has just introduced a new series of audio snake cables for use in broadcast and other high-end audio applications requiring a plenum-rated cable. These cables are available in constructions containing 2 to 24 pairs and are UL-CL2P rated. Part number SN1624PL consists of 16 individually shielded and jacketed pairs with an overall jacket.



Nemal Electronics' new audio cables are perfect for high-end applications, such as broadcasting.

The digital versions (24XPL Series) are also available in constructions of 2 to 24 pairs with color-coded conductors and no inner jackets. The new cables facilitate rapid and neat installation of systems requiring multiple audio pairs, and the discrete numbered individual jackets provide for easy and positive identification. Outer jackets are available in natural (standard), or in other colors by special order. The product is available either on 1000-foot rolls or fully terminated to customer specifications. Nemal also manufactures connectors and tooling for this product.

For additional information, contact Nemal Electronics International at 800-522-2253, e-mail them at <info@nemal.com>, or visit them on the Web at <www.nemal.com>.

Tigertronics SignaLink

The company says it's "Your passport to the digital domain!" Let's face it, new DSP technology and the alphabet soup of new digital modes of communications can be confusing, but they're also fascinating! There are more than 80—that's right, 80—different programs listed on the <Tigertronics.com> website, and there are even more on the Internet.

Here's the Tigertronics SignaLink that allows you to work all digital modes!

The new SignaLink Interface is a fully assembled and tested unit with surface mount construction. The company robotically assembles the SignaLink units right here in the United States. This easy-to-use soundcard/radio interface will put you in touch with the latest digital modes from Packet, AMTOR, RTTY, SSTV, WEFAX, ACARS, PSK31 to MT63 and WSJT, and much more.

No serial port is required to use the SignaLink. The Auto-PTT circuit eliminates the need to connect to a computer's RS-232 port, and it automatically detects transmissions from the soundcard, activating the radio's PTT circuit. There's also complete isolation from your computer and radio, eliminating troublesome ground loops and preventing hum and noise from degrading incoming signals.

What about powering the unit? Simple. It consumes so little power, it can work from the "accessory voltage" found on most radio mic connectors, making for a very simple and clean installation. For radios that don't have power available, Tigertronics has provided an external power jack on the rear panel.

With the Tigertronics SignaLink you get a fully assembled detachable radio cable, a software CD with the latest programs for the most popular modes, a 2.1-mm power plug, jumper wires

(no soldering required!), a printed installation manual, and free telephone tech support.

The Tigertronics SignaLink sells for $49.95. For more information, contact Tigertronics at <www.tigertronics.com> or call the company at 541-474-6700. You know what to tell them—that you read it in *Pop'Comm*!

New Technician Class Book Reorganizes Everything!

Gordon West, WB6NOA, announced the new *Gordon West Technician Class Element 2* study guide, valid July 1, 2003, through June 30, 2007. This new book reflects all 511 Element 2 Technician class questions and answers released by the National Conference of Volunteer Examination Coordinators Question Pool Committee. Every question and answer is followed by Gordo's unique and upbeat description of the correct answer.

Gordon West explains one of the most important features of this new book to better help new ham applicants study questions in a more logical progression:

When the 4-member Question Pool Committee revised the old Technician class question pool, many of the subject areas were separated and moved out of place from a logical teaching plan. The QPC question pool jumps right into questions about privileges and radio bands, yet the applicant won't see questions on what an actual radio wave is until nearly halfway through the pool. If someone were just to study the question pool in the order of how the 511 questions appear from the QPC, they are simply memorizing how to pass the test and missing the important aspects of how that particular test question works into the real world of operating ham radio.

Gordon West is well known for his teaching methods through his weekend amateur radio training classes offered throughout the country. The new Gordon West Technician class book has completely reorganized the entire question pool for Technician class in a logical progression of learning and teaching amateur radio in both the classroom as well as home study.

The progression of Q & As laid out in Gordo's new Element 2 Technician class book parallels the exact order of how West teaches ham radio in his popular weekend seminars. The grouping of similar questions facilitates learning a specific subject that might be covered by 10 almost-the-same Q & As. The unique reorganization of the entire Technician class question pool also facilitates in seeing graphs, diagrams, and explanations all grouped in one subject area. "There's no more jumping from the front of the book to the back of the book to track down similar questions in the pool," adds West.

Also included throughout the book are nearly 100 Web addresses as an encouragement for everyone studying the book, listening to the audio course, or working the computer course to further their knowledge of a specific question by going to recommended websites. Many of these Web addresses are relatively obscure but may contain much backup information about a specific subject that all hams need to learn more about.

The new *Gordon West Technician class Element 2* and home-study training book is available from all amateur radio dealers, and in single copies or in quantity at a discount for amateur radio instructors through the W5YI Group at 800-669-9594. The book is part of a series of amateur radio and commercial communication electronics books published by Master Publishing in Lincolnwood, Illinois (<www.masterpublishing.com>). ■

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the wireless connection

a look behind the dials

by Peter J. Bertini <radioconnection@juno.com>

Back To Basics: Harold's Kitchen Radio

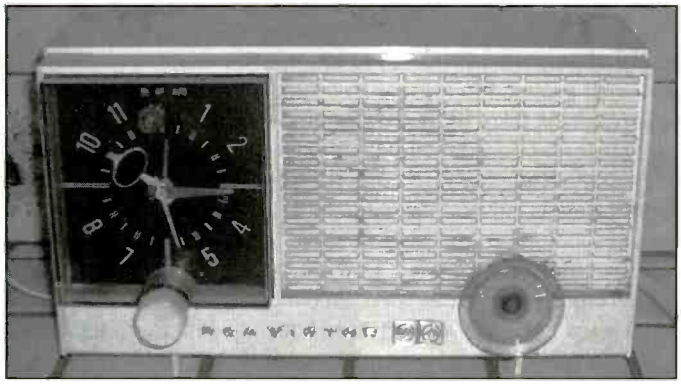

Photo A. Harold's Iceberg White RCA Victor model RJD-10Y clock radio. This radio would be right at home in any retro 1960's-era bedroom or kitchen!

Photo B. Top view of the pc board. The replaced capacitors, two wax paper caps, and dual-section filter are shown in the foreground. The two replacement radial-lead electrolytic caps can be seen on the rear of the board.

"Harold's got to be pulling my leg!" These were my first thoughts when the package containing his mom's "vintage" radio arrived for restoration. Yet, there it was, carefully double-boxed and encased in bubble wrap, a very common mid-'60s plastic clock radio. A 1965 RCA Victor, model RJD-10Y to be precise. **Photo A** shows the radio. It's nothing that most collectors would give a second look at. Could this be the vintage radio we'd discussed on the telephone the week before? Then it dawned on me: 1965, the radio is almost 40 years old! A young teenager in 1965 would be around 50 years old today.

Sigh. *Tempus fugit* and all that stuff. Harold's kitchen radio was indeed vintage column fodder as Harold had suggested. Besides, it's a good vehicle for us revisit restoration basics, things I may have taken for granted that beginners were familiar with.

I've noticed that the prices of many of the common Bakelite radios from the late 1930s, '40s, and '50s are going up, especially for sets in excellent, original condition. Many collectors like these simple radios because they often work fine with a simple recapping, new dial string, and general cleanup! You don't have to be an electronic techie to successfully get 95 percent of them working like new. Since the radios use similar tubes and fairly generic circuitry, they're often simple and repetitive enough to be repaired without a schematic or service information.

Schematics

First, I needed the schematic for the RCA radio. My Rider's library ends at Volume XIX, and even the last volume published (XXIII) only covered sets made in the late 1950s. A glance in my Sams Technical Publishing Annual Index[1] showed they offered a Photofax for servicing the RJD-10Y, which I'd have to order direct or through a dealer. On a hunch, I checked the Beitman's manuals stored on my computer hard-drive. Sure enough, I found out that a model covered, RCA's RGD-24, used the same RC-1213P chassis as the RJD-10Y. The Beitman's schematic and pictorial board layout are shown in **Figure 1**.

By 1965, most table radios, including a majority of the RCA sets, were using all solid-state transistorized chassis. I suspect RCA was simply using up the remaining tube and parts inven-

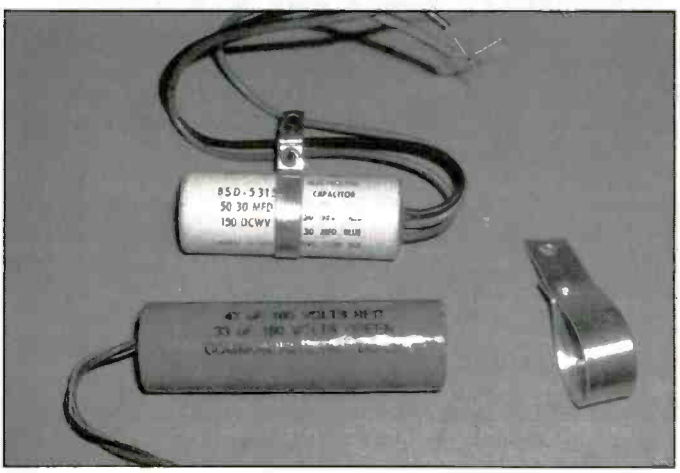

Photo C. Here's a typical dual-section capacitor found in early AA5 radios along side a replica capacitor made by Bill Turner. Bill's capacitors are offered in several popular dual- and triple-section values for very reasonable prices.

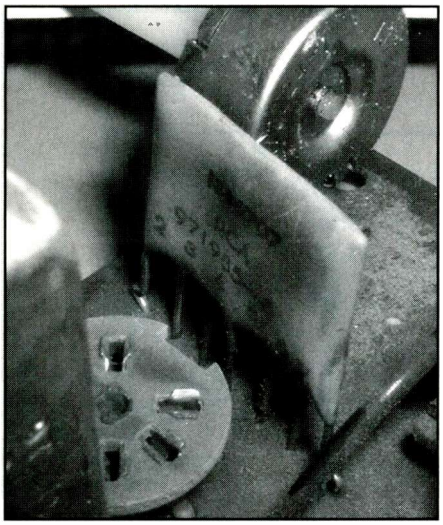

Photo D. A close-up of the RCA circuit module.

tories in a few sets in 1965. It was probably one of the last American tube table radios made and the end of an era. An *Iceberg White* dinosaur. Indeed, within a few short years most of the major tube manufacturing plants will have closed their doors for good.

Beitman's series ceased publication with the 1968 edition, and I am considering offering the entire run on CD for a modest $15 postage-paid price (U.S.) to *Pop'Comm* readers. The Bietman volumes feature only the most popular radios from any given model year, so they aren't as comprehensive as the Rider manuals. But if you're interested in this offering, let me know via e-mail, but please, no advance orders!

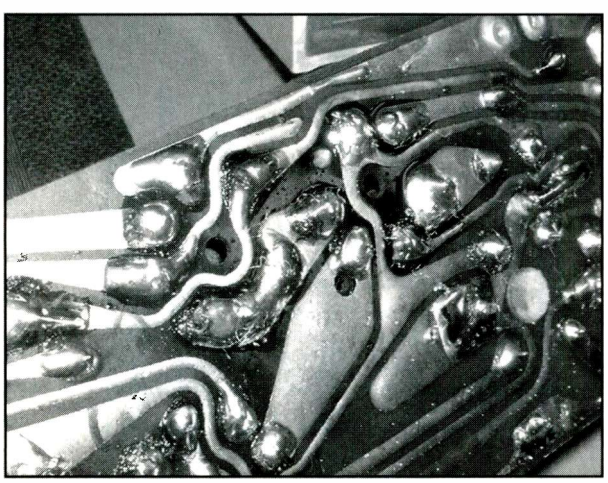

Photo E. The phenolic board has darkened in the area of the 50C5 socket. The 50C5, running Class A, dissipates a considerable amount of heat; over the decades the heat takes its toll on nearby components.

Overheard....

Fellow PopComm reader and cabinetmaker, Thomas J. Watson, wrote in to share this radio memory with us. You can contact Thomas at <www.tjwcabinetmaker.com>.

Old radio guys? I grew up with a tube-driven, brown bakelite a-hummin' when the humidity-got-high-AM-only-Philco radio. The only radio in the house that got the Phillies game as well as the car radio did. In the late night, parent-enforced darkness of my room, I would listen to men who harkened back to the days of spark gap transmitters, men like Jean Shepherd, Long John, Barry Farber who were gods in my young eyes.

The yellow-orange glow of the tubes danced through the tawdry cardboard that enclosed the back of my old squawk box and threw mystical gleams onto my walls. And on those hot-tube-lit walls danced the visions that accompanied the tales told by the "old radio guys" I loved. I would like to meet these men

I still love radio—it engages the mind.

The RCA RC-1213 Chassis

This set featured an interlocked "cheater cord" for electrical safety; you couldn't remove the radios back cover without removing the AC line cord, and the knobs were also captive to prevent their removal and contact with a potentially *live* metal control shaft by the user. The set used the All American Five (AA5) miniature 7-pin tube lineup: 12BE6 converter, 12BA6 IF amplifier, 12AV6 detector and first audio, 50C5 audio amplifier, and 35W4 rectifier. These 150-mA filament tubes were designed for direct 120-volt AC line series-string operation—Christmas light fashion—precluding the need for a separate filament transformer.

The radio would be a typical AC/DC set, except for the clock motor requiring 60-cycle AC for operation. Earlier, and arguably the "true" AA5 radios, used an octal tube lineup: 12SA7 converter, 12SK7 IF, 12SQ7 detector/first audio, 50L6 audio output, and a 35Z5 half-wave rectifier. See **Photo B**.

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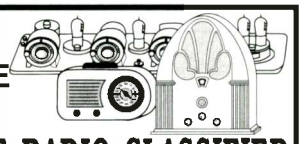

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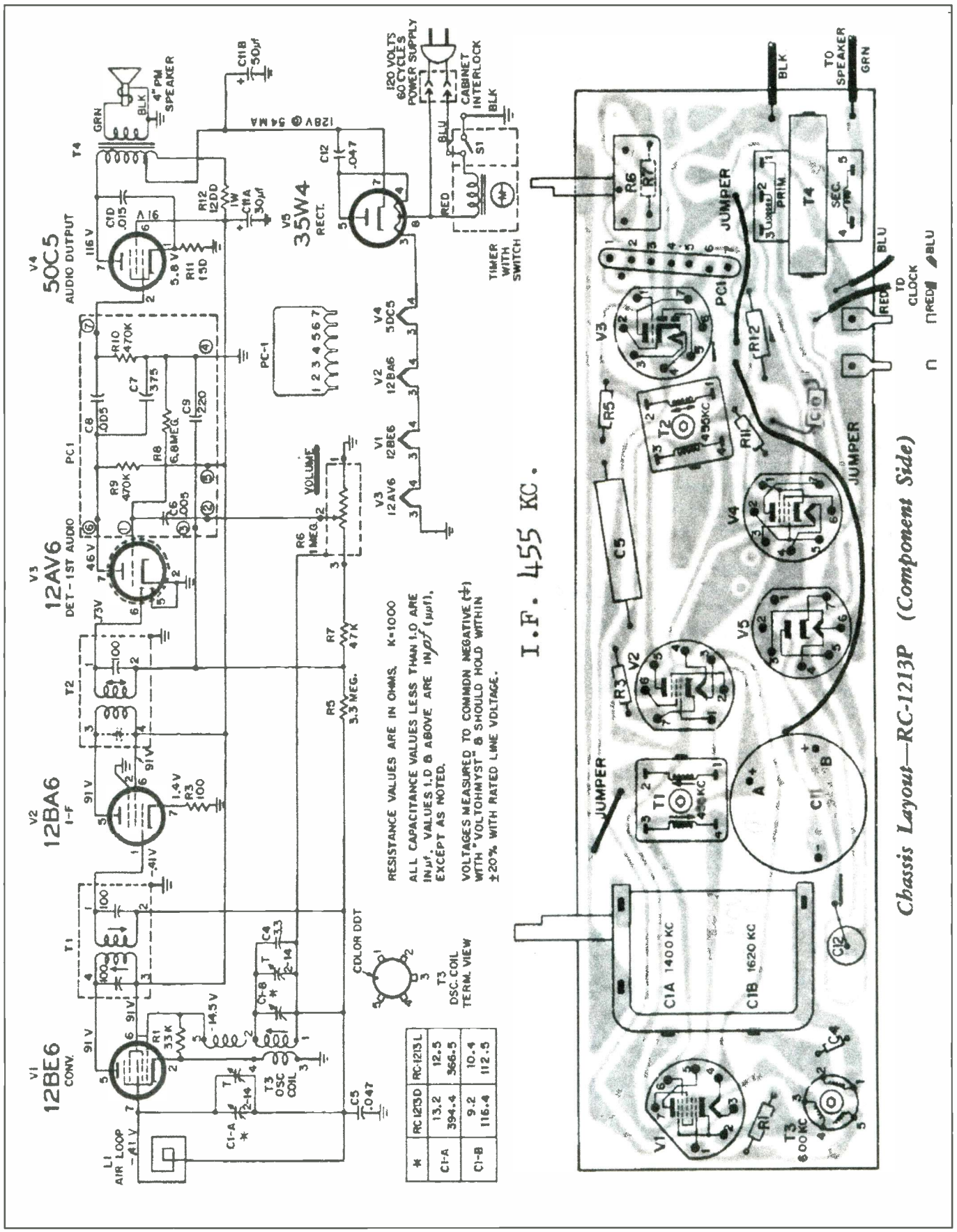

*	RC-1213D	RC-1213L
C1-A	13.2 394.4	12.5 366.5
C1-B	9.2 116.4	10.4 112.5

Figure 1. Schematic of the RCA RJD-10Y as cropped from the 1965 Beitman's manual. The pc board pictorial layout is also shown. Notice the PC-1 "Couplate" circuitry, shown in dashed outlines between the 12AV6 and 50C5.

Photo F. Albeit expensive, this Denon SG-7000Z handheld desoldering tool is the professional approach to pc board desoldering.

Photo G. My dim-bulb tester is permanently mounted on the bench adjacent to the Heath SP-5220 variable, isolated AC supply. The dim-bulb tester is made from an odd combination of socket and AC plug on a single electrical plate.

Inspection First!

Before firing up the radio, I decided it was best to do a visual inspection and to change out any wax paper capacitors and the electrolytic filter capacitors. There were only two .047-mFd wax-paper capacitors in the entire radio. I replaced these with Mylar capacitors with a conservative 630-volt DC rating. The electrolytic was a dual-section 50/30-mFd with a 150-VDC rating, which I replaced with two discrete radial lead electrolytic caps, using standard 47- and 33-mFd values, and with a higher 160-VDC rating. The photos show how they were mounted using the same terminal holes as the original dual-section electrolytic capacitor. Radio restorer Bill Turner[2] is offering some very nice replica dual- and triple-section capacitors (shown in **Photo C**), typical of those found in the early plastic and Bakelite AA5 radios.

An Odd Component: The Couplate

In 1950 or so, many AA5 sets began featuring a small 6- or 7-lead circuit package containing several thick-film resistors and ceramic capacitors on a ceramic substrate, a precursor to the integrated circuits packages that were developed a decade later! These small circuit modules contained several of the resistors and capacitors needed for IF detector filtering, AGC, and audio interstage RC coupling and biasing. They were made by Centralab (CRL) and Sprague. I've seen them referred to as PECs, an acronym for Packaged Electronic Components, and also as Couplates, depending on the manufacturer.

I suppose *Couplate* is a variation of *Plate Cou*pler in deference to their application. Couplates were mentioned as early as 1947 in the *ARRL Handbook*, if I recall correctly. They're very reliable devices. A single Couplate replaced several discrete components between the first audio plate and audio output stage grid. It provided the interstage RC coupling while greatly reducing the number of components needed for inventory and the number of steps on the factory assembly line.

For example, the RCA module contains three resistors: two for grid biasing (470 k and 6.8 meg), and a 470-k plate resistor for the 12VA6 first audio. A close-up of the module is shown in **Photo D**. Two caps are .005 mfd and the remaining two caps are 375 and 220 pF. The mostly likely failure is the 470-k plate resistor, which can be easily subbed externally if it fails (the module circuitry can be seen in **Figure 1**). Or, the entire Couplate package can be replaced with discrete components if it is physically damaged or missing. Beitman's and Sam's service data both provide the internal parts values and internal schematic for these modules.

Look For Damage

The RCA used an inexpensive phenolic pc board. The board was given a good visual inspection, keeping a keen eye out for damaged pc board runs, cracks in the board material, discolored resistors, overheated solder connections, or any other signs of damage. Miniature tubes can run quite hot, especially the 35W5 and the 50C5 stages! Many hundreds of hours of commutative use had darkened nearby areas of the phenolic pc board material, as shown in **Photo E**.

As a precaution, I heated all the solder connections and reflowed them with fresh solder, assuming that some of the joints may have failed due to the stresses of repeated thermal cycling. Thermal cycling can produce small cracks in solder joints that aren't easily seen but that can cause intermittent operation and can

Photo H. Alignment points: The C1-A-T (antenna trimmer) and C1-B-T (oscillator trimmer) 2-14-pF mica trimmers can be seen on the top frame of the tuning capacitor. The oscillator trimmer is towards the front (control side) of the board.

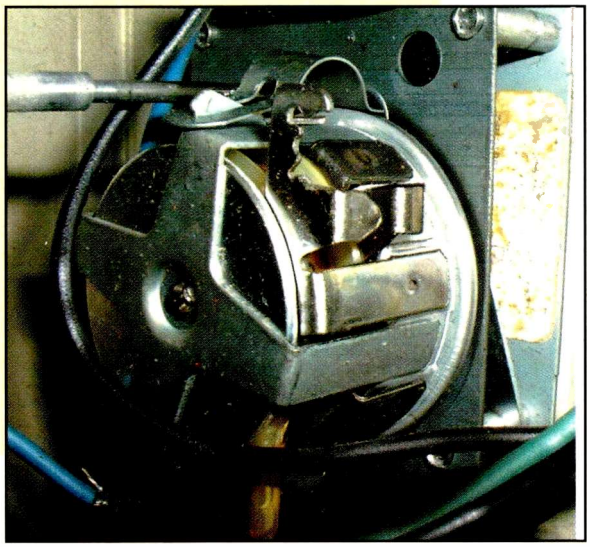

Photo I. The RCA clock radio motor is clip-mounted to the clock frame.

be a bear to find! In extreme cases, heat can also ruin the temper of the tube socket pins, resulting in intermittent connections between the tube pins and the socket. Or, the socket material may become brittle and friable and show signs that it is starting to disintegrate. The only remedy here is to replace the socket.

Cracks found in the pc board can be fixed with super glue. Let the glue flow into the crack lines and give it time to set up and dry. The cracks can be further strengthened by running beads of epoxy on both sides of the crack line, giving additional reinforcement to the damaged areas of the board. Breaks in the pc foil runs can be repaired by soldering bridges of #20 gauge tinned copper bus wire across the breaks. Lifted foil runs can be glued down with super glue or epoxy adhesive. Old components can be removed by using either solder wick or, if available, a good vacuum desoldering tool. My favorite is the small handheld Denon SG-7000Z shown in **Photo F**. This unit is carried by Howard Electronic Instruments.[3] Remember, excessive heat can damage or lift the pc foil runs, so always be careful!

Photo J. A small hole is drilled in the front plate of the gearbox so fresh clock oil can be added to the mechanism. Care must be taken to prevent drill chaff from entering the gearbox, where it could bind the gears or cause premature wear. I smashed a plastic gear when the drill entered too far into the opening.

Radio Alignment And Testing

Once the pc board was inspected and I had replaced all of the wax and electrolytic caps, I did a quick test to see if the radio worked. Since this is a hot chassis radio, and one that is opened for servicing, an isolated AC supply is a must! I used my dim-bulb tester (described in an earlier column) for the first time the power was applied. If any major problems existed, the dim-bulb tester would limit the maximum current that could be drawn to a safe amount. **Photo G** shows how my dim-bulb tester is located near the Heath SP-5220 variable, isolated AC supply on my bench.

Once the radio passed the dim-bulb test, I powered it up on my Heath isolated variable AC supply, without the dim-bulb current limiter in line. The tubes warmed up and the radio played fine! The only alignment was adjusting the trimmer caps on the oscillator and RF section of the tuning capacitor for best signal strength at the correct dial position while monitoring a local station at 1600 kc.

The set was modern enough to use miniature 3/4-inch IF transformers. These are slug-tuned using adjustable ferrite cores, as compared to the trimmer capacitors used on more vintage sets. It's been my experience that attempting to align slug-tuned IF transformers often does more harm than good! The ferrite slugs can easily jam or break if turned, requiring that the transformer be replaced or repaired. If the set seems sensitive enough, leave the IF transformers alone! Their alignment is probably close enough for all intents and purposes.

The oscillator coil also had a hex tool adjustable ferrite core for setting the low-end Local Oscillator tracking. Again, due to the age and heat issues, these slugs are also often brittle, cracked, or frozen and are best left alone. The alignment points are shown in **Photo H**.

Another failure mode is the fixed-value mica capacitors mounted in the IF transformer bases. A defective mica capacitor often produces large amounts of continuous static through the speaker. The resonating capacitors for the IF transformers might be the last thing one would expect to cause this sort of problem, but it is a common failure. The cap should be replaced with a silver mica capacitor. Internal 100-pF cap values for this RCA are shown on the **Figure 1** schematic. I'll show how to disassemble and remove these mica caps in a future column.

Does It Hum?

Hum is usually an indication of poor filter caps, or of a heater-to-cathode short in one of the tubes in the RF or AF section of the radio. But, for these simple AC/DC chassis sets, a small amount of hum is often normal. If objectionable, the hum level can often be reduced considerably by reversing the plug in the AC outlet.

Fixing The Clock Mechanism

A common ailment for old electric clock motors is noisy or slow (losing time) operation, especially after decades of operation. The RCA clock motor assembly is shown in **Photo I**. This unit was made by General Time.

Here's an easy trick to fix a problem clock: Simply run the clock upside down—or on its back or front, if one of the other positions doesn't cure the problem in several days' time. This allows the remaining lubricant in the sealed gearbox housing to flow around noisy bearings.

For more stubborn cases, you'll need to add fresh lubricant. The best lubricant is clock oil; watch oil isn't good for this purpose, and neither is sewing machine oil or WD-40! I've used Three-In-One household oil in a pinch, but the proper clock oil can be ordered from a local clock repair shop or clock parts vendor.[4] These clock suppliers are good sources for replacement curved or flat round dial glasses, too! Some restorers have sug-

Photo K. The oiling hole must be sealed. Either silicone adhesive or solder can be used. Since this housing was brass, I opted to seal the hole with solder.

gested using synthetic motor oil if clock oil is not available. It supposedly won't gum up the works over time, but I've never tried it myself.

Because the clock mechanisms are sealed movements, getting fresh oil inside the gearboxes requires some special techniques. One elegant method is to remove the clock mechanism and heat it on a 100-watt lamp (or in an oven) until it's good and hot. Remove it from the lamp and, before it cools, add oil around any shafts or bushings. As the motor cools, fresh oil will be drawn into the motor mechanisms. These steps might have to repeated *several times* before enough oil is sucked in to do the job.

If the heating/cooling cycles fail to relubricate the motor, a more brute force approach might be needed. Start drilling a hole into the gearbox using a small pin vise, but stop just short of penetration! You don't want the drill bit to break through—that might allow the drilling chaff to enter and jam up the fine gear teeth! Instead, coat the drill bit with grease, which will grab and adhere the drill chaff, and then do the final breakthrough using a sharp pick (see **Photo J**). Add fresh oil through the opening and reseal the case with silicone adhesive, or solder it shut if the housing is solderable (see **Photo K**). Again, running the clock in different positions for periods of time after oiling will help disperse the oil where it is needed.

Of course, in some cases the gears might be simply too worn for lubrication alone to do the trick! Some people have had luck opening the gearbox and shimming the gears for a tighter fit to gain a few more years of operating life. Another option is to reclaim donor motors from junker clock radios for reuse in future projects.

How Not To Fix It!

By the way, **Photos J** and **K** show exactly where to drill if you want to **destroy** a plastic gear in the gearbox. That was the worst spot I could have picked to drill a hole. In fact, after examining the inner workings of this motor, drilling is not an approach I would recommend! The motor rotor occupies close tolerances at rear of the mechanism, and drilling in that area would also be problematic. This had been suggested on some of the Internet newsgroups as a viable repair approach, but I can't recommend drilling unless extreme care is used! I had to salvage a replacement movement from a junker radio—fortunately these particular sets are still quite common and inexpensive! If you are planning to do a lot of clock motor repairs, I'd suggest taking a few junkers apart to get a feel for the mechanics involved.

A Happy Harold

Hopefully Harold's newly restored clock radio is again doing faithful duty in his kitchen table or bedroom nightstand. I'd like to think it will do so reliably for another three or four decades, thanks to a few hours of restorative work. That's what's it's all about.

Until next month, 73 from the "Wireless Connection" workshop.

References

1. For more information on the Sams Photofax service documentation contact Sams Technical Publishing, 5436 West 78th Street, Indianapolis, IN 46268-4149; Phone: 800-552-3910; Web: <www.samswebsite.com>.
2. Replica filter capacitors for AA5 table radios are available from Bill Turner, 1117 Pike Street, Saint Charles, MO, 63301 (SASE for list and resource guide); Phone: 636-949-2210; E-mail: <dialcover@webtv.net>.
3. Howard Electronic Instruments, 6222 North Oliver, Wichita, KS 67220; Phone: 800-394-1984.
4. S. LaRose, Inc. 3223 Yanceyville St. Greensboro, NC 27420; Phone: 910-621-1936. Also,
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Chemtrails: True Or False?

While tuning around on the AM broadcast band one night, I came across a popular program that airs from sea to sea across the United States. (Why is it that you hear the same program on station after station as you tune from one end of the MW band to the other? Where's the diversity and creativity once found on broadcast radio?). The guest on the show was a self-proclaimed expert expounding upon a secret military and/or governmental project that allegedly creates "chemtrails." "Contrails" are the familiar vapor trails left by aircraft as they pass through high humidity and cold temperatures. The term, "chemtrail," on the other hand, refers to alleged manmade controlled spraying of some chemical substance by aircraft, at high altitudes.

This fellow was explaining a theory that military aircraft spray a metal-based cloud trail in an effort to either change the weather, or to mask military targets with some form of cloud cover. He made claims that these "dustings" are made up of aluminum, barium, or other metals that might absorb microwave radiation.

This sounds a bit conspiratorial. While the radio show focused on the health and ethical issues of such activity, I wondered about the science involved. If such metallic clouds are being created by the military, what are the repercussions on the propagation of radio signals? Why would they deploy such cloud covers? Is it really possible that the government would engage in activities that would manipulate the environment and atmosphere?

I recall reading an old issue of *CQ* magazine in which George Jacobs reports on three nuclear blasts in the atmosphere which caused man-made aurora and a significant change in the geomagnetic and ionospheric conditions for several days (see *CQ*, June 1959, "Propagation," page 82). Perhaps the government really is working on some strategic program that includes activity causing these chemtrails.

I decided to research the Internet to find proof and purpose of such activity. My initial navigation through the many webpages focusing on chemtrails proved frustrating. Nearly all the sites I explored were fine examples of sensational, alarmist rumor mill. What amazes me is that many of those websites quoted each other (without attributing the source), yet never actually revealed credible sources. There were many photos offered as "proof." Most looked like normal contrail activity. Others looked like hoaxes. There is a wealth of anecdotal evidence, but, again, without direct attribution to credible sources and reliable documentation. I began to doubt the validity of the whole idea that the government was involved in some secret project that included spraying our skies.

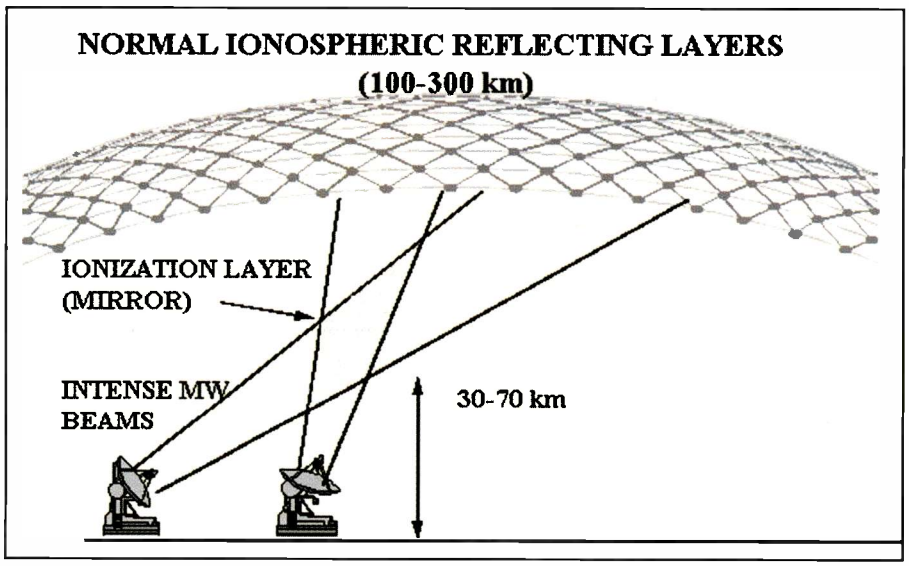

Figure 1. Creating an ionospheric mirror using high-powered microwave beams.

An Air Force Site

Then, I came across an interesting document posted on the "Air Force 2025" website at <http://www.au.af.mil/au/2025/volume3/chap15/v3c15-1.htm>. While it's made clear that this document does "not reflect the official policy or position of the United States Air Force, Department of Defense, or the United States government," I was nevertheless stunned as this document spells out the possibility of the military controlling the ionosphere and weather. To quote from their paper:

> This paper focuses primarily on localized and short-term forms of weather-modification and how these could be incorporated into warfighting capability. The primary areas discussed include generation and dissipation of precipitation, clouds, and fog; modification of localized storm systems; and the use of the ionosphere and near space for space control and communications dominance. These applications are consistent with CJCSI 3810.01, "Meteorological and Oceanographic Operations."

How would such ionosphere manipulations help the military? Specifically, what manipulations could be made to affect radio wave propagation?

Modification of the ionosphere to enhance or disrupt communications has been the subject of active research for many years. The former Soviet Union conducted theoretical and experimental research in this area, as has the United States (like the Argus Project in the 1950s and the current HAARP and SuperDARN projects) and other western nations.

Between August and September 1958, the U.S. Navy exploded three fission-type nuclear bombs 480 km above the south

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JAPAN	22	22	22	23	22	21	20	19	17	16	15	14	14	16	18	17	16	16	16	17	18	19	20	21
CENTRAL ASIA	22	23	23	22	22	21	20	18	17	15	14	13	14	16	18	20	21	19	17	16	16	17	19	21
INDIA	14	16	18	19	19	17	15	14	13	12	12	14	17	19	19	18	16	13	11	10	10	10	9	9
THAILAND	19	21	22	22	21	20	18	16	15	14	13	12	14	17	19	20	21	20	19	17	16	15	15	17
AUSTRALIA	33	33	33	33	33	32	32	29	27	23	21	20	18	17	16	16	15	14	14	14	19	26	29	31
CHINA	21	21	22	22	21	20	18	16	15	14	13	12	14	17	19	19	18	16	15	15	15	17	18	20
SOUTH PACIFIC	32	32	32	31	30	27	24	17	16	16	15	14	14	14	13	13	13	13	13	24	27	30	31	32

UTC TO/FROM US EAST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	22	22	22	20	18	17	15	14	13	12	12	12	14	16	17	18	19	20	21	21	22	22	22	22
NORTHERN SOUTH AMERICA	26	25	25	22	20	19	17	16	15	14	13	13	15	17	19	21	22	23	24	25	25	26	26	26
CENTRAL SOUTH AMERICA	29	27	24	22	21	19	18	17	16	15	15	18	21	23	25	27	28	29	30	31	31	32	32	31
SOUTHERN SOUTH AMERICA	22	18	17	16	15	15	14	14	14	13	13	13	19	22	24	26	28	29	30	31	31	31	30	27
WESTERN EUROPE	19	17	16	14	13	13	14	15	15	15	17	18	19	20	20	21	21	21	22	22	21	21	20	20
EASTERN EUROPE	13	12	12	11	11	14	15	15	15	16	18	19	20	21	21	22	22	22	22	21	20	19	17	14
EASTERN NORTH AMERICA	10	10	9	9	8	8	7	6	6	5	5	6	7	7	8	8	9	9	9	9	10	10	10	10
CENTRAL NORTH AMERICA	21	21	21	21	20	18	17	15	14	13	13	13	14	16	17	18	19	20	20	21	21	21	21	21
WESTERN NORTH AMERICA	28	28	28	28	27	26	24	22	20	18	17	17	18	20	22	23	25	26	26	27	28	28	28	28
SOUTHERN NORTH AMERICA	22	22	22	21	20	18	17	15	14	13	12	12	13	15	16	18	19	20	20	21	21	22	22	22
NORTHERN AFRICA	23	21	19	18	17	16	16	17	17	17	20	22	23	24	25	26	27	28	28	28	28	27	27	26
CENTRAL AFRICA	20	18	17	16	15	15	16	17	17	17	20	21	23	24	25	26	27	28	28	27	27	26	24	22
SOUTH AFRICA	16	15	15	14	14	14	13	19	18	17	19	22	24	26	27	29	30	30	27	22	20	19	18	17
MIDDLE EAST	20	19	17	17	17	17	15	15	15	16	17	19	20	21	21	22	22	23	23	23	23	23	23	22
JAPAN	22	22	22	21	21	19	18	16	15	15	15	16	18	19	19	17	16	16	16	17	18	19	20	21
CENTRAL ASIA	22	22	22	21	20	18	17	15	14	14	15	17	19	20	21	22	21	20	18	17	16	16	19	21
INDIA	10	10	10	9	15	16	15	14	13	14	17	19	20	21	21	21	21	20	19	18	16	12	11	10
THAILAND	18	20	21	20	18	17	15	14	13	14	16	18	20	21	21	22	23	21	20	18	17	16	15	15
AUSTRALIA	33	33	33	32	32	30	27	25	23	21	19	18	17	16	16	15	15	14	14	14	21	26	29	31
CHINA	20	21	21	20	19	17	16	15	14	13	16	18	19	20	20	19	18	16	15	14	14	16	18	19
SOUTH PACIFIC	32	31	31	30	28	26	21	17	16	15	15	14	14	14	13	13	13	13	13	24	27	29	31	31

Atlantic Ocean, in the part of the lower Van Allen Belt closest to the earth's surface. In addition, two hydrogen bombs were detonated 160 km over Johnston Island in the Pacific. This gigantic experiment created new magnetic radiation belts encompassing almost the whole earth, and it injected sufficient electrons and other energetic particles into the ionosphere to cause worldwide effects. The electrons traveled back and forth along magnetic force lines, causing an artificial "aurora" when striking the atmosphere near the North Pole.

The HAARP (HF Active Auroral Research Program) is jointly managed by the U.S. Air Force and the U.S. Navy and is based in Gakona, Alaska. Its mission is to "understand, simulate and control ionospheric processes that might alter the performance of communication and surveillance systems." The HAARP system intends to beam 3.6 GW of effective radiated power of high-frequency radio energy into the ionosphere. Some of the stated goals are to generate extremely low-frequency (ELF) waves for communicating with submerged submarines, conduct geophysical probes to identify and characterize natural ionospheric processes so that techniques can be developed to mitigate or control them, and to generate ionospheric lenses to focus large amounts of high-frequency energy, thus providing a means of triggering ionospheric processes that potentially could be exploited for Department of Defense purposes. Also stated is the attempt at electron acceleration for infrared (IR) and other optical emissions which could be used to control radio wave propagation properties. Of interest to the chemtrail theorists is HAARP's goal of using oblique heating to produce effects on radio wave propagation, thus broadening the potential military applications of ionospheric enhancement technology.

DARN (Dual Auroral Radar Network) is a global-scale network of HF and VHF radars capable of sensing backscatter from ionospheric irregularities in the *E*- and *F*-regions of the high latitude ionosphere. The current network of radars was given the acronym SuperDARN since it was derived from the DARN concept but is significantly larger in scope. The stated mission of SuperDARN is to "study the ionosphere."

Even Brazil has conducted experiments to modify the ionosphere using chemical injection into the ionosphere.

There is strong motivation for this research because induced ionospheric modifications may influence, or even disrupt, the operation of radio systems relying on propagation through the modified region. The controlled generation or accelerated dissipation of ionospheric disturbances may be used to produce new propagation paths, otherwise unavailable, appropriate for selected RF missions. These would be created using a number of possible methods, such as ionospheric heating, injection of chemicals, and particle beams.

One such ionospheric manipulation is called "Artificial Ionospheric Mirrors" (AIM). Soviet researcher A. V. Gurevich in the mid-1970s first proposed the creation of an artificial uniform ionosphere that would provide a precise mirror for electromagnetic radiation of a selected

The Ap Index And Understanding Propagation Terminology

The Ap index, or Planetary A index, is a 24-hour averaging of the Planetary K index. The Planetary K index is an averaging of worldwide readings of earth's geomagnetic field. High indices (Kp > 5 or Ap > 20) means stormy conditions with an active geomagnetic field. The more active, the more unstable propagation is, with possible periods of total propagation fade-out. Especially around the higher latitudes and especially at the Polar Regions, where the geomagnetic field is weak, propagation may disappear completely. Extreme high indices may result in aurora propagation, with strongly degraded long distance propagation at all latitudes. Low indices result in relatively good propagation, especially noticeable around the higher latitudes, when transpolar paths may open up. Maximum K-index is 9, and the A-index can exceed well over 100 during very severe storm conditions, with no maximum.

Classification of A-indices is as follows:

A0–A7 = quiet	A30–A49 = minor storm
A8–A15 = unsettled	A50–A99 = major storm
A16–A29 = active	A100–A400 = severe storm

Solar Flux (SFI): This flux number is obtained from the amount of radiation on the 10.7-cm band (2800 MHz). It is closely related to the amount of ultraviolet radiation, which is needed to create the ionosphere. Solar Flux readings are more descriptive of daily conditions than the Sunspot Number. The higher the Solar Flux (and, therefore, the higher the Sunspot Number), the stronger the ionosphere becomes, supporting refraction of higher frequencies.

Ionosphere: A collection of ionized particles and electrons in the uppermost portion of the earth's atmosphere, which is formed by the interaction of the solar wind with the very thin air particles that have escaped earth's gravity. These ions are responsible for the reflection or bending of radio waves occurring between certain critical frequencies with these critical frequencies varying with the degree of ionization. As a result, radio waves having frequencies higher than the Lowest Usable Frequency (LUF) but lower than the Maximum Usable Frequency (MUF) are propagated over large distances.

Sunspot Number (SSN): Sunspots are magnetic regions on the Sun with magnetic field strengths thousands of times stronger than the earth's magnetic field. Sunspots appear as dark spots on the surface of the Sun. Temperatures in the dark centers of sunspots drop to about 3700° K (compared to 5700° K for the surrounding photosphere). This difference in temperatures makes the spots appear darker than elsewhere. Sunspots typically last for several days, although very large ones may last for several weeks. They are seen to rotate around the sun, since they are on the surface, and the sun rotates fully every 27.5 days.

Sunspots usually occur in a group, with two sets of spots. One set will have positive or north magnetic field while the other set will have negative or south magnetic field. The field is strongest in the darker parts of the sunspots (called the "umbra"). The field is weaker and more horizontal in the lighter part (the "penumbra").

Galileo made the first European observations of sunspots in 1610. The Chinese and many other early civilizations have records of sunspots. Daily observations were started at the Zurich Observatory in 1749; continuous observations were begun in 1849.

The sunspot number is calculated by first counting the number of sunspot groups and then the number of individual sunspots. The "sunspot number" is then given by the sum of the number of individual sunspots and 10 times the number of groups. Since most sunspot groups have, on average, about 10 spots, this formula for counting sunspots gives reliable numbers even when the observing conditions are less than ideal and small spots are hard to see. Monthly averages (updated monthly) of the sunspot numbers show that the number of sunspots visible on the sun waxes and wanes with an approximate 11-year cycle.

For more information, see <http://prop.hfradio.org>.

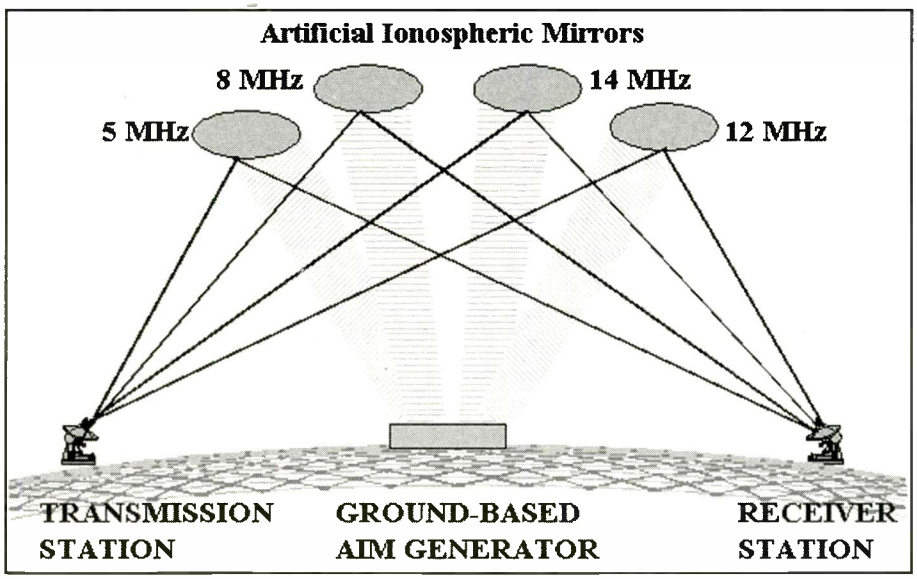


Figure 2. Artificial ionospheric mirrors and point-to-point communications.

frequency or a range of frequencies. This would be useful for both pinpoint control of friendly communications and interception of enemy transmissions.

Figure 1 shows precise control of the location and height of the region of artificially produced ionization using crossed microwave beams that produce atmospheric ionization of neutral gases. Ideally, the AIM could be rapidly created and then would be maintained only for a brief operational period. An AIM could theoretically reflect radio waves with frequencies up to 2 GHz, nearly two orders of magnitude higher than those waves reflected by the natural ionosphere. Of course, this would require an enormous amount of microwave power. An alternative way to generate these ionospheric mirrors would be to create artificial clouds of some material that would refract the radio waves.

Besides providing pinpoint communications control and potential interception capability, this technology would also provide communications capability at specified frequencies, as desired. **Figure 2** shows how a ground-based radiator might generate a series of AIMs, each of which would be tailored to reflect a selected transmission frequency. The HAARP facility is one current project that is used to study ionospheric heating, AIM creation, and other related methods. Check out <http://www.haarp.alaska.edu/> for more information.

Of course, disruption of enemy radio signals (and, therefore, effective blocking of their radar and tactical communications) would also be possible. Because HF communications are controlled directly by the ionosphere's properties, an artificially created ionization region could conceivably disrupt an enemy's HF radio communications. Offensive interference of this kind would likely be indistinguishable from naturally occurring space weather. This capability could also be employed to precisely locate the source of enemy electromagnetic transmissions.

Creating ionospheric scintillation (artificial irregularities in the ionosphere) could also disrupt VHF, UHF, and superhigh frequency (SHF) satellite communications. High-frequency modification produces electron density irregularities that cause scintillation over a wide-range of frequencies. The size of the irregularities determines which frequency band will be affected. Creating artificial scintillation would allow us to disrupt satellite transmissions over selected regions. Like the HF disruption described above, such actions would likely be indistinguishable from naturally occurring environmental events.

Further digging brought me to a webpage (<http://www.eastlundscience.com/patentsa.html>) that lists a series of patents for methods and technologies directly related to these alleged activities. I also discovered mention of a software system, called "Radio Frequency Mission Planner," that is used in battlefield logistics. Developed by The University of Texas Applied Research Laboratories (<http://sgl.arlut.utexas.edu/current.html>), RFMP is a tactical decision aid used to place communications, intelligence collection, and information warfare assets within the battlespace. Similarly, it assists in determining the vulnerability of friendly RF emissions to hostile exploitation and in battlespace frequency management.

According to the June 1998 issue of the Navy *NPS Research* bulletin,

> RFMP is operational at a growing number of U.S. Navy field sites as well as aboard aircraft carriers and flagships on deployment. It is currently the only tactical decision-aid (modeling tool) for these purposes undergoing certification...[and] is also undergoing certification to be the RF modeling and planning tool for the Global Command and Control System (GCCS)-Maritime.

For virtually any area worldwide, RFMP provides a highly visual and interactive display of how signals from 100 kHz to 3 GHz (with extensions through 30 GHz) propagate throughout the area of

interest. It differs from other propagation tools in that it selects from a catalog of models based on frequency, the effects of terrain, weather (troposphere and space), and environment characteristics. RFMP also incorporates real transmitter/receiver/antenna parameters. RFMP is then able to calculate critical decision parameters, the probability of acquiring the signal of interest, the probability of a signal being detected, and the probability of maintaining a particular signal-to-noise ratio.

It seems that there is a real possibility that the military creates artificial ionospheric conditions, reflective clouds, and manipulations to the weather. Putting aside any concern about the repercussions to the environment, global weather, and public health and related ethical questions, this science can certainly affect the radio propagation that we rely on. Blocking of radio broadcasts by nations that restrict the freedom of thought of their people, enhancements of DX contest conditions, or perhaps the ability to eavesdrop on the military activities on some foreign battlefield...these are just some possible scenarios conceived after thinking about manmade ionospheric enhancements. I will continue researching this and hope to share more on this in later articles.

Current Solar Cycle 23 Progress

The Royal Observatory of Belgium, the world's official keeper of sunspot records, reports an observed monthly mean sunspot number of 46 for February 2003, down 34 points from January 2003. That's a real dip in this cycle's activity, clearly indicating the sure decline toward the solar cycle minimum. The recorded low for February was 10 on February 17, and the high was 93 on February 9. The 12-month running average of the monthly mean sunspot number centered on August 2002 is 99, down four points from July. A smoothed sunspot level of 59 is expected for May 2003, plus or minus 10 points.

The Dominion Radio Astrophysical Observatory of Canada, located at Penticton, British Columbia, reports a mean value of 125 for the February 2003 level of 10.7-cm solar flux, down from January's 144.6. The 12-month smoothed 10.7-cm flux centered on August 2002 is 169.5, down from July's 176. A smoothed 10.7-cm solar flux of about 117 is predicted for May 2003, plus or minus about 16 points.

The observed monthly mean planetary A Index (Ap) for February 2003 is 15, up from the previous several months. The 12-month smoothed Ap index centered on July 2002 is 14.3.

HF Propagation

June is a month of typical summer-time radio propagation on the shortwave (HF) bands. Solar absorption is expected to be at seasonally high levels, resulting in generally weaker signals during the hours of daylight when compared to reception during the winter and spring months. Nighttime usable frequencies to most parts of the world are higher than at any other time of the year, while the daytime usable frequencies are generally lower than are those during winter.

At the highest end of the HF spectrum, propagation from DX locations east and west are a rare event. North and South paths may still be hot, especially around sunrise and sunset. Nineteen and 16 meters will be the most reliable daytime DX band, while 19 and 22 may offer some nighttime openings on periods with higher flux levels.

Twenty-five and 31 meters will be fairly good in the evenings and mornings. At night, those paths that remain open will be marginal. The most reliable band for both daytime and nighttime should be a toss-up between these two.

Forty-one and 49 meters should offer good DX conditions during the night, despite higher static. Look for Europe and Africa as early as sunset. After midnight, start looking south and west for the Pacific, South America, and Asia. Short-skip should be possible out to about 750 miles during the daytime.

Expect some openings on 75 and 90, similar to those on 40 meters. Fairly frequent short-skip openings up to 1,000 miles are possible during darkness, but expect very few daytime openings with all the static and absorption. MW and 120-meter propagation is rough in the summer due to the high static and higher overall absorption caused by the short nights and higher *D*-Layer ionization.

Watch for major solar flare activity and Coronal Mass Ejections (CMEs), as we are still in a very active part of Cycle 23. Solar flare events will generally shut down the high frequencies, starting first with the lower bands (120 to 19 meters). CMEs will cause geomagnetic storminess, degrading higher latitude signal paths more than middle- and low-latitude paths. Thunderstorm noise and other natural static noise increases considerably during June and the summer months, masking exotic DX signals.

VHF Conditions

The summertime sporadic-*E* (*Es*) season for the northern hemisphere begins in force in May. Within the normal *E*-layer region of the ionosphere, regions of abnormally intense ionization are formed. Through June, you can expect to see 20 to 24 days with some *Es* activity. Usually these openings are single-hop events with paths up to 1,000 miles, but June's *Es* is often double-hop. Look for HF openings on the higher frequencies, as well as on low VHF, throughout the day but especially in the afternoon.

With Cycle 23 still at the peak of activity, there is still a chance of occasional aurora activity. Don't forget that you can also visit my propagation page at <http://propagation.hfradio.org/> to view current conditions including aurora activity.

A Closing Thought

While serving in the United States Army, stationed in Germany in the 1980s, I spent many days in anxiety for my young family and those families of soldiers I served with. Popular hangouts for some of us soldiers were bombed by terrorists. There were times when we were told to evacuate our grocery store or other facility because of bomb scares.

Once, when I was coming home from an exercise in the field, protesters who were burning the United States flag surrounded me. If it were not for the German police quickly blocking them, I would no doubt have become a victim of hostility. As I made my way home, I was spat upon and threatened.

I know firsthand the stress one undergoes in times of political unrest. So, please, no matter your view of current affairs and the military action of those who serve on our behalf, support them with your prayers, kindness, and practical encouragement. Help a family whose dad or mom, son or daughter was deployed. Don't attack these families with unkind words. Raise the flag proudly and be an informed and prepared communicator and citizen.

I hope to hear from you regarding any propagation topic. Questions and comments are most welcomed. I wish you success in your radio endeavors. ■

pirate & alternative radio

free radio broadcasting

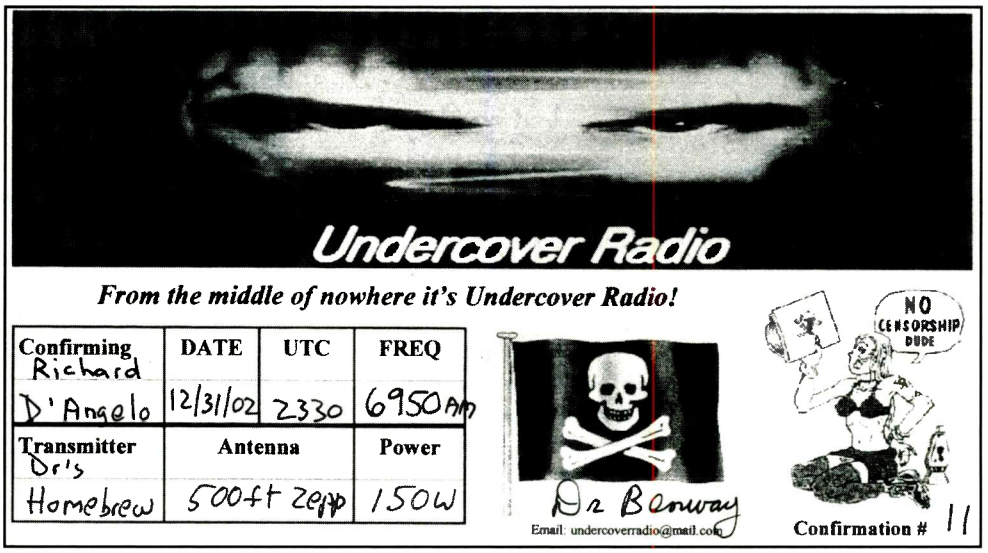
by Edward Teach

High Alert, And High Times On The Bands

It's time again for yet another installment of your loggings. Here's what the action has been like over the past month in Pirate Land.

Voice of Captain Ron, relayed by WHYP on **6925**, tune in from 0045 to 0105 in AM mode. (Bill Finn, PA) **6950 LSB** at 0115 with "California Uber Alles" and a top-10 list. (William Hassig, IL)

WHYP, **6925** at 0125 with a live broadcast about the Code Orange alert. Also heard from 0030 with a Michael Stanley tune, talking about "high alert" and "doomsday is coming." Wants e-mails to <whyp6925@yahoo.com> and mentioned they were using 170 watts. Also requests from various people, K-tell music bit, rectifier tube, red October, and off at 0130. (Finn, PA) **6950.2 LSB** at 0020 with heavy metal (and tinny audio), ranting and raving by Jimmy the Weasel, a Blues Brothers song. Hosted by James Brownyard. Also heard with a very poor signal at 0055. (Hassig, IL)



Here's a QSL from Undercover Radio sent to Rich D'Angelo.

WMPR, **6955** was heard at 0245 to 0300. (Finn, PA)

Captain Morgan, **6950** at 0139 with "Early in the Morning" music, theme from *Twilight Zone*, and ID mentioning "you're in the pirate zone." (Finn, PA) 0045 with *Twilight Zone* music, fake phone calls, ID. (Richard D'Angelo, PA)

Undercover Radio, 6950 USB caught at 0055 with what sounded like the close of an old radio show with live audience. Gave e-mail as <Undercoverradio@mail.com> and off at 0100. (Brian N.) At 2210 with L. Anderson program. Some interference from an unidentified station on 6955. (Lee Silvi, OH)

WMOE, 6950 came on right after the above station went off with "Quiet numbskulls, I'm transmitting" over music from the *Three Stooges*, two dance songs, then rock numbers. Also mentioned that the dipole was tossed into the tree, the ground wires were in the ground, and the show was pre-recorded, then made a lot of sexual suggestions as future holidays. ID: "You are tuned to the very powerful WMOE" and gave a Belfast, New York mail drop. Also e-mail of <WMOE6955@yahoo.com>. Off at 0127. (Brian N)

Raegnor Radio, 6955 at 2347 with pro-gun advertisements and a song "Breakin' the Law!" The announcer said this was a transmitter test. (Hassig, IL)

Radio Oz (?) **6955** at 2353 with reggae/ska music. Songs "We Are Devo" and "White Rabbit." Then a numbers station spoof and garbled talk, perhaps deliberately. (Hassig, IL)

There's some extra space this time so here are a couple of unidentifieds for you to chew on.

6955 at 2210 with muffled or garbled talking (*maybe the tentative Radio Oz, above?—ET*). Copied such phrases as "wherever you are or whatever you are doing,...," "thousands of people," "the mighty double," "something is going to happen," and "now is your time," all intermixed with music. They signed off at 2228. (Silvi, OH)

69124.8 at 0209 with the song "Material Girl." (Hassig, IL)

6950 at 2335 with "Purple Haze," *Green Acres* song spoof. (Hassig, IL)

Britain Targets Internet Service Providers

Finally, it's reported that Britain—which has always taken a tougher line against pirate broadcasters than the FCC, even at its most gung-ho—is after Internet service providers to shut down pirate station websites based there. British law says that anyone who advertises or provides premises for such broadcasters is liable to prosecution, which includes ISPs. Last year, Britain prosecuted and won convictions on 49 pirate broadcasters, the numbers of which are now down by about 20 percent. Meantime, London's crime rate is said to be worse than New York City's ever was.

Let's get busy and send in those logs each and every month! I'm also in much need of copies of pirate QSLs, pictures of broadcast set-ups, and such to include as illustrations, so if you can help me out that would be great. Thanks and I'll see you next time. ■

overheard

by Ken Reiss <radioken@earthlink.net>

strategies and techniques to keep YOU informed

Scanner Features, Part II

This month we're continuing our series on scanner terms and features, and we'll be tackling a couple of tough ones. Look through the subheads, and if you already know all the terms you can have the month off, we'll see you next time. In the meantime, let's jump right in where we left off.

Just What Is dB?

The term dB is commonly used but often misunderstood so, while it's not really a scanner feature per se, I thought it might be appropriate to include. If you're reading this paragraph, then it means that good ol' "What the heck did he say anyway?" Harold agreed with me and left it in.

The "d" in dB stands for deci, or one tenth. One tenth of a Bel is what the dB measures. So what exactly is a Bel? A Bel is a measure of gain or efficiency expressed in a funny notation. If something is 10 times better than something else, or can amplify or produce 10 times more signal than something else, it would be 1 Bel better or higher. Something one hundred times better would be 2 Bels, so each zero adds one to the count, so to speak. Mathematically inclined people will recognize this as a logarithmic scale and that's exactly what it is.

Now to confuse things a bit. Since we don't normally get as much as 10 times the amplification, a smaller, more graduated scale is in order, and that's where the decibel comes into play. Ten dB is equal to 1 Bel, or 10 times the amplification. Twenty dB would be 2 Bels, or one hundred times the amplification. By using decibels, we can get some easy-to-remember numbers that are meaningful. For instance, 3 dB is about two times the efficiency; or, if it's a loss, -3 dB would be about 1/2. Six dB is about four times the gain or efficiency. So really all we're saying is that one thing is better or worse than another by some factor. Adding a 6-db attenuator would cut the signal to about 1/4 of what it was originally. An antenna with 3 dB *gain* would, in theory, be able to present twice the strength of signal to the radio as one without gain.

All things considered, that seems relatively simple. But not so fast, because there's a problem. The problem is the standard for measurement. In order to get a gain measurement of one thing over another, there must be two things to compare. But *what* was the other thing compared to when you see published radio specs? That's where things get a bit tricky. There are some standards, but they're not always adhered to. By comparing to some other "adjusted" standard, you can make the dB figures much more impressive.

For instance, it's very common to see gain figures for antennas published in dB. The standards for comparison are an isotropic dipole (an antenna that doesn't really exist, but is a perfect dipole in an interference-free environment) or a standard 1/4-wave ground plane antenna, which would be affected by its environment and the things around it, but is at least something in the real world to compare to. Often, however, there's no way to tell which one of these the manufacturer used for comparisons—perhaps it was even something else!

More sophisticated receivers often include an RF gain control in addition to, or instead of, an attenuator. This reduces the amplification in the front end of the receiver and can help reduce interference. Of course, it also reduces sensitivity to weak signals, so you don't want to use it unless necessary.

This receiver has the modes listed on buttons, but many just have one button, labeled mode, that steps through the choices. On a scanner, we'd expect to find AM for aircraft and NFM (narrow FM) for public safety transmissions. Better receivers also have WFM (wide FM) for reception of broadcasts and wireless microphones. Communications receivers sometimes include SSB (single sideband, a variation of AM) or USB and LSB (upper and lower sideband) for use with special communications modes. CW and FSK are almost exclusively used below 25 MHz in long-distance communications.

This problem caused the AOL scanner conference group to come up with a new standard that makes most antennas look quite impressive. It's abbreviated dB-ws (dB over Wet Spaghetti!). You can get so much gain by just switching to a metal antenna that even a 1/4-wave ground plane probably has 20 or 30 dB of gain. But even then there are problems associated with how wet the spaghetti has to be, and how do you con-

A signal strength indicator is extremely convenient for testing antennas. This analog meter on an AR-5000 receiver is calibrated in S units up to 9 and the dB over S9, which is very common. Once reserved for high-end communications receivers, more scanners are including some form of signal strength indicator.

nect it to the radio? This obviously sarcastic measurement helps underscore the problem with specifications in general. Most manufacturers aren't going to distort things this much, but it means you have to take specs between two different manufacturers with a liberal grain of salt. Comparing two models from the same manufacturer should be a reasonable thing to do. The key word here is "should."

The other thing to watch with antennas is the band used for the measurements. An antenna that has 15 db gain in the UHF band probably won't work well at all for VHF work, unless of course it's a dual-band antenna that's supposed to work in both places. *Gain is always traded for frequency bandwidth.* The higher the gain at one particular frequency, the less bandwidth the antenna will have. That's great if you only want to listen to the one frequency that the antenna was designed for, but can be a real problem if you were looking for wideband coverage!

Scanning Delay

Depending on how the two-way system you're listening to is set up, the reply to a particular transmission may or may not take place on the same frequency as the original transmission. Put another way, sometimes the mobiles are on the same channel as the base and sometimes they are not, for a variety of reasons.

If the reply takes place on the same frequency, then it would be nice to have the scanner wait a second or two for the response before going off to find the next available activity. This feature is called *channel delay*, *scan delay*, *resume delay,* or simply "*Delay.*" This is one of those basic functions that you *shouldn't* have to think about, but you do. Some of the radios out there don't have it, or have a universal setting. That is you turn the delay (usually two seconds) on for all channels or off for all channels, but it is one way or the other.

The ideal situation, and that found on the higher end units, is *channel selectable delay*, which allows you to pick and choose which channels wait for the two seconds and which do not. If you listen to many agencies (and are not on a trunked system) that's a very convenient feature. This way, if you listen to some channels that are simplex (that is, the mobile and base units transmit on the same frequency without a repeater) there can be a delay on those channels. But other systems may use some form of repeater that builds in a delay, or, worse yet, the reply might take place on a different frequency. On those channels you probably don't want any delay so that the scanner can go in search of the reply as quickly as the first transmission ends.

More advanced radios go even a step further and allow you to set the *amount* of delay. This can be convenient if you find that two seconds is too much, or perhaps not enough. With some computer control systems, you can set the amount of delay per channel. While this might seem like a bit much, in reality some fine tuning on the system can make a real difference in the "continuity" of what you're hearing on the radio.

The "Hold" Function

Scanners that feature a search function might also have a hold button. The idea is that as you're searching along and find something of interest, you might want to sit on that channel for a few minutes to see what else happens. The hold function will do just that. On some receivers it's also used to temporarily hold or store the frequency so that you can move it to a permanent memory location. That's particularly useful if you don't have an autostore available or if you choose not to use it.

Mode Functions: NFM, WFM, AM, USB, LSB, and Digital (APCO-25)

The mode function allows you to switch reception modes on a given frequency. For instance, the upper end of the 300-MHz range can be used in either AM or FM, depending on the service that's using the frequency in your area. Most of the low-end scanners pick a mode and stick with it, while higher-end units will have a mode switch to allow you to choose which method should be used.

The term mode refers to the method of transmission, using one of the standard, or not-so-standard, transmission types. NFM (narrowband frequency modulation) is by far the most common. This is the method used by most of the public safety and business users in the bands we listen to. WFM (wideband frequency modulation) is for the most part reserved for FM transmissions in the FM broadcast band, although there are a few government and military stations that use some form of wide, or at least wider than NFM transmission. Finally AM (short for antiquated... er...amplitude modulation) is an older system generally reserved for aviation band enthusiasts, both commercial and military.

By the way, AM is really a relic of World War II, when radio was first added to airplanes. After the war, all the planes came back with AM radios in them and the cost of conversion was simply too high, so they continued to use AM in all aviation applications. There is also the theory that AM will produce a whine, or heterodyne, when two people transmit at the same time, which FM does not. That way, the tower could tell if two planes doubled with each other. That's an advantage of AM, but not the reason we're still using it for airplanes.

AM transmits a carrier (a radio wave used to carry the modulation) as well as two identical sidebands which contain the speech. It turns out that this is terribly inefficient in terms of transmission power, but it's easy to build receivers for AM. By employing a more sophisticated receiver, you can reduce the

transmission to just one of the two sidebands, called single sideband (SSB). You can use either the upper sideband (USB) or lower sideband (LSB) and get the same results as long as the receiver knows which one you're using. There is not much use for SSB in the VHF/UHF regions, except in the ham bands where it is used because the SSB signal is easier to transmit long distances. Of course, most activity in the ham bands is NFM, too, but there is some SSB activity there. There have been a few commercial systems used with a variant of SSB for one reason or another, but none that I am aware of are in common use today.

Beyond that, the reason you'd want to pay extra for a radio that has USB and LSB available is in case you also venture down into the HF portion of the spectrum. These so-called *wideband receivers* cover not only the public safety frequencies, but also can receive shortwave and tropical frequencies, where SSB is commonly used to save frequency space and enhance distance. If you're not interested in these types of communications, you won't want to pay extra for a radio that has them.

RF Gain

The easiest way to explain RF gain is to explain AF gain, which you already have but didn't know. AF gain is audio frequency gain, or the volume control. RF stands for radio frequency and controls the amount of amplification the front end of the receiver applies to the incoming signals. By reducing the amount of gain, you can reduce interference from strong signals, but you do that at the expense of signal sensitivity. Generally, RF gain is found only on communications receivers, and a true RF gain control isn't really necessary for most scanner applications. Related to RF gain, however, and very useful to scanner folks is an attenuator setting, which we defined earlier.

S Meter

Some form of indicator of the strength of the received signal is a very desirable feature on any receiver. It is helpful to test antennas, or just to get some idea of how far away a signal might be based on reception strength. It's also useful to note if something changed. If you always hear your dispatcher at full strength on the meter and suddenly they drop to S7, there's something wrong somewhere. It could be they've made changes to a transmitter, or switched to a backup, or it could be your antenna got water in the coax last night, but it's a good indicator that you should check things out.

Unfortunately, signal strength meters are found only on the higher-end units, and many of them are LCD bargraph-types, indicating one to five units. This is much better than nothing, but it's not quite as convenient as a real meter. With a real meter you can see slight changes which are very convenient for tuning an antenna or pointing it in the right direction. I do have to admit, however, that many of today's LCD or LED meters are very responsive.

The S unit, or signal unit, which is what an S-meter is supposed to measure, is also a distorted standard. The standard says that the receiver with no antenna connected should read S-0. That allows for the receiver's own internal noise and environmental factors to be subtracted before the signal measurement begins. Then each S-unit is supposed to be 6 dB, or four times the signal strength of the previous S unit, up through S-9 or a total of 54 dB. Then most meters indicate 10, 20, and sometimes 30 above that.

The problem is that most meters are not calibrated. So comparing one receiver to another is meaningless. The same signal through the same antenna might measure S-5 on one radio but S-7 on another. Comparing signal strength on the same radio is valid. This is good for comparing relative signal strengths of various received signals, or comparing the performance of one antenna to another, but you can't compare across receivers. Sorry.

Real analog meters or LCD meters with enough steps to simulate an analog meter are only found on communications receivers. If you're not looking to spend that much money, you'll have to take what you can get, but some form of signal strength indicator is highly desirable.

Scanners Versus Communications Receivers?

Just what is the difference between a high-end scanner and a communications receiver? Well, in some respects, nothing. They're both receivers intended to pull radio signals out of the sky, and both probably cover about the same frequency range. Many of the VHF/UHF-capable communications receivers are actually wideband units that also cover down into the 100- or 150-kHz range. The difference lies in the intention of the receiver. A high-end Uniden scanner (something like the BC-9000 for instance) was designed mostly for scanning and has many functions available to support that, including alpha display, banks, lockouts, channel selectable attenuators—pretty much all the things we've talked about as being desirable for scanning.

A communications receiver on the other hand might be able to scan, but the primary purpose is to have the best receiver possible. These units have very high specifications, but tend to fall apart a bit in the basics. Many of them make terrible scanners without computer control of some sort. Radios like the ICOM 7100 or the AOR 3000 really are able to scan almost as an afterthought. The 3000, for instance, can only scan one of its 100 channel banks at a time. The 7100 doesn't even have banks. Many of them don't have channel lockouts or, if they do, it's a bit of a chore to make it work.

So why bother? Well, the communications receiver has specifications that will blow most of the scanners away. Most scanners these days are fairly sensitive, so that's not as much of a concern as it used to be. But the communications receiver tends to be a bit more selective, referring to the ability to hear one channel without being bothered by transmissions on another nearby channel. Communications receivers also excel in the area of dynamic range, which is the ability of the receiver to hear one *weak signal* without being bothered by stronger signals on close by frequencies. Most of our scanners can't do this, so, even though they may have the same sensitivity as another receiver, real world operation with strong signals all around means it won't be able to process the weaker signals we want to hear on a consistent basis. The communications receiver will.

As an example of this problem, my local police has a transmitter that's about one mile from my house. That transmitter has to cover quite a distance, so it puts out a fairly strong signal—The Voice of St. Louis County, as we affectionately call it. They transmit on 154.845. The north precinct of the county is on 154.875, about 25 miles away. On a scanner, I can hear the 154.875 transmissions *if* 154.845 isn't on the air. As soon as that strong signal 30 kHz away comes on frequency, my scanner gets overwhelmed and the 154.875 transmission is lost, dropped below the receiver's ability to pull it out.

On many of the communications receivers I've tested, this doesn't happen. On the better ones, 154.875 stays right where it is and nothing happens. On most, because the signal on 154.845 is so strong, you can hear a little bit of desensitization, or desense as it's commonly called. This sounds like the 154.875 signal has gotten a bit weaker—there's static on it that wasn't there before.

What's really happening is that the 154.845 transmitter's signal has gotten into the front end of the receiver a little bit and caused the receiver to turn down the amplification, thinking it's now dealing with a strong signal. The same thing happens on the scanner, but to such a level that the desired weak signal actually disappears. It is this *dynamic range* that really separates the two types of receiver.

I hate to draw lines, because as soon as I do, someone will remind me of an exception to the rule. However, to help you see where the distinction is, let's put an artificial barrier at about the $800 level. Above that price point, you're probably getting a fairly sophisticated piece of equipment that will meet most, if not all, the requirements of a communications receiver. Below that price point, you probably have a high-end scanner. I know somebody's gonna say "what about..." and you're right. But as a quick and dirty judgment tool, this should work in today's radio market. We've addressed this issue in the past, but it's probably due for an update. When we get enough questions we'll address the issue again.

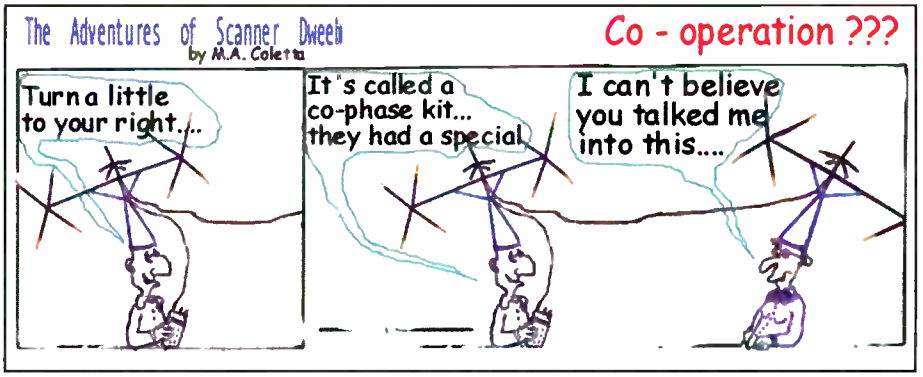
Frequency Of The Month

Our frequency this month is **42.22**. We haven't been down to the low band for a while, and it's getting to be that time of year when almost anything is possible down there. Plug it in and have a listen for a few days. Let me know what you hear, and we'll enter your name in the drawing for a one-year subscription to *Popular Communications*! Make sure to mark your e-mail or envelope with the frequency so it can get to the right place!

Help! Your Input Needed!

Well, we're done for another month. Once again, I hope you've found the definitions useful and informative. We'll be back next month with the third and last part of this series.

In the meantime, if you've got a question or information you'd like to share, don't hesitate to write. I can be reached at <radioken@earthlink.net> or via traditional methods at Ken Reiss 9051 Watson Rd. #309, St. Louis, MO 63126. Until next month, Good Listening! ■



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washington beat

Capitol Hill and FCC actions affecting communications

by Laura Quarantiello <lauraq@cts.com>

FCC Reallocates Spectrum For New Wireless Services

The Federal Communications Commission has reallocated spectrum that can be used to provide a variety of new wireless services, including advanced wireless services (AWS), commonly referred to as "Third Generation." The 30-MHz of reallocated spectrum comes from the 2-GHz Mobile Satellite Service (2-GHz MSS), specifically the 1990- to 2000-MHz, 2020- to 2025-MHz, and 2165- to 2180-MHz bands. In a Notice of Proposed Rulemaking, the FCC sought further comment on use of the 1910- to 1920-MHz band. This section of band is currently available for UPCS asynchronous (data) applications, but at present is unused. This band could be paired with the 1990- to 2000-MHz band to support the development of AWS, or it could be used to support the relocation of other wireless licensees. The Commission concluded that the 1920- to 1930-MHz band should be retained for UPCS use and also sought comment on whether it should provide for additional flexibility in that band, as well as any additional spectrum retained for UPCS use in the 1910- to 1920-MHz band.

Also in the *Notice*, the Commission sought additional comment on potential uses for spectrum in the 2155- to 2160/62-MHz band, which is currently used by the Multipoint Distribution Service (MDS), and the 2160- to 2165-MHz band identified for emerging technology use, as well as asking for comments on suitable relocation spectrum for MDS licensees currently operating in the 2150- to 2160/62-MHz band.

Rockwell Collins VHF Waiver

Rockwell Collins, Inc., has asked the FCC for a waiver in order to certify its VHF aviation transceiver to extend the upper limit to 150.8 MHz. The company also asked for a waiver of Section 87.173(b) of the Commission's Rules to permit type certification of VHF aircraft transceivers capable of transmitting on both the 25-kHz spaced channels currently authorized and on the 8.33-kHz spaced channels that are used in certain countries in Europe and in the United Kingdom. The FCC granted both waivers with the caveat that this does not authorize aircraft to transmit on 8.33-kHz spaced channels within airspace of the United States, its territories, or the Commonwealth of Puerto Rico, but is limited to permitting type certification of specified transceivers capable of transmitting on both 25-kHz spaced channels in the United States and on the 8.33-kHz spaced Aeronautical Mobile Service (AMS) channels used in certain other countries.

Modified UWB Rules

The FCC has announced minor changes to the rules authorizing the unlicensed operations of ultra-wideband (UWB) devices. The commission has amended its rules to assist in the operation of through-the-wall imaging systems by law enforcement, emergency rescue, and firefighter personnel in emergency situations. The Commission also:

- Eliminated the requirement that ground-penetrating radar (GPR) and wall imaging systems operate with their -10-dB bandwidths below 960 MHz or above 3.1 GHz.
- Specified the limitations of who may operate GPR systems and wall imaging systems and for what purposes.
- Eliminated the requirement for non-handheld GPRs to employ a dead man switch.
- Clarified the coordination requirements for imaging devices.
- Clarified the rules regarding emissions produced by digital circuitry used by UWB transmitters.

Military And Wireless To Share Spectrum

Call it a compromise. The Department of Defense and wireless networking companies have agreed on how military radar systems and wireless devices will share spectrum. According to the agreement, wireless companies will have access to 255 MHz of unlicensed spectrum in the 5-GHz band on a non-interference basis. The compromise requires that wireless devices be designed to detect military radar and avoid interference. No word on how that will be accomplished. The agreement will be presented at the World Radio Conference in Geneva this month.

CTIA Opposes 800-MHz Spectrum Proposal

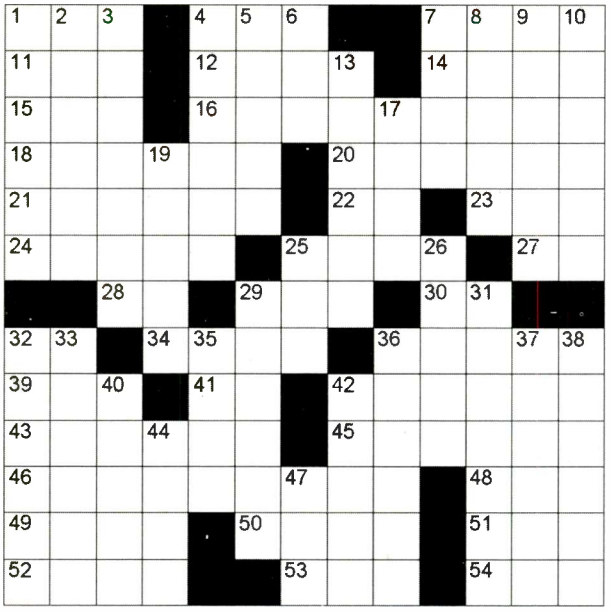
The Cellular Telecommunications & Internet Association (CTIA) has filed comments with the Federal Communications Commission opposing a proposal for resolving interference issues in the 800-MHz spectrum band. Nextel Communications has committed to spending $850 million to retune and relocate public safety and private wireless licensees in the 800-MHz band to solve interference problems. Their outlay is contingent upon the FCC's licensing a 10-MHz block of spectrum at 1.9 GHz. CTIA president and CEA Tom Wheeler indicated that, while the industry remains committed to resolving interference issues, it cannot support the new proposal, saying, "This is an issue that demands swift resolution. The Joint Commenters' plan is unnecessarily complex, extremely resource intensive, and will take nearly four years to complete. And, it will only reduce, not eliminate, interference for the public safety community." CTIA would rather operate on a case-by-case basis and supports restructuring within the band to minimize interference. It also supports the 700-MHz band as a long-term solution. ■

the Pop'Comm puzzle corner

test your radio knowledge

by Eric Force <eric@dobe.com>

(RevSp = Reverse Spelling – e.g. "SPELLING" = "GNILLEPS" in puzzle)



ACROSS

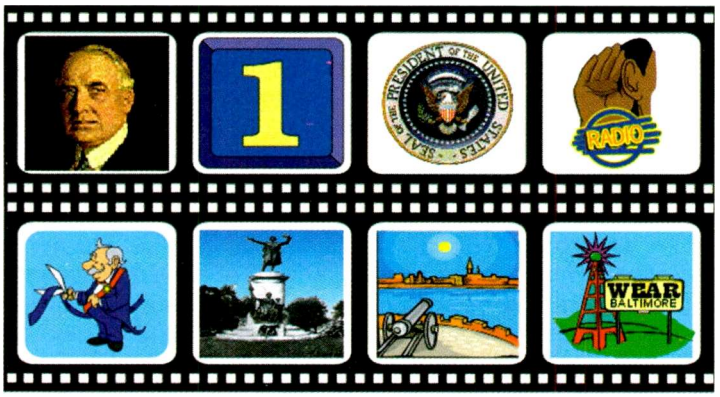
1 CW abbr, Net Control Station (RevSp)
4 CW abbr, Received
7 Hand-held device system (RevSp)
11 Phonetic "2" (NATO/Int'l)
12 Having wings
14 Saucy person
15 CW abbr, Repeat, Say Again
16 Erasures
18 ITC Prefix C5A-C5Z (Country)
20 Person to whom a thing is sold
21 Reflective optical device
22 CW abbr, Number, Near
23 Deforest's first name (RevSp)
24 Regions
25 Apparent solar time
27 Radio Frequency
28 Frequencies 300 Hz-3 kHz, abvr. (RevSp)
29 Airport code, Washington DC (National) (RevSp)
30 Type of "computer" technology, abvr.
32 CW abbr, Ground Plane
34 AM 830, MINNEAPOLIS (RevSp)
36 Existing condition
39 Help
41 Oscillating current
42 Henry's first name (RevSp)
43 Thick lubricant
45 Plating substance
46 Magnesium carbonate
48 Club for "Ragchewers" (abvr)
49 The "D" in FCC's CDBS (RevSp)
50 The Sun this
51 Consume
52 Headland
53 Engage in espionage
54 Now called Class D Airspace

DOWN

1 Stain
2 Callsign, Comair, Inc.
3 Elementary particle which exhibits spin (RevSp)
4 Avgerage U.S. Household has 5+ of these
5 Channel type, 540 KHz
6 Airport, Dallas, TX (Love Field)
7 O'Reilly's "No" Zone
8 Simple Vacuum Tube
9 Thin layer of wood
10 Emphatic form of it
13 CO Airport code DEN (RevSp)
17 Prefix 10E12
19 Phonetic dah, dit dit dit
25 Older method of sending Morse code (abvr)
26 Saltpeter
29 The "A" in RAM
31 Inflight live TV programing company (RevSp)
32 Comedian
33 Sometimes heard on 6955 KHz (+/-)
35 Equipment housing
36 Spherical
37 Callsign, Cologne Commercial Flight GMBH, Koln
38 Matter ejected
40 Free from gas
42 Quick fix (RevSp)
44 "No Ifs, ____ or Buts"
47 It is

THIS MONTH IN RADIO HISTORY PICTO-GRAM

On June 14, 1922 ...



Solution: Warren G. Harding became the first president heard on radio, when he dedicated the Francis Scott Key memorial at Fort McHenry over Baltimore radio station WEAR.

Pop'Comm Trivia...

I feature broadcast transmitter facility tours of VOA, 700 WLW, WABC-77, RCI and other standard broadcast stations plus numerous resources related to radio and broadcast technology. What am I?

Ans: Jim Hawkins' Radio and Broadcast Technology Page
More info at: http://hawkins.pair.com/radio.html

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global information guide

listening to what your world says every day

by Gerry L. Dexter

All India Radio Enters The Relay Race!

Pass the baton! All India Radio is entering the relay race! An agreement has been reached whereby various AIR outlets will relay programming from the Voice of America and the BBC. (The swaps may be well under way by the time you read this.) In turn, VOA/BBC transmitters will carry transmissions from All India Radio, which should mean much better reception from a broadcaster that, while it has a zillion or so shortwave channels, is often received at something less than "5 by 5" quality in much of North America. So, from the latter standpoint, we can count this as good news. On the other hand the ever-confusing task of keeping track of who's broadcasting from where becomes still more complex. At this writing, there's no word as to who's going to be doing what to whom, or when, or where.

The old CRI/CPBS building in Beijing is central in this 1993 photo, taken by R.C. Watts (KY)

Colombian Back On The Air

A long-time Colombian shortwave station has come back to life. **Radio Melodia** in Bogotá has shown up on **6140** (varying slightly) and is being heard late into the evening. The signal, while generally pretty good, gets squeezed and splashed by Deutsche Welle on 6145 and BBC via Delano, California, on the lower side.

The **Voice of Nigeria** has reactivated a couple of channels it used to use an eon or two back. The station is now being heard on **9690** and **11770**, in parallel with **15120**. These new frequencies are in use from 0500 to 0800 in English, 0800 to 0900 in Hausa, 0900 to 1200 in English, 1200 to 1300 in French, 1300 to 1600 in Swahili, 1600 to 1700 in Arabic, 1800 to 2000 in English, 2000 to 2200 in Hausa, and 2200 to 2300 in English. The current season should provide most of us with pretty good reception on the new frequencies so give 'em a try. Intermittent reception of 7255 and 15120 have caused some to wonder if VON may be about to drop those frequencies, but both have been noted active. So far there've been fairly few reports on the new frequencies.

The **Voice of America** is looking toward an expansion of its programming efforts to certain areas and a cutback in others. A lot of bucks are going into the creation of an Arabic language TV network, which is drawing funds away from other areas. Programming to Indonesia is set to double, while more effort and dollars will go towards getting VOA programming on local stations in important areas. Eastern Europe will see cutbacks in service, including broadcasts to the Ukraine. In addition, there will be a small cutback in Radio Free Europe/Radio Liberty (costing a few jobs) and a relatively minor cut for Radio Free Asia.

The **British Forces Broadcasting Service** has come back to shortwave, as it did the last several times Britain was involved in a foreign war or developing situation. This time it's to provide service to British military personnel involved in the war against Iraq. The schedule—always subject to changes—is 0200 to 0300 on **6025** and **13720**, 0300 to 0400 on **6135** and **13720**, 0400 to 0500 on **9820** and **13720**, 1500 to 1700 on **5945** and **15530**, and 1700 to 1800 on **5945** and **12040**. BFBS says St. Petersburg, Tashkent, and Rampisham relay the broadcasts, although they do not identify which frequencies are which.

Brazil's government broadcaster, **Radio Nacional da Amazonia**, was reported to have stopped using 6180 in favor of **9665**, but we still hear **6180** loud and clear and haven't yet found the station on the 31-meter band frequency.

The **Voice of Guyana** has reactivated (again) on **3290**. Evenings and well past your local midnight hour is the best time to go after this one. This one seems to experience two or three disappearances and returns each year.

Radio Polonia seems to have finally decided to take at least some kind of step toward improving reception of their shortwave broadcasts: they are going to have a meeting with the agency responsible for operating the shortwave transmitters! This sounds like it amounts to establishing a committee to study the situation.

Our book winner this month is **Tricia Ziegner** of Massachusetts who receives a copy of the 2003 edition of *Passport to World Band Radio*, courtesy of Universal Radio. If you don't have Universal's monster wish book of shortwave radios and all kinds of extras and associated goodies you can get to enjoy your hobby, you're really missing something! Call them at 614-866-4267, e-mail your request to <dx@universal-radio.com>, or send a note to Universal Radio at 6830 Americana Parkway, Reynoldsburg, OH 43068.

St. Peter's Square is the subject of one of the many Vatican Radio QSL styles.

Abbreviations Used In This Month's Column

//	—	Parallel frequency
ABC	—	Australian Broadcasting Corporation
AFRTS	—	Armed Forces Radio Television Service
AFN	—	Armed Forces Network
AIR	—	All India Radio
anncr	—	announcer
anmt(s)	—	announcement(s)
BSKSA	—	Broadcasting Service of the Kingdom of Saudi Arabia
CNR	—	China National Radio
GOS	—	General Overseas Service
ID	—	identification
Int'l	—	international
IS	—	interval signal
Lang	—	language
LSB	—	lower sideband mode
NBC	—	National Broadcasting Corporation
OA	—	Peru, Peruvian
PBS	—	People's Broadcasting Station
Pgm	—	program
RRI	—	Radio Republick Indonesia
sked	—	schedule
SIBC	—	Solomon Islands Broadcasting Corporation
TOH	—	Top of the Hour
unid.	—	unidentified
USB	—	upper sideband mode
vern	—	vernacular (any local dialect or language)
VOA	—	Voice of America
VOIRI	—	Voice of the Islamic Republic of Iran

Now here's the usual request for your logs, shack photos, station pictures, copies of QSL cards (or actual cards if you don't need them returned), schedules, pennants, and such and so. We are especially seeking illustration items, particularly QSLs and pictures of you in your shack, so get out your camera!

If you're submitting logs, they should be by listed by country (as presented in the column), be double-spaced (at a minimum), and have your last name and state after each one. That's 'cause these things get cut up and sorted and, without your name on each slip, we cannot give you the credit you deserve! (To be hard-nosed about it, we're not about to write them in ourselves!)

On to the reports! All times are in UTC (GMT), which is 7 hours ahead of EST, 6 ahead of CST, etc. 0000 UTC equals 7 p.m. EST, 6 p.m. CST, 5 p.m. MST and 4 p.m. PST. Broadcast languages are abbreviated with a double capital (SS = Spanish, FF = French, AA = Arabic and so on). If no language is specified you may assume the language was English.

AFGHANISTAN—Radio Afghanistan, **18940** via Norway at 1448 in AA, Tajik, and Dari with world news, drama. (Ziegner, MA) 1502 with local vocals, man and woman in Dari, baby crying in the background. Tones at 1530, ID and news, non-stop Afghani music to close at 1630. (D'Angelo, PA)

ALBANIA—Radio Tirana, **7160** at 0250 with talk about relations between Albania and Romania. (Quinby, PA) **9540** at 2231 with program notes, Albanian music. (Burrow, WA)

ANGOLA—Radio Nacional, **11955** at 0215 in PP and local languages with news, commentary, and African music. (Linonis, PA)

ANGUILLA—Caribbean Beacon, **11775** at 2040 in SS. (MacKenzie, CA) (*Listed as entirely in EE.—gld*)

ANTIGUA—BBC relay, **6195** with news at 1105. (DeGennaro, NY) 15190 at 1530. (Paradis, ME)

ARGENTINA—RAE, **11710** at 0200 with ID, contact info, new, music. (Paradis, ME) 0230 with Argentine music. (Quinby, PA)

ARMENIA—Voice of Armenia, **9960** at 2038 with music, IOS, and presumed national anthem, skeds, ID: "You are listening to the Voice of Armenia," then into news. (Gray, TN) 2040 sign-on. (Burrow, WA) 2040 with news, comment. (Paradis, ME)

ASCENSION ISLAND—BBC relay, **7160** at 0330 with African news. (Quinby, PA) **12095** at 0024. (McKenzie, CA) **15400//17830** at 2000. (Jeffery, NY) 17830 at 1943. (Charlton, ON) **21740** with call-in show at 1445. (Paradis, ME)

AUSTRALIA—Radio Australia, **6020** in Pidgin at 1035. (DeGennaro, NY) 6020//9580//**11650** with operatic songs at 1335. (Brossell, WI) **9580** at 0917. (Jeffery, NY) 9580// **11650** at 1613. Also **11880** at 2003. (Charlton, ON) **9710** at 0850 and not parallel to 9580. (Barton, AZ) 11650 at 1325 with ID as "Radio National Australia." (Northrup, MO) **21615** via Northern Marianas at 0018. (Roberts, NC) **21740** monitored at 2117. (Charlton, ON) 2300 with "Asia Pacific." (Paradis, ME) 2320 with classical piano. (Roberts, NC) **21820** at 1042. (Foss, Philippines)

ABC Northern Territories Service, **2310** Alice Springs at 1529 with music, news. (Miller, WA) 2485-Katherine, with sports coverage at 1032. (Miller, WA) HCJB-Australia, **11755** at 1020 with ID "Radio from the heart—this is HCJB Australia, the Voice of the Great Southland." (D'Angelo, PA)

AUSTRIA—Radio Austria Int'l, **7325** at 0230 with "Report from Austria." (Paradis, ME) Radio Africa Int'l, via Austria, **17895** at 1555 with news, possible ID at 1559, off at 1600. VOA-Botswana signed on at 1558 making copy difficult. (Montgomery, PA)

BANGLADESH—Bangladesh Batar, **7185** at 1226 with open car-

rier until string IS at 1229 then woman with opening ID, music, opening anmts, news. (D'Angelo, PA) 7185//**9550** at 1801. In on religious commentary, Islamic song, and interpretation. (Burrow, WA)

BELARUS—Radio Minsk, **7210** in EE at 0230. (Linonis, PA)

BELGIUM—Radio Vlaanderen Int'l, **13700** at 2255 with request for letters and giving their postal and e-mail addresses. (Charlton, ON) (*via Bonaire?—gld*)

BOLIVIA—Radio Mosoj Chaski, **3310** at 1002 with music, woman in Quechua, ID, rustic vocals, and flutes. (D'Angelo, PA) Radio Eco, **4409.8** at 2331 with rustic vocals hosted by man, IDs and TCs. (D'Angelo, PA) Radiodifusoras Mineria, **5927.1** at 2250 with SS talk, ID, and TCs over rustic vocals. Long talks between selections. (D'Angelo, PA) 2318 with man announcer in excited talk, possible ID. (Montgomery, PA) Radio La Cruz del Sur, **4876.5** at 2307 in SS and music. Male in different language at 2308, female back at 2309. (Montgomery, PA) 1004 with music. (Miller, WA) 1040 in SS with long talks under nasty RM. (Montgomery, PA)

BOSNIA—Radio Yugoslavia, **7115** at 0150 in unid. language. Comments and taped interviews. (MacKenzie, CA) (*Wonder how long they'll stay as R. Yugoslavia.—gld*)

BOTSWANA—Radio Botswana, **4820** at 0340 with pops, ID "This is Radio Botswana broadcasting from Gabarone. The time is now 6 o'clock. Here is the news, read by ---" (D'Angelo, PA) 0344 with rap vocals. (DeGennaro, NY) VOA relay, **9885** at 0330. (Linonis, PA) **11835** at 0508 and 12080 at 2035. (Brossell, WI) **17895** at 1800 and 2051. (Jeffery, NY)

BRAZIL—Radio Difusora Seis de Agosto, **3255** at 1007 in PP. (D'Angelo, PA) Radio Rio Mar, Manaus, **9695** at 2141 with futebol match. (DeGennaro, NY) Radio Cultura de Campos, **4960** (listed 4955, gld) with PP vocals at 1101. (DeGennaro, NY) Radio Clube do Para, **4885** with news in PP at 1017. (Miller, PA) 0230 in PP with live sports. (Linonis, PA) Radio Nacional Amazonia, **11780** in PP at 0051. (Miller, WA) 0143 with soccer match. (Barton, AZ) 0515 with talks and music in PP. (Brossell, WI) Radio Difusora Amazonas, Manaus, **4805** at 0951 with Amazon regional news. (DeGennaro, NY) Radio Educacao Rural, Campo Grande, **4755** at 0143 with PP vocals and talk. (DeGennaro, NY) Radio Nacional Macapa, **4915** at 0137 with news and interviews in PP. (DeGennaro, NY) Radio Difusora Tabaute, **4925** at 1019 with ads and PSAs in PP. (DeGennaro, NY) 1028. (Miller, PA) Radio Capixaba, **4935** at 0045 with sermon in PP, IDs at 0103, 0104, back to religious talk. (Alexander, PA)

BULGARIA—Radio Bulgaria, **7400** at 0120 in BB, //9400. (MacKenzie, CA) 0208 with music and talk. And **7500** at 2258. (Charlton, ON) **9400** at 0139 with music and talk. (DeGennaro, NY) 0334 with ID, into "It's A Small World." (Burrow, WA)

CANADA—Radio Canada Int'l, **9515** at 1400 with news, 13655 at 1310 with sports. (Northrup, MO) **11865** in SS at 0007 with ID, then into FF. Also **17865** in GG at 1650. (Charlton, ON) **13650** at 2345 with current events. (Barton, AZ) **13650** at 2130 with "Canada in the World." Canada or a relay? (Paradis, ME) (*Sackville—gld*)

CANARY ISLANDS—Full Gospel Las Palmas Church, **6715 USB** at 2315 with Korean language preacher, male vocal with organ music. Off at 2334. (D'Angelo, PA)

CHILE—Voz Cristiana, **11935** with SS vocals and religious messages in SS at 1122. (DeGennaro, NY) **17680** heard at 2333. (Roberts, NC) 2346 in SS. (MacKenzie, CA)

CHINA—China Radio Int'l, **5990** with EE news at 2302. Also 13630 with news at 2112. (Charlton, ON) **11760** at 2015 in FF and then into EE. (Brossell, WI) **11730** at 1047. Off at 1055. Also **15100** in unid. language at 0036. (Jeffery, NY) **11900** at 1320. (Northrup, MO) China National Radio/CPBS—**4850**, Beijing, at 2235 with EE lesson, //**4830**-Fuzhou. (D'Angelo, PA) **17550** in CC at 2355. (MacKenzie, CA) Radio Xinjiang, Urumqi, **5060** at 0015 in Mandarin. (Strawman, IA) **7310** in CC at 0130. (MacKenzie, CA) Voice of the Strait, Fuzhou, **4900** at 1417 with man/woman in CC. (Foss, Philippines) Xizang PBS, Lhasa, **4820** at 2229 with CC talk, several "China National Radio" IDs at 2230, 5 + 1 time pips at 2300. (D'Angelo, PA) 0012 in Mandarin. (Strawman, IA) **6110//6200** in EE at 1630 with talk and weak and muddy audio. Mentions of Tibet at 1640. Off at 1650. (Burrow, WA) Chian Huayi Broadcasting Corp, **4830** at 2234 with man/woman and CC/EE sessions. (Montgomery, PA) Music Jammer, **9335** at 2000. Also on **9885**, **11900**, **11950**, **13625**, **13745** and **15510**. (McKenzie, CA)

COLOMBIA—La Voz de tu Conciencia, **6010.9** at 0335 with long religious talk in SS, canned ID, guitar, and instrumental music. QRM from Radio Mil. (D'Angelo, PA) **6009.8** at 0850 with SS religious music. Wiped out by HCJB sign on at 0930. (Alexander, PA) Radio Melodia, **6139.8** at 2304 with ID and frequency anmt in SS, commercials, and listener phone calls. (D'Angelo, PA) 0330 with numerous mentions of Bogotá and Melodia. (Strawman, IA)

COSTA RICA—University Network, **9725** with religious programming at 1400. (Paradis, ME) Faro del Caribe, **5054.6** with religious programming in SS at 1024. (Miller, WA) **9645** in SS at 1235. (Northrup, MO)

CROATIA—Voice of Croatia, **7285** (via Julich, Germany) at 0405 with news, ID at 0410. (Burrow, WA) 0450 in Croatian. (Brossell, WI) **13820** via Julich heard at 0807 with EE news, ID. (Alexander, PA)

CUBA—Radio Havana Cuba, **6000** with news at 0012. (Charlton, ON) 0400. (Quinby, PA) 1154 in SS. (DeGennaro, NY) **17705** with sign on in SS at 2200. (Baton, AZ) Radio Rebelde, **6140** in SS at 1200 with ID, sports, news. (DeGennaro, NY)

CYPRUS—BBC relay, **21660** with news at 1600. (Paradis, ME)

CZECH REPUBLIC—Radio Prague, **6200** in EE with music at 0227. (Miller, WA) **7345** with news at 2230. (Paradis, ME) **9865** with cultural news at 0440. (Burrow, WA)

DOMINICAN REPUBLIC—Radio Barahona, **4930** at 1008 with SS vocals, local news. (DeGennaro, NY) Radio Pueblo, **5010** at 1030 sign on with anthem, ID, merengue music, commercials, and PSAs all in SS. (DeGennaro, NY)

ECUADOR—La Voz del Upano, **3360** at 0424 with LA vocals, ID at 0428 and again at 0432 before SS religious talk. (D'Angelo, PA) **5040** (tent) at 0055 with SS religious programming. (Alexander, PA) Radio Quito, **4919** at 1000 with SS ID and news. (DeGennaro, NY) 1010 with LA music. (Miller, WA) 0420 with SS songs. (Brossell, WI) Radio Federacion, **4960** at 1016 in Quechua and native music. (Miller, WA) 1032 with rap-type and anmts. (DeGennaro, NY) 0045 with talk in local language, religious recitations and off at 0102. (Alexander, PA) Radio Buen Pastor, Saraguro, **4815** at 1005 with Ecuadorian folk music, SS talks, canned ID. (Alexander, PA). 1117 with SS talk and Quechua music vocals. (DeGennaro, NY) Radio Centro, **3289.9** at 0940 with SS talks, Ecuadorian ballads. Guyana not on. (Alexander, PA) Radio Oriental, Tena, **4782** at 1025 with Andean music, SS and Quechua talks. (DeGennaro, NY) HCJB—**5965** in EE to Europe at 0734. (Becker, WA) **9650** at 0222 with SS pops, religious story in SS. Also **11960** with news, interviews in SS at 1130. (DeGennaro, NY) **9745** at 0000. (MacKenzie, CA) **12005** at 1230. (Northrup, MO) **15115** heard at 1330. (Paradis, ME)

EGYPT—Radio Cairo/Egyptian Radio, **9475** in AA music with SS talks at 0135. Also **12050** in AA at 1744. (DeGennaro, NY) **9620** in AA at **12450**. (Northrup, MO) **9900** with AA songs, ID at 2315 and news in EE. (Charlton, ON) 2315 with "Islam in Focus." (Paradis, ME) 0345 in AA. (Brossell, WI) 2020 in FF and 12050 in AA at 2046. (MacKenzie, CA) 11875 at 1642 in unid. language. (Foss, Philippines) **15255** heard at 1635 with Koran recitation and interpretation beamed to West Africa. (Burrow, WA)

EL SALVADOR—Radio Imperial, **17835.4** at 2352 with lively Latin vocals, woman with ID, man with frequency anmts in SS. Continuous ballads and religious tunes until sudden off at 0012. Poor signal with deep fades. (D'Angelo, PA)

ENGLAND—British Forces Broadcasting Service, **6135** from 0259 sign on with countdown to transmission start, time check, news, and Middle East Breakfast Show" featuring pops and dedications, weather for various Mideast countries. Also **12040** at 1659 sign on and program about Iraq, weather for various countries where the British have troops, including the Falklands. ID for BFBS Radio 2 and then BBC Radio 4. Off at 1800 Also **15530** at 1538 with rock and sports coverage.

ID at 1554 mentioning website, <www.bfbs.com>. At 1559 a countdown until the next transmission ("The next transmission from BFBS starts in 50 seconds..."). Time check for 4 o'clock and ID followed by world news. (D'Angelo, PA) 15530 to Operation Telia forces in the Mid-East including BBC news, DJ named Vicki. (Watts, KY) (*As of this writing transmission sites for these BFBS broadcasts haven't been pinpointed.—gld*) Radio Wales Int'l, via England, **7325** at 2130 with ID, interview, music. (Paradis, ME) BBC, **5975** via Antigua, 2333 with news item. (Chandler, ON) **6195** at 2258 and **15485** at 1217. (Jeffery, NY) **9515** via Delano, 0350 with excellent jazz program. (Linonis, PA) **15190** at 1310. (Northrup, MO) **15400** to Africa at 1900. (Ziegner, MA) 2019. (Charlton, ON)

ETHIOPIA—Radio Fana, **6210** at 0330 with IS, ID into Amharic. (Paradis, ME) **6209.9** at 0327 sign on with ID, ID and anmts in Amharic at 0330, news to 0340 then into music. Also **6940** at 0357 with music, ID at 0400, and news in Amharic. (D'Angelo, PA) Radio Ethiopia, **7165//9560** at 1622 with music bells, news, clear ID at 1639 but gone by 1650. (Burrow, WA)

FINLAND—YLE Radio Finland, **17660** in Finnish at 1345. (Brossell, WI)

FRANCE—Radio France Int'l, **7135** at 0440 with FF talks, "Ici Radio France International." (Brossell, WI) **11615** at 1618 with EE news and discussions. (Miller, WA) **12025** in FF at 2305. (Charlton, ON) 1700 with news in EE. (Jeffery, NY) **21590** heard at 0020. (Roberts, NC)

GABON—Africa Number One, **9580** in FF with African pops at 2230. (Linonis, PA) 2246. (Charlton, ON) **17630** in FF at 1345. (Brossell, WI)

GERMANY—Deutsche Welle, **3995** in GG at 2300. (Paradis, ME) **6100** in GG at 0200. Also **7400** via Irkutsk, Russia in GG at 1148. (DeGennaro, NY) **15275** in EE at 1919. (Charlton, ON) **15515** closing at 1700. (Barton, AZ) Bayerischer Rundfunk, **6085** in GG at 2130. (DeGennaro, NY)

GHANA—Ghana Broadcasting Corp, Radio 2, **3366** at 2255 with classical music. (Montgomery, PA)

GREECE—Voice of Greece, **9420** in Greek with Greek pops at 0143. Also **17565** at 2047. (DeGennaro, NY) **15630** at 1730. (Ziegner, MA) **17705** via Delano in Greek at 1722. (Charlton, ON)

GUAM—Adventist World Radio/ KSDA, **11560** in EE at 1636. (Charlton, ON) **11980** at 1632 with world religious news and AIDS in China. Also **15330** at 1535. (Foss, Philippines)

GUATEMALA—Radio Mam, Cabricam, **4825** with SS sports at 1046. (Miller, WA) Radio Maya de Barillas, Huenhuetenango, **3324** with Quechua religious broadcast. (Miller, WA) Radio Buenas Nuevas, San Sebastian, **4799** with SS religious music at 1033. (Miller, WA) 1045 with light instrumental music, SS talk, ballads. (Alexander, PA) **11309** with SS ID, religious music. (DeGennaro, NY) 0015 with partial SS ID. (Roberts, NC) **4799**, varying to **4802**, 0240 in SS with instrumental music. (Linonis, PA) Radio K'ekchi, San Cristobal, **4845** at 1136 with local and SS languages. (DeGennaro, NY) 0222 with ID, marimbas, rustic vocals, and talk in K'ekchi. Two choral anthems at 0304 sign off. (D'Angelo, PA) 0245. (Linonis, PA) Radio Verdad, **4052.5** at 0043 with continuous old songs, ID in EE/SS heard at 0055. (Montgomery, PA)

HONDURAS—Radio Misiones Int'l/HRMI, **5010** with religious SS talks at 0034. (Roberts, NC) Radio Litoral, **4832** with religious messages in SS at 1123. (DeGennaro, NY) La Voz Evangelica, **4819** at 0304 with religious programs in SS. (DeGennaro, NY)

INDIA—All India Radio, **3223**, Shimla, stringed instruments and singers at 1650. (Foss, Philippines) **4760**, Port Blair blasting Pakistani aggression at 0230. (Linonis, PA) 4775-Gahuati, 1150 with local program (tentative). (Montgomery, PA) 1339. (Strawman, IA) Impal, 1146 with Hindi talks, vocals with flutes, ID at 1200 and into news. (D'Angelo, PA) **4790**, Chennai at 0021 in Tamil to 0043 close. (D'Angelo, PA) **4800**, Chennai, 1418 in Hindi. Gone by 1427. (Strawman, IA) 4800, Hyderabad at 0023 sign on with IS, Hindi vocals, EE news at 0035-0040. (Alexander, PA) **4840**, Mumbai, 0031 with woman and news, ID at 0041. (D'Angelo, PA) 1327 with Hindi vocals. (Strawman, IA) **4860**, Delhi at 0026 musical opening, ID, 5 + 1 time pips at 0030 and Hindi news. EE ID at 0035. (D'Angelo, PA) **4895**, Kuresong at 1143 with Hindi vocals and woman annor. (D'Angelo, PA) **4990**, Gauhati with Hindi vocals at 0025. (Strawman, IA) **9445**, Aligarh at 2108 with news, Hindi music. (DeGennaro, NY) **7250**, Panaji, **//9810** at 0133 in Nepali. (MacKenzie, CA) 11585 in presumed Hindi at 1330. (Brossell, WI) **11620**, Aligarh/Bangalore at 1939. (Chandler, ON) 2032 in Hindi. (MacKenzie, CA) 2103 with EE news. (Miller, WA) 2138 in Hindi. (DeGennaro, NY) 2200 with news, commentary. (Paradis, ME) 2200 in Hindi. (Quinby, PA) **11900**, Delhi at 0139 with "Song of India," vocals. Listed in Tibetan. (Strawman, IA) **13605**-Bangalore with EE news at 1800. (DeGennaro, NY)

INDONESIA—Voice of Indonesia, **11784.9** at 2000 with IS, ID, sked, program preview, news in EE. (Burrow, WA) **15149v**, 2000 with news, comment, music, ID, more news at 2058 and off at 2103. (Alexander, PA) (*From what you say this seems to alternate between 11 and 15 from month to month.—gld*) Radio Republic Indonesia, Ternate, **3345** at 1302 with news in II. (Foss, Philippines) RRI-Pontianuk, **3976.1** at 1045 with long II talk, local vocals, SCI at 1159. (D'Angelo, PA) RRI Makassar, **4753.4** at 2203 with Jakarta news in II, ID at 2212 and II vocals. (D'Angelo, PA)

IRAN—VOIRI, **3985** in AA with readings and music interludes at 0035. (Montgomery, PA) **7320** at 1930 with ID, Holy Koran. (Paradis, ME) **9935** in AA at 1930. (Ziegner, MA) **11695//15140** at 1930 with IS, ID, anthem, schedule, Koran. (Burrow, WA) **11950** in Farsi at 1330. (Northrup, MO)

IRELAND—Radio Telefis Eireann, via England, on **6155** at 0150 with music, ID, weather for Ireland. Also **15280** via Singapore at 1024 with ads, ID, Ireland weather. (Jeffery, NY)

ISRAEL—Kol Israel, **6280** at 2031 with long talks in FF and short music interludes. (Montgomery, PA) **7545, //11585** at 0244 with interview in HH. Also **11605** in unid. language at 2027. (MacKenzie, CA) **9435** at 0504 with news, weather, time pips, ID, and into FF at 0515. (Burrow, WA) **11585** in HH at 0200. (Quinby, PA) 11605 with time pips, news. (Barton, AZ) 1732. (Charlton, ON) 1740 with news in EE. (Miller, WA) 2055. (Brossell, WI) 1844 in RR. (DeGennaro, NY) Galei Zahal, **6973** with talks in HH at 2358. (Roberts, NC) 0200 with variety of music. (Paradis, ME) 0215 in HH. (Linonis, PA)

ITALY—RAI Int'l, **6060** in II at 0156. **6110** in II at 0205 and **11855** in II at 1610. (DeGennaro, NY) **9745** at 1938 with news and music. (Charlton, ON) 1932 with IS, ID, news. (Burrow, WA) **11800** at 1455 with bird call IS mixing with 11805 signal. (Barton, AZ) 2025 with news. (Paradis, ME) 0312 in II with pops, and 0315 ID "RAI—RTV Italiana." (Brossell, WI) IRRS, **6290** at 2117 in possible RR with long talks. Not listed. ID in EE and off at 2130. (Montgomery, PA) 2120 in RR, then EE ID "This is I double RS," address and fax number and off at 2131. (D'Angelo, PA)

JORDAN—**11690** at 1551 with "Interaction" program, time pips, ID, news at 1600. (Burrow, WA) 1643 with music, e-mail address. (Charlton, ON)

JAPAN—Radio Japan/NHK, **6120** via Canada at 1137. Also **11710** via England at 1110. (DeGennaro, NY) **6145** opening in RR at 0800. (Barton, AZ) 6145 in JJ at 0720. Also **6165** to SE Russia at the same hour. (Becker, WA) **9445//11855** in EE with JJ lessons at 2124. (Charlton, ON) **11665** in JJ at 2035. (MacKenzie, CA) **15220** via Ascension at 2250. (Quinby, PA) **21600** via French Guiana at 1741 in JJ to 1757 close. (Jeffery, NY) Radio Tampa, **3945//6055** in JJ at 0750. (Becker, WA)

KUWAIT—Radio Kuwait, **11675** in AA at 1438. (Miller, WA) 0307. (Brossell, WI) **11990** in EE at 1800. (Paradis, ME) 1836. (Ziegner, MA) 1938. (Charlton, ON) 2007 in EE, ID 2017. (Burrow, WA) 2030 with techno pops, news, 2049 ID: "You are listening to Radio Kuwait." (Wood, TN) **13620** in AA at 1320. (Northrup, MO) **15495** in AA at 1824. (DeGennaro, NY)

LESOTHO—Radio Lesotho, **4800** in unid. language at 0356 with coral talks and man/woman talk. (DeGennaro, NY)

LIBERIA—Radio Veritas, **5470** at 0635 in vernacular talk, EE with ID at 0644 and local EE news, into VOA news at 0700. (Alexander, PA) Radio Liberia Int'l, **6100** monitored at 0635 with vernacular talk, African folk music, into EE at 0659 with news at 0701, ID as

"International Service of Liberia Communications Network—Radio Liberia." (Alexander, PA)

LIBYA—Radio Jamahiriya, **11635** via France at 1910 with Mideast music. (DeGennaro, NY) **15435** in AA at 1406. (Brossell, WI) 1737 with news in EE, then in FF. (Charlton, ON)

LITHUANIA—Radio Vilnius, **9875** at 2330 with news. (Paradis, ME) 2330 with ID, program content, news. (Burrow, WA) 2340 mixing with Chinese music jammer. (Barton, AZ) 2348. (Miller, WA)

MADAGASCAR—Radio Nationale Malagasy, **5010.1** at 0301 with brief news in Malagasy, continuous vocals and man whistling. (D'Angelo, PA) Radio Voice of Hope, **12060** at 0430. Also **15320**. Language unid. but news was in EE. (Paradis, ME)

MALAYSIA—Radio Malaysia, **7295** with "Midnight Madness" dedications at 1635. (Burrow, WA)

MALI—RTV Malienne, **4835** monitored at 2245 in FF to 0001 sign off. (Paradis, ME) 2250 with pop vocals, FF talk. (Strawman, IA) 2300, //weaker **5995** with flute music, man/woman FF announcers. (Montgomery, PA)

MALTA—Voice of the Mediterranean, **9850** via Italy in EE at 1734 with Malta history and culture. (Burrow, WA)

MAURITANIA—Radio Mauritanie, **4845** in AA at 2323 (Charlton, ON) 4845 in AA at 0000. (Paradis, ME) 0737 with local music. (Miller, WA)

MEXICO—Radio Mexico Int'l, **9705** in EE at 2330. (Charlton, ON) Radio Educacion, **6185** in SS at 0255 (Charlton, ON) 0745. (Becker, WA) 1148. (DeGennaro, NY)

MOLDOVA—Voice of Russia relay, **7180** in SS at 0147, //**7125**, **7390**, **7440**, **7570**. (MacKenzie, CA)

MONGOLIA—Voice of Mongolia, **12085** with comment about democracy in jeopardy. (Ziegner, MA)

MOROCCO—RTV Marocaine, **15345** in AA at 2030. (Brossell, WI) VOA Relay, **15240** at 2129; 15250 in Kurdish at 1600 and **17895** at 1751. (Jeffery, NY)

MYANMAR—Radio Myanmar, **4725** at 1131 with continuous talk by woman and music including "Gone With the Wind." (Montgomery, PA) 1132 with news in Burmese. (D'Angelo, PA) **5985** at 1541 and ID as "This is Myanmar Radio." Off at 1559. (Burrow, WA)

NEW ZEALAND—Radio New Zealand Int'l, **6095** at 1352; **15265** at 1756 and **17675** at 2208. (Miller, WA) 11675 at 0906, 17675 at 0000. (Jeffery, NY) **11980** at 1656 closing. (Charlton, ON) 1650. (Burrow, WA) 17675 at 2349. (MacKenzie, CA)

NETHERLANDS—**5965** via Canada heard at 1133 and **11655** heard at 1850 (DeGennaro, NY) 11655 at 1952. (Charlton, ON) **12065** at 1036. (Jeffery, NY) **17570** via Russia at 2353 in DD/EE. (MacKenzie, CA) 0024. (Roberts, NY)

NETHERLANDS ANTILLES—Radio Netherlands via Bonaire, **6165** in SS at 1135. (DeGennaro, NY) **9590** in DD at 0345. (Northrup, MO) **9790** in EE at 1030 and **17605** in DD at 2028. (Jeffery, NY)

NIGERIA—Voice of Nigeria, **15120** with EE and music at 1954. (Charlton, ON) 2015 with political commentary. (Brossell, WI) Radio Nigeria, **3326** at 2257 with children singing, man with prayers, ID at 3202. (Montgomery, PA)

NEPAL—Radio Nepal, **5005** heard at 1147 with woman anncr in local language, long talks with music interludes. (Montgomery, PA)

NORTH KOREA—Korean Central Broadcasting Station, **2850** at 1027 with vocals with orchestra, KK talks by woman. //**6398.8** noisier and with somewhat delayed audio. (D'Angelo, PA) (*It is not God's intention that you hear this stuff.—gld*). Voice of Korea, **3560//9975** at 1600 with IS, ID, anthem, news. (Burrow, WA) **9335** at 1300. "The great leader Kim Jong Il" now being referred to as a "great general." (Barton, AZ) **11735** in EE at 0124. (Charlton, ON)

NORTHERN MARIANAS—VOA relay, **11850** at 1739. (Charlton, ON)

NORWAY—Norwegian Radio, **9890** at 0212 in NN. (DeGennaro, NY) **18950** at 1600. (Barton, AZ)

OMAN—BBC relay, **15310** at 0403. (Foss, Philippines)

PAKISTAN—Radio Pakistan, **4790** in AA at 0326. (DeGennaro, NY) **11570** at 1602 on abruptly with news, ID, anti-India comments and off abruptly at 1614. (Burrow, WA)

PAPUA NEW GUINEA—Radio Morobe, **3220** with music and EE at 1142. (Miller, WA) NBC, **4890** with EE and music at 1054. (Miller, WA) 0835 with reggae music. (Barton, AZ)

PERU—(*Note: There's a lot of them this month so unless otherwise noted you can assume all programming is in SS with lots of Peruvian music, announcements, commercials, dedications, etc.—gld*) Radio Union, **6114.9** at 0840. (Alexander, PA) Radio del Pacifico, **4975** at 1021. (DeGennaro, NY) 1028. (Miller, WA) Radio Cultural Amauta, Huanta, **4955** at 1025. (DeGennaro, NY) Radio Libertad de Junin, **5039.2** at 1044. (D'Angelo, PA) Radio Superior, **5300.1** at 1058 sign on. (D'Angelo, PA) 1100. (Montgomery, PA) Radio Horizonte, **5109.9** at 1056 sign on. (D'Angelo, PA) Radio San Nicolas **5470.8** at 1116. (D'Angelo, PA) Radio Luz y Sonido, **3234.9** at 1010. (D'Angelo, PA) Radio Tarma, **4775** at 1119. (Montgomery, PA) Radio Sicuani, **4826.5** at 1046, ID as "Radio Sicuani Nacional" with heavy reverb. (Montgomery, PA) La Voz de la Selva, **4824.4** at 116 ID. (Montgomery, PA) Radio Virgen del Carmen, **4886.7** at 1033 with some splatter from Brazil-4885. (Montgomery, PA) Radio Atlantida, **4790** at 1026 with ID, TC. (D'Angelo, PA) ID at 1059. (Montgomery, PA) Radio Huanta 2000, **4746.8** at 1050. (D'Angelo, PA) Radio Ondas del Huallaga, **3329.6**. (D'Angelo, PA)

PHILIPPINES—Radio Pilipinas, **11730//11890** at 1730 in Tagalog. Multilingual ID and into "Radio Periodico" program. (Burrow, WA) VOA Relay, **11895** in Asian language at 1345. (Brossell, WI) **15290** at 2336 and **17820** at 2329. (Jeffery, NY) 17820 at 2339. (MacKenzie, CA)

PORTUGAL—RDP Int'l, **9815** in PP at 0840. (DeGennaro, NY) **13770** in PP at 0015, //**11980** and **13700**. (MacKenzie, CA) **15540** at 1350 and **17680** at 1903. (Brossell, WI) 15540 in PP at 1300. (Quinby, PA)

PUERTO RICO—Armed Forces Network, **6458.5** at 2340. (Jeffery NY) 1055. (DeGennaro, NY)

ROMANIA—Radio Romania Int'l, **9690//11940** at 1700 with IS, ID, frequencies, news. (Burrow, WA) 11940 at 1708 with news, "This is Radio Romania in Bucharest." (Charlton, ON) 1737 with Gypsy music. (Ziegner, MA)

RUSSIA—Radio Rossii, **7380** in RR at 0255. (MacKenzie, CA) Voice of Russia, **9480** from St. Petersburg at 0157 and **9765** via Vatican at 0250. (DeGennaro, NY) **9875** to 1600 close. (Barton, AZ)

RWANDA—Radio Rwanda, **6055** at 2058 after Slovakia sign off in time to hear their choral national anthem. Off at 2100. (D'Angelo, PA) Deutsche Welle relay, **16145** in FF at 1533 and **15275** in EE at 1900. (Jeffery, NY) **17860** in GG heard at 1843. (Charlton, ON) 1910. (Brossell, WI)

SAO TOME—VOA relay, **4960** heard at 0300 with Daybreak Africa. (Paradis, ME) 0321. (Montgomery, PA) **6080** at 0628. (Jeffery, NY)

SAUDI ARABIA—BSKSA, **11820** in AA at 2043. (MacKenzie, CA) 2257. (Charlton, ON) **11915** heard at 2129. (Miller, WA)

SEYCHELLES—FEBA Radio, **11605** in unid. language to 1700 sign off. (Miller, WA) **11885** at 0345 with "Spotlight" program to 0400 close Listed for Thur, Fri, Sun. only. (Alexander, PA)

SIERRA LEONE—Radio UNAMSIL, **6139.1** at 0307 with regional music hosted by man. One mention of United Nations. Didn't appear to be all English. Killed by BBC-Delano at 0358. (D'Angelo, PA)

SINGAPORE—Radio Corp. of Singapore, **7235** with interview in several languages at 1442. (Foss, Philippines) Radio Singapore Int'l, **6150** with African music at 1311. (Miller, WA) 1546 with commercials, ID as "Mediacorp—Perfect 10." (Burrow, WA) BBC Relay, **9740** heard at 1114 and **15360** at 0003. (Jeffery, NY)

SLOVAKIA—Radio Slovakia, **7230** in Slovak at 0140, //**9440**. (MacKenzie, CA) 0115. (Charlton, ON) 9440 at 0150 (DeGennaro, NY) **11990** in RR at 1625. (Foss, Philippines)

SOLOMON ISLANDS—SIBC, **5019.9** at 1042 with EE religious talk, mix of Pidgin anmts with ID and address, EE promos. Off at 1106 with TC, ID, and closing anmts. (D'Angelo, PA) Carrying BBC programming at 1324. (Miller, WA)

SOUTH AFRICA—BBC relay, **11765** at 0356 and **11940** at 0548. (Jeffery, NY) 0515.

(Brossell, WI) Channel Africa, **9525** at 1611 with news, features, address, ID. (Burrow, WA) **11710** at 0515 in unid. language. (Brossell, WI) **15215** at 0620 to abrupt close at 0655. (Barton, AZ) **17870** at 1702. (Charlton, ON) Adventist World Radio, **12105** with ID at 2028 plus address in Kenya then into African dialect. (Brossell, WI) **15295** at 2011 with ID, address. (Charlton, ON) Radio Sonder Grense, **3320** in Afrikaans at 2248. (Montgomery, PA) 0350. (Brossell, WI)

SOUTH KOREA—Radio Korea Int'l, **5975//9515//9870** heard at 1617. (Burrow, WA) **7275** in JJ at 1437. (Foss, Philippines) **9650** via Canada in KK at 1112. (DeGennaro, NY) **15575** in KK at 0137. (MacKenzie, CA)

SPAIN—Radio Exterior de Espana, **6055** in EE at 0000. (Carlton, ON) 0346 in SS and **17550** signing on in SS at 1459. (DeGennaro, NY) **21610** in SS at 1650. (Barton, AZ)

SRI LANKA—SLBC, **4870** with domestic music at 1317. (Foss, Philippines) **15425** at 1515. (Linonis, PA)

SWAZILAND—Trans World Radio, **3240** at 0330 with EE ID and into local dialects, ID again at 0344 and off 0345. (Montgomery, PA)

SWEDEN—Radio Sweden, **9495** at 0231 with news. (Carlton, ON) **18960** at 1340 with EE interview. (DeGennaro, NY) 1430 with "60 Degrees North." (Paradis, ME)

SWITZERLAND—Swiss Radio Int'l, **13790** via Germany in FF at 1813. Off at 1815. (DeGennaro, NY) **17660** via French Guiana at 2006. (Carlton, NY)

SYRIA—Radio Damascus, **13610** in EE at 2100 with news heard at 2103. (Burrow, WA)

TAIWAN—Radio Taipei Int'l, **5950** via WYFR in CC at 2306. (Carlton, ON) **7445** in EE at 1158. (DeGennaro, NY) CC at 1300. (Northrup, MO) **11550** in EE at 1657. (Burrow, WA) **11605** at 1335 in CC. (Brossell, WI)

THAILAND—Radio Thailand, **6040** at 1145. (Miller, WA) **9535** at 2030. (Burrow, WA; Paradis, ME) BBC relay, **17615** at 0016. (Jeffery, NY) VOA relay, **11785** in CC at 1402. (Brossell, WI)

TURKEY—Voice of Turkey, **6120** at 1550 with Turkish music. (Foss, Philippines) (*Think this has now been dropped.—gld*) **7300** in TT at 0345. (Quinby, PA) **9460** at 2112 in TT. Also **17815** in EE at 1334. (DeGennaro, NY) **9655** in EE at 2335. also **9745** at 1932 and **6020** at 0406. (Burrow, WA) 9655 at 2335 with music, ID, frequencies. (Carlton, ON) **9715** at 2031 with IS, time pips, ID and into FF. (Montgomery, PA) **15350** at 1525. (Ziegner, PA) **17815** at 1355. (Brossell, WI)

TUNISIA—RTT, **7190//7275** with Koran at 0445. Also **15450** in AA at 1407. (Brossell, WI) **11730** in AA at 1555. (DeGennaro, NY) **12005** in AA at 1800. (Miller, WA) 2000. (Paradis, ME)

UGANDA—Radio Uganda, **5026** at 0256 talk to 0300 rooster crow, ID and EE news. (D'Angelo, PA) **7195** in local language at 0316. (DeGennaro, NY)

UNITED ARAB EMIRATES—UAE Radio, **13630//13675** at 1600 in EE. 13675 went off abruptly at 1608. (Burrow, WA) **13675** in AA at 1756. (DeGennaro, NY) **15400** in EE at 0330, **//12005**, 13675 (best). (Alexander, PA) **21600** relaying Dubai FM service with US pops at 1500. (Linonis, PA)

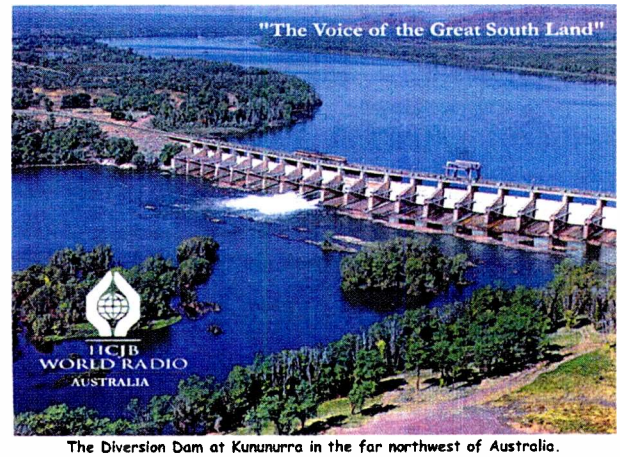
UZBEKISTAN—Radio Tashkent, **9540** in presume Uzbek at 0340. (Linonis, PA) **11905** at 2030 with IS, ID, frequencies, music, ID, news. (Burrow, WA) To 2059 sign off. (Wood, TN)

VATICAN—Vatican Radio, **7345** in a Slavic language at 0445, off at 0459. (Brossell, WI) **9605** in SS at 0216. (DeGennaro, NY) **15595** in EE at 1728. Also **11625** in SS with Rosary. (Carlton, ON) **15570** in Swahili heard at 1605. (Miller, WA)

VENEZUELA—Radio Tachira, **4830** at 1105 with Latin vocals, man in SS. (D'Angelo, PA) 1111 with ID, vocals. (DeGennaro, NY) 2302 but not as strong as in the past. (Montgomery, PA) (*Often they aren't even there.—gld*)

VIETNAM—Voice of Vietnam, **6195** via Canada in EE at 0104. (Charlton, ON) **9840//12020** at 2340 with music, news, comment. (Burrow, WA) 12020 at 1020. (Foss, Philippines) Son La Broadcasting Station, **4796** at 1216 in VV with flutes, talk, possible ID at 1230. (D'Angelo, PA) Presumed at 1219 with VV music but very weak. (Montgomery, PA)

HCJB Australia
"The Voice of the Great South Land"
E-Mail – english@hcjb.org.au



The Diversion Dam at Kununurra in the far northwest of Australia.

HCJB Australia's property is situated adjacent to the right hand side of this dam. It is from here that our South Pacific broadcast commenced transmission on 11755 KHz at 25KW on the 5th January '03, moving to 11770 KHz on the 2nd February '03. Test transmissions to Asia on 15480 KHz began on 24th January '03 with broadcasting commencing on 2nd February '03 on 15480 KHz at 75 to 100KW.

To: Mr. Richard D'Angelo

We wish to thank you for your reception report and hereby acknowledge it with this verification.

Date	Time/UTC	Frequency kHz
25 January 03	1020-1105 UTC	11755 khz

[K0076 - HCJB Australia.doc Jan '03]

This may be the wave of the future in QSLs: a full page, full color e-mail reply from the new HCJB-Australia, sent to Rich D'Angelo.

YEMEN—Republic of Yemen Radio, **9779** at 1750 in AA and EE and IS at 1758, possible ID and into EE news. (Burrow, WA) 1800–1900 with EE news at 1803, pops news again at 1830 and 1855, into AA at 1900. (Alexander, PA)

ZAMBIA—ZNBC, **6265** with local African music at 2123, man with long talks. (Montgomery, PA) 0401 with tribal vocals, "You are listening to the Zambia National Broadcasting Corpora-tion, Lusaka" and news. (D'Angelo, PA) 0404. (Miller, WA) Christian Vision International, **4965** at 2335 with EE talk, nice music and several IDs with UK address. (Montgomery, PA)

Whew! Sound the trumpets and salute these stalwarts who came through with the goodies this time:

Stewart MacKenzie, Huntington Beach, CA; Jerry Strawman, Des Moines, IA; Marty Foss, Quezon, Philippines; Bob Charlton, Windsor, ON; J.W. Roberts, NC; Dave Jeffery, Niagara Falls, NY; Robert Montgomery, Levittown, PA; Richard D'Angelo, Wyomissing, PA (note: many of Rich and Bob's logs were made on a DXpedition to Pennsylvania's French Creek State Park where they string out very long antennas); Michael Miller, Issaquah, WA; Tricia Ziegner, Westford, MA; Bruce burrow, Snoqualmie, WA; Pete Becker, Clarkson, WA; Ray Paradis, Pittsfield, ME; Ciro DeGennaro, Feura Bush, NY; Rick Barton, Phoenix, AZ; Mark Northrup, Gladstone, MO; R.C. Watts, Louisville, KY; Robert Brossell, Pewaukee, WI: Joe Kenneth Wood, Gray, TN; Samuel Quinby, PA; Jack Linonis, Hermitage, PA and, lastly, Brian Alexander, Mechanicsburg, PA.

Thanks to each one of you. Until next month, good listening!

by Joe Cooper <ur-review@provcomm.net>

A Radio Operator's Life, And A Response To Last Month's Combs' Article

We've heard from British contributor David Hopcroft on several occasions, particularly about coastal station GRZ. This time David will provide us with some insight into the reality of a radio operator's life—that it's mainly long hours of boredom with moments of crisis thrown in randomly (see "On Passage: Memories of a British Radio Operator at Sea").

In addition, Craig Rose has put together a response to Bob Combs' critique of Craig's "More Than Just Voices" piece.

How about you? Do you have a story or two to tell about your experiences, either past or present, working in the field of utility radio? How about an opinion to share? Let's hear from you.

And, as always, we have logs for you. Send in your log contributions, too!

Reader's Logs

One of the things you will notice in this month's logs is the large amount of information contained in each one through the use of standard abbreviations. I've been getting some feedback that many people do not have access to a good list of these short forms so I'm including a table of some of the most common abbreviations used in UTE logs. Do you know of any others that may have been missed here? If so, please send them along.

Likewise, there's a lot of military action taking place in the Middle East right now. While you know what position about publishing sensitive information that could comprise national security or the troops overseas (and domestically as well) I would encourage you still share your frequencies. Monitoring is still legal, as long as sensitive content is not divulged.

Remember that all frequencies are in kilohertz and times are Universal (Z).

0000: STATION, Anytown, USA, summary of traffic heard in MODE at 0000 Z (Z), personal comments here. (JC)
2749: Canadian CG-Stephenville (OM FF), 0216Z USB w/MIB for the Maritimes. (RP3)
6986.5: AAR5BD (Army MARS), 1300Z USB w/AAR5HC, AAR5MI in net chat. (RP3)
3494: ARINC New York, 0132Z USB trying to contact Reach 641Y w/no response. (RP3)
3640: UNID YL/EE with "SYN2" repeated over and over for several minutes, then off. USB at 2352Z. (CG)
4150: OM (RR), 0200Z USB w/OM (RR) in long conversation covering myriad of subjects, mostly maritime. (RP3)
4209.5: XSX Chi-Ling R TAI 1130Z FEC NAVTEX wngs & met wngs/forecast in Chinese. (ML)
4268: VTG Indian Nvy Mumbai 2300Z CW 4LG msg then to VVV VTG 4/6/7 mkr. (ML)

Response To Bob Combs' "Popular Communications or Popular Psychology"

By Craig Rose

I received an interesting response to an article I wrote that appeared in the February 2003 issue of *Popular Communications*. Entitled "More Than Just Voices," the topic of this article focused specifically on how we as radio listeners relate to the events and people that we monitor. In this instance I used an actual event, in which two F/A-18 Super Hornets collided in a coastal warning area during exercises. Bob Combs in New Mexico suggests that I may have erred by submitting this article, more appropriate for a psychology journal, to *Popular Communications*.

Although I can understand Mr. Comb's reaction to this discussion, I fear that he has overlooked the basic fact that we have said the same thing, but in differing language. When Mr. Comb's states, "...if I hear something from a Utility station that I question as to whether or not it is something I shouldn't be hearing, I listen but I keep the information between my two ears," I am forced to refer to my own suggestion that each of us simply apply common sense in sharing what we hear. The crash of two U.S. Navy aircraft served as a clear reminder that what we hear is NOT always worthy of repeating or reporting, and this is especially true when dealing with an issue as tragic as the loss of these aircrews.

Also, when Mr. Combs asserts that, "If a person really believes that what he says over a radio (or a cell phone for that matter) is secret and not being heard by anybody, then he is sadly mistaken and perhaps should be re-educated on the concept," I would respectfully submit that there is always a possibility that the content of a conversation cannot, and should not, be self-censored. This seems rather obvious when it comes to dealing with a tragedy requiring emergency, time-sensitive, on-the-spot communications, like those heard in the aftermath of the F/A-18 crash.

However, an even more basic principle, and one that Mr. Combs and I can completely agree on, is the application of common sense when considering whether one should disseminate the content of what one hears over his receiver. This should not be reduced to a simple determination of personal ethics, as Mr. Combs suggests. In fact, a far more appropriate approach would be the old standby of putting one's self in another person's shoes and carefully considering whether your actions might breech the concept of common courtesy.

Working as a freelance photojournalist has allowed me to become intimately familiar with the hallmarks of ethical behavior when dealing with the subjects I choose to photograph. The application of these standards has served me well professionally and personally. In the end, I believe that Bob Combs and I are actually on the same page in our thinking. However, contrary to Bob's opinion, I can't think of a better place to discuss this topic than in the pages of a periodical called *Popular Communications*.

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On Passage: Memories Of A British Radio Operator At Sea

By David Hopcroft

Did you ever wonder what an RO [Radio Operator] did aboard ship during long and boring ocean passages?

Thirty days at sea with hardly a sight of land can get pretty mind-numbing—so much so that you were glad you wrote yesterday's date at the top of your logbook because otherwise you would not have known what today is! The answer to the boredom was quite simple: you put your feet up and read a book.

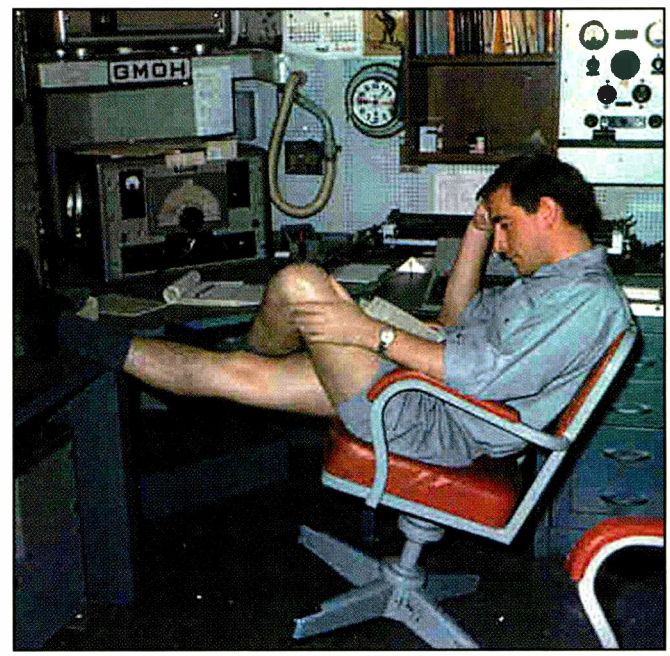
GMOH was the callsign of the Mobil Oil's tanker *Mobile Astral*. That's me in the photo, which was taken during the last watch of the day, around June or July, 1967. The 2nd Mate took the picture without my knowing it using his new Polaroid camera. We were on a loaded passage from Ras Tannura in the Persian Gulf bound for Port Stanvac and Melbourne, Australia. Believe me it was a long trip by anyone's standards.

The radio gear you see in the picture was supplied and operated by AEI (Associated Electrical Industries), Woolwich, England. On the left you can see the mediumwave (300 to 520 kHz section of the main transmitter, which was desktop-mounted into separate mediumwave and high-frequency (2 to 30 MHz) sections.

Below that equipment is the main power unit. The transmitter had Wireless Technology (CW) and Radio Technology available on each MF and HF band at around 800 watts output power. Next to it is the Redifon R50M main receiver. Above my head is the emergency battery-charging unit, and just out of shot was the emergency rack containing the Auto Alarm, Auto Key, MF Transmitter, and Receiver.

I remember there was one event that enlivened this long trip, making it memorable. About halfway through the voyage there was a curious equipment fault that was totally different from anything I had experienced before. It was a complete mechanical failure of the high-frequency tuning inductor coil, making the equipment useless.

The tuning inductor coil itself was an open wire-wound two-inch diameter cylinder with a small grooved wheel that ran along the top of the coil frame bearing on the wire, varying the inductance as you turned the tuning dial wheel on the front of the transmitter. One side of the framework had cracked, allowing the wheel to run off the coil, mangle itself up, and jam up tight.



Here is David Hopcroft caught in the act—of being a typical ship's RO (Radio Operator), that is. It's a long way between ports and most of the work routine. The picture was taken in the summer of 1967 in the radio room of Mobil Oil tanker Mobil Astral. (Photo courtesy David Hopcroft)

The repair of the inductor took some time, as I had to dismantle the whole thing to fix it. I used an approach called "thistle bonding," a British gluing technique that uses a product called Araldite that will pretty well bond any material to anything else. It was a perfect solution for the cracked side assembly, but there was some damage to the tuning wheel attached to it.

One of the nice things about being on board a well-fitted ship was that we had a complete machine shop on board. Our 3rd Engineer was a good fitter and turner and made me a com-

4477: OM (EE), 0259Z USB w/OM (EE). Both speaker sw/New England accents discussing flounder fishing strategies. (RP3)
4721: 2DR (accented EE), 0231Z USB w/3DR (accented EE) in radio checks. ALE also on freq. (RP3)
4721: 3IP (accented EE), 0238Z USB calling IDR (Italian Navy, Rome) with no response. (RP3)
4724: REACH 596Y p/p via Andrews HF-GCS to CASINO OPS, Westover ANGB with arrival info in USB at 0439Z. (MC)
4737: OM (EE), 0005Z USB w/OM (EE). Both speakers w/heavy U.S. southern accents in mechanical discussion about engines. Possible fishing vessels or oil rigs. (RP3)
4742: Architect (RAF Flight watch), at 0230Z USB w/airfield color states & volmet for Middle East locations. Simultaneous on 0931. (RP3)
5180: OM (IT), and at 2255Z USB w/OM (IT). (RP3)
5308.2: OM (EE), 0219Z USB w/OM (EE). Both speakers w/heavy U.S. southern accents discussing fishing matters. (RP3)
5450: RAF West Drayton: 0346Z USB w/automated volmet. (RP3)
5517: Tripoli (MWARA AFI-3), 0006Z USB w/KLM 594 & Speedbird 64 in position report. Tripoli also w/Cairo confirming Libya 272 flight from Casablanca to Cairo. (RP3)
5517: Cairo: 0331Z USB w/Khartoum w/information on Ethiopian 731 (id as B-752) from Rome to Addis Ababa. (RP3)
5541: Stockholm Radio: 0125Z USB w/Reach 644Y (ID as World Airways aircraft) reporting departure from Larnaca, Cyprus enroute to Kuwait International. (RP3)
5550: New York (MWARA CAR-A), 0337Z USB w/DA-JGK & N526AC in position report. (RP3)
5696: CG1502 reporting to CAMSLANT Chesapeake that he is 5 minutes from touchdown in Elizabeth City. He requested termination of HF guard. USB at 0055Z. (CG)
5696: RESCUE 6013 reporting "ops normal" and position information to CAMSLANT Chesapeake. Also relayed a message from

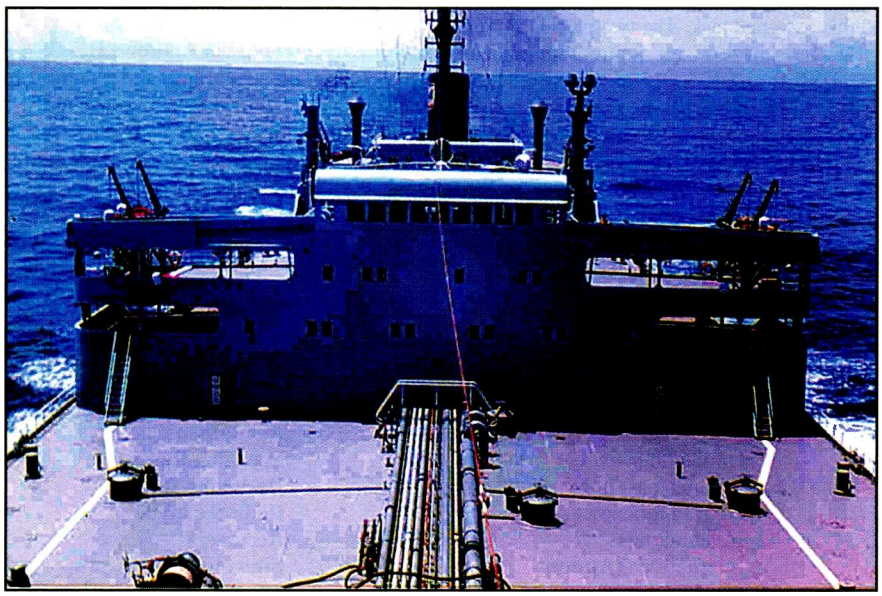
pletely new wheel-tuning wheel from scratch. All in all, it was an easily identified problem and easily fixed—things were much simpler in those days.

After finishing up in Australia we ran into another problem that was a bit unusual on this otherwise routine trip. When we left port and headed back we were following the approximate course of the *George Champion*, a Universe Tank ships tanker. They were halfway across the Indian Ocean when their RO called me on 500 kHz to ask if we had any refrigerator gas to spare. It appeared that theirs had leaked out and they were left with no freezer. That meant they were looking at the real possibility of losing all their fresh food for their voyage home.

We did indeed have a spare cylinder of gas, and promptly arranged a mid-ocean rendezvous for the next day. That may sound easy today, but back in those days there was no GPS to pinpoint where you were. Back then (and it was not that long ago really) ship's navigators still used those funny things called sextants, which required just as much art as science to find a position. It was truly close to the proverbial finding a needle in a haystack.

What actually ended up helping us the most was using Bellini-Tosi fixed loop DF (Direction Finder). I radioed the *George Champion* and instructed the operator to begin transmitting long dashes on 512 kHz. Using the DF I was able to fix his position, and, working with the crew at the ship's helm, we were able to alter course until they were dead ahead.

The next problem was with basic communications. While 500 kHz is great over long distances, it proved to be difficult as we began to get closer. Fortunately, we found we both had 27-MHz AM handheld docking transceivers. You sometimes take such equipment for granted these days, but back in the 1960s they were leading edge technology for us—and a godsend in this situation.



The view aft from the foremast of the Mobil Oil tanker Mobil Astral. You can see the Automatic Direction Finder loop antenna located above the bridge. They used this antenna to find the tanker George Champion in the middle of the Indian Ocean. (Photo courtesy David Hopcroft)

The *George Champion* put down a lifeboat to collect the gas cylinder. It seemed to be taking a long to come alongside before we realized that it was not a motor lifeboat at all, but one powered by the crew! They had to use a hand-cranking lever that turned a geared propeller when pulled back and forth.

Our captain was anxious to be underway again as we had just received loading orders via KPH, the famous California Globe Wireless CW station. To save time, the captain actually maneuvered the *Mobile Astral*—all 82,000 tons of it—to come alongside the lifeboat!

The transfer was quickly completed and we carried on to the Gulf, happy in the knowledge that we were on hand and able to help some fellow mariners in distress. It was a good reminder that, while an RO's life can be very dull and routine most of the time, it's those critical moments when an emergency—no matter how big or small—does occur that your skills and those of your shipmates are what make the difference between disaster and success—de dah de dah dit.

RESCUE 6040 to CAMSLANT Chesapeake. USB at 0049Z. (CG)

5696: RESCUE 1706 reporting "ops normal" and position information to CAMSLANT Chesapeake. Also reported that he had assumed radio guard for RESCUE 6040. USB at 0052Z. (CG)

5696: CAMSLANT Chesapeake in QSOs with several units. RESCUE 6001 (twice), CG6032 (three times) and RESCUE 6013. Each unit reported "ops normal" and provided position information. USB from 0100–0131Z. (CG)

5696: RESCUE 1706 in QSO with CAMSLANT Chesapeake. 1706 requested CAMSLANT to relay to "District 7" that "US Navy warship desires to depart scene, requests permission from District 7." 1706 also reported "ops normal" and position information. USB at 0124Z. (CG)

5696: RESCUE 6001 reporting to CAMSLANT Chesapeake that he is "on final approach to home plate". USB at 0129Z. (CG)

5696: CAMSLANT diverts R7Y to search for Go-fast along north coast of Colombia at 0218Z. (MC)

6234.5: USCG ANDVT encrypted comms at 0140Z. (MC)

6501: CAMSLANT hailing Cutter Haddock in USB at 0318Z. (MC)

6535: OM (Portuguese), 0600Z USB w/aircraft (OM Portuguese) w/ETA for Curacao. Caught at end of transmission. Possible LDOC. (RP3)

6729.7: OM (SS), 0113Z USB calling Argentina (sounds like) w/no response. (RP3)

6754: Trenton Military: 0229Z USB w/volmet. (RP3)

6846: "Bravo Zulu" in QSO with "India," "Delta," and other stations. Sounded like a military exercise with discussion of the movement of forces. USB from 0111–0121Z. (CG)

7527: CAMSLANT heard wkg CG 6032 at 0055Z. (MC)

7970: OM (accented EE), 2208Z USB w/OM (accented EE). Strange traffic. Operator passes 31653 (repeats it), time 1320, dropped 6 metric tons at location Yoko Loco (sounds

like) (probable coverterm). (RP3)
8272: OM (Tagalog mixed w/EE), 0246Z USB reading administrative/news items. Mention of personnel in hospital in Baguio, NBA scores, etc. (RP3)
8387.5: UBPQ BATM D SONG-9 (?) 1100 ARQ w/KYPS SELCAL, UBPQ log on & tfc to Vladivostok. (ML)
8734: OM (RR), 2130Z USB w/Y/L (RR). Transmitter has loud swooshing sound when activated. Y/L said she had called earlier in the afternoon. She couldn't hear the OM and said she would call him tomorrow. Probable Athens Radio. (RP3)
8764: CAMSLANT wkg H6G at 2117. CAMSLANT "confirms darkship at 2200Z. (MC)
8828: Honolulu, 0308Z USB w/volmet. (RP3)
8865: OM (EE), 2150Z USB w/OM (EE-very weak). Both speakers w/heavy Irish accents. Chat liberally laced w/expletives. Weak end was doing all the talking. (RP3)
8903: Luanda, 0135Z USB w/Springbok 855 w/position report. Enroute to Mohammed Khider (DAUB). (RP3)
8912: SERVICE CENTER wkg UNID aircraft in USB at 0014Z. (MC)
8912: Panther (DEA, Nassau Bahamas), heard at 0011Z USB w/CG 15C (HH-60 6015, CGAS Clearwater) reporting inbound to Panther w/5 POB. Panther requests an UHF radio check. (RP3)
8924.5: OM (EE), at 2235Z USB w/OM (EE). Discussing fishing locations for cod & hake. (RP3)
8971: PELICAN 712 (P-3C) wkg FIDDLE (TSC Jacksonville) in USB at 2215 with SPARE GROUP 3 report. (MC)
8971: BLUESTAR (TSC Roosevelt Roads, PR) heard wkg WIZARD 03 in USB at 2319 to pass info on ALLIGATOR (Link-11) data freq. (MC)
8971: BLUESTAR diverts BURROW 03 (P-3C) to search for Go-fast along north coast of Colombia at 0244Z. (MC)
8980: RESCUE 1706 in QSO with CAMSLANT Chesapeake. 1706 requested p/p to "District 7" ("Miami Ops") on 5696 and was told to QSY to this frequency. 1706 told Miami ops that he had assumed command from a Naval warship, and that he was 50% complete with his assigned task. The two parties agreed to use "Satcom 402" for future communications. USB from 0104–0112Z. (CG)
8983: CAMSLANT passes info to CG 2102 on Go-fast in Florida Keys moving at 45 knots in USB at 0106Z. (MC)
8983: CAMSLANT diverts CG 1708 with a request from JIATF-E to search the Windward Passage from Haiti to Great Inagua for a Go-fast at 2226Z. (MC)
8989: OM (FF), 2203Z USB w/OM (FF-very weak). Stronger OM is passing WX for UNIDentified locations and mentions that an aircraft "CH" took off at 2059Z hours. Possibly Belgian Air Force. (RP3)
8992: Andrews with 22-character EAM in USB at 1932Z. (CG)
8992: REACH 594T p/p via Andrews HF-GCS to HILDA EAST in USB at 2239Z. In a long patch they report an equipment malfunction and consider options to continue to Bangor, RTB to Andrews or go to Robins where a KC-135 is standing by. The equipment starts working and they continue their mission. (MC)
8992: HERKY 75 in p/p via Puerto Rico HF-GCS reports inbound to Sigonella, A2 for cabin pressurization at 0223Z. (MC)
8992: KING 99 p/p via Andrews HF-GCS to Lajes AFB with arrival info and a request for transportation for 25 crew at 2134Z. (MC)
9000.8: OM (SS/EE), 0547Z USB w/OM (SS/EE). Chat mentions a truck (camion) due

Some Common UTE And Shortwave Listening Abbreviations

A	Approximate Frequency
AA	Speaking Arabic
AB	Air Base
ACD	Automatic Call Distribution
ADT	Airborne data terminal
AF	Air Force
AFB	Air Force Base
AFCC	Air Force Communications Center
ALLOC	Allocation
AM	Amplitude Modulation
ANG	Air National Guard
ANT	Antenna
ARQ	Automatic Request
ARR	Arrive
ATC	Air Traffic Control
BC	Broadcast
CALL TAPE	Repeated Recording
CH	Channel
Comms	Communications
CONUS	Continental U.S.
CW	Continuous Wave
DCS	Defense Communications System
DEP	Depart
DSB	Double Sideband
DX	Distance
EE	Speaking English
ETA	Estimated Time of Arrival
f/in	Fade in
f/out	Fade out
FAA	Federal Aviation Administration
FAX	Facsimile
FEC	Forward Error Correction
FF	Speaking French
FREQ	Frequency
FSK	Frequency Shift Keying (RTTY)
GMT	Now UTC
H	On the hour
H+	Minutes past hour
HF	High Frequency
HQ	Headquarters
IAP	International Airport
ID	Identification
kW	Kilowatts
LA	Latin America
M	Meters (measure)
MAP	Municipal Airport
MARS	Military Auxiliary Radio Service
MEDEVAC	Medical Evacuation
METEO	Meteorological (Weather)
Mystic Star	Air Force 1 and 2 communications
NA	North America
NASCOM	NASA communications
NBRS	Numbers
NDB	Non-directional Beacon
NG	National Guard
NTM	Notice to mariners
NX	News broadcast
OM	Male Speaker
OPR	Operator
OPS	Operators
PP	Speaking Portuguese
PT	Plain text
PX	Program
QSL	Verification card
QTH	Home base
R	Radio Station
RDO	Radio
RPTNG	Repeating
RF	Radio Frequency
RR	Speaking Russian
RS	Receiving station
RTTY	Radio Teletype
RX	Receiver
s/on	Sign on
s/off	Sign off
SAR	Search and Rescue
SEC	Secondary Frequency
SITOR	Error Corrected RTTY
SKED	Schedule
SS	Speaking Spanish
SSB	Single Side Band
TACOM	Tactical Communications
TFC	Traffic Communications
TX	Transmitter
UNID	Unidentified Station
USA	United States Army
USAF	United States Air Force
USB	Upper Side Band
UTC	Coordinated Universal Time
VY	Very
w/	With
WKG	Working (talking to)
WPM	Words per minute (CW or RTTY)
WX	Weather
XMTR	Transmitter
Z	Zulu Time, same as UTC

on the 14th. Both operators use EE slang, "OkeeDokee, Alright" in chat. (RP3)

9007: CANFORCE 336 wkg TRENTON MILITARY for traffic check and SELCAL check at 0227Z. (MC)

9025: REACH 134Y (self-id as C-17A) with ALE initiated p/p to HILDA Dispatch for flight plan from UK to Germany heard at 0122Z. (MC)

9031: Cyprus Flight Watch, heard at 2220Z USB w/WX for Cyprus and Middle East locations. (RP3)

9102.7: Egyptian Emb Khartoum (JG KDBF-CLJ) at 2300Z ARQ ATU-80 msg to Cairo. (ML)

9251: Y/L (EE), 2228Z USB w/5-figure groups. (RP3)

9310: Y/L (EE), 2209Z USB w/5-letter groups. (RP3)

10018: Mumbai (MWARA MID-2), 2203Z USB w/India 1413 (not heard) in position report. (RP3)

10033: Miami Radio, 2232Z USB w/Honduras 925 who reports departure from San Pedro Sula, Honduras enroute to Managua, Nicaragua w/8 pax. (RP3)

10046: 4XZ, Haifa, Israel with CW beacon at 0040Z. (CG)

10230: OM (IT), 2015Z USB w/unheard station. (RP3)

10320: OM (Vietnamese), 2018Z USB w/OM (Vietnamese). (RP3)

10320: USN AFN Network (Hawaii), 0235Z USB w/NHL Radio broadcast of hockey game & sports news. (RP3)

10426: Lincolnshire Poacher E-3 (Y/L EE), 2218Z USB w/5-figure groups. (RP3)

10580: HMF KCNA Pyongyang 0955Z RTTY 100/450 id tape & nx EE //8152. (ML)

10780: Cape Radio: 2025Z USB w/Storm 17 (UNIDentified) in pp w/Storm King (UNIDentified) who calls Storm 17 Storm Tower. Storm 17 tells Storm King that he's just using 10780 to show the soldiers how a pp works. They sign off. Cape Radio also w/King 76 (USAF HHC-130) in radio checks. (RP3)

11150: OM (Arabic mixed w/FF), 2031Z USB w/OM (Arabic mixed w/FF). Probable North African net. (RP3)

11175: REACH 446 enroute to Kelly AFB discussing what sounded like a serious problem with maintenance personnel via pp McClellan. (DS2)

11175: HERC 08 (USCG C-130 #1708) p/p via Diego Garcia HF-GCS to JIATF-East, Key West. They are told to come up on the 402 Net heard in USB at 0139Z. (MC)

11175: REACH 333Y p/p via Puerto Rico HF-GCS to HILDA West with ETA for Kuwait International Airport with 69k cargo in USB at 2242Z. (MC)

11175: REACH 7X5 p/p via Andrews HF-GCS to Lajes AMCC and Meteo at 2234. Inbound with 15 patients. (MC)

11205: SMASHER heard wkg 29 in USB at 2103Z. (MC)

11232: KING 21 p/p via TRENTON MILITARY to Moody AFB at 2047Z. (MC)

11232: DARKSTAR Y (E-3 AWACS) p/p via TRENTON MILITARY to Tinker AFB COMSEC Vault with No Joy at 0103Z. (MC)

11402: OM (SS), 2308Z USB w/Y/L (SS-weak). Chat about four small packages (paquetta) of Kool Aid 01 & 04. Chat about the money for these 4 packages of Kool Aid. NOTE: Could be chatting about bringing home souvenirs for the family but I don't think so. (RP3)

12520: USJE BMRT Vozrozhdenie 0844Z RTTY 50/170 msg to unkwn. (ML)

12570: UCXP STR Vaninsk 1026Z ARQ crew msg to Vladivostok. (ML)

12570: UIOR RTM Almaz 1120Z ARQ tfc to Vladivostok, UIOR log on/off. (ML)

13200: REACH 7438 (self-id as KC-135) p/p via Puerto Rico HF-GCS to Charleston AFB CP with arrival info at 2130Z. (MC)

13215: REACH 9168 ALE initiated p/p to Charleston AFB and Meteo with arrival info at 2235Z. (MC)

13257: CANFORCE 3005 p/p via TRENTON MILITARY to ?. They are told they do not have another crew for the aircraft. The best they can do is a 2300Z takeoff time from Ottawa. CFA in Mexico City is aware of their delayed arrival in Mexico City in USB at 2046Z. (MC)

13360: OM (IT), monitoring at 2235Z USB w/OM (IT). (RP3)

13570: OM (EE), 1834Z USB w/"fire & brimstone" religious broadcast. (RP3)

13580: HMF KCNA Pyongyang 0800Z RTTY 100/250 id tape only until 0808 then off air //11476. (ML)

13927: REACH 860Y (self ID as C-130) p/p to Pope AFB. Reporting inbound from Newfoundland en route to Hurlburt Field but diverting to Pope AFB for problem with #4 engine in USB at 2137Z. (MC)

14408: TEAL 17 (WC-130 Hurricane Hunter) morale p/p via USAF MARS AFA1LJ at 2121. Tells MARS operator they have been flying a track along the East Coast collecting data on the big winter storm. (MC)

14606: REACH 7015 (C-141C) p/p via USAF MARS to Wright Patterson AFB Meteo at 2136. MARS relays ETA to Wright Patterson and a request for Customs and Ag. (MC)

16417: OM (RR), 1843Z USB w/unheard station passing series of telephone nrs for Sevastopol. Another OM (RR) comes on w/small talk, i.e. WX, how's the family, etc. Possible maritime link. 13/02. (RP3)

16444: OM (Greek), 1855Z USB w/ unheard station. (RP3)

16713: UEXQ STR Kalinovsk 0912Z ARQ KYXM selcal, UEXQ log on, svc & crew msgs to Vladivostok. (ML)

16811: CBV, Valparaiso Radio, Chile with SITOR/CW beacon at 0005Z. (CG)

16819.5: NMN, U.S. Coast Guard, Portsmouth VA with SITOR/CW beacon at 0000Z. (CG)

16992: CLA, Havana Radio, Cuba with CW beacon at 0010Z. (CG)

17130: HLW, Seoul Radio, South Korea with

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SITOR/CW beacon with auroral flutter and heavy QRM from a digital signal. 0020Z. (CG)

17940: Aircraft (OM SS), 1641Z USB w/OM (SS) w/position report. Probable Iberia LDOC. (RP3)

18003: Reach 7047 (id as C-17), 1638Z USB w/Hilda Metro w/request for WX at undisclosed location. (RP3)

18012: Circus Vert (CFAP HQs, Villacoublay-overmodulated), 1606Z USB w/COTAM 1809 (FAF aircraft) w/QSL for receipt of message. Also w/Circus Tilleul (NDJAMENA, CHAD—not heard) exchanging information on progress of a COTAM flight (number missed) that departed from Lyons at 1031Z enroute to Reunion. (RP3)

18048: ZRX SAN Durban 0652Z RTTY 75/850 clg FUX French Nvy Le Port w/FUX DE ZRX foxes 1-0 ZBZ 5 INT ZBZ INT QRU K. (ML)

18245: FUX French Nvy Le Port 0716Z RTTY 75/850 clg ZRX SAN Durban w/ZRX DE FUX foxes TEST INT ZBZ K, 0806 5LG msg start/end grp ZZZZZ. (ML)

18326.7: MFA Cairo 1200Z ARQ SELCAL TVVX Algiers to IRS mode & then off air. (ML)

20981.7: MFA Cairo 1005Z ARQ SELCAL OOVQ, op chat & s/off to Beijing. (ML)

20981.7: Pakistani Emb Pyongyang 1126Z ARQ svc & 5LG msg to Islamabad, msg router PYI. (ML)

20981.7: Pakistani Emb Seoul 1021Z ARQ rqst for msg rpt to Islamabad. (ML)

20981.7: Santa Maria (MWARA NAT-A), 0003Z w/Reach 574Y. Santa Maria hands him over to Shanwick ATC on 3016 or 5598. (RP3)

22723: OM (accented EE), 1730Z USB calling Libya Radio w/no response. (RP3)

This month's contributor's are: Chris Grey (CG), Dwight Simpson (DS2), Mark Cleary, (MC), Murray Lehman (ML), and Ron Perron (RP3).

Again, thank you all very much. Each and every one of your contributions is appreciated, as always. There is a still a need for new contributors, especially for people who can keep us up to date on hot frequencies being used in the conflict in the Middle East.

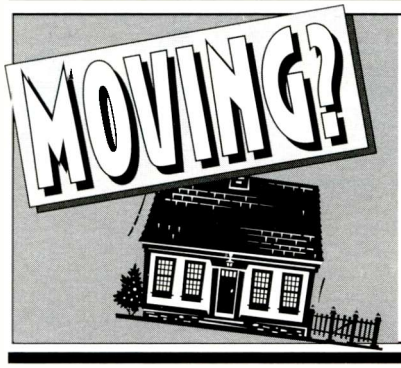
I would like to dedicate this month's column to my sister-in-law, Sherry Hall, who passed away suddenly during her battle with cancer. Sherry was only 45 years old and was a partner in a successful accounting firm. She died of pancreatic cancer. Among women, this form of cancer is strongly linked to cigarettes, which she chain-smoked. Many family members, friends, colleagues, and even her health care workers attended her funeral. Everyone agreed that it was a great loss to everyone to have her leave us so early and to have watched her go through such unnecessary pain.

Seriously folks, I am seeing far too many young people dying of cancer, heart, and lung disease and a host of other ailments these days. Some are afflicted through lifestyle choice, and many others are being struck down even though they are living exemplary lives. The truth is that if you look at the statistics for dying of things such causes, exacerabated by our behavior or environmental factors, they are rising and it is clear that none of us are exempt from this trend.

We really must start looking seriously at what we are doing to our planet and ourselves. At minimum, don't take your health for granted and certainly don't get hooked on habits that have been proven to be fatal. Start with yourself, then help your loved ones get healthy, and after that start looking at your community and seeing how you can help.

Sherry's untimely death took a lot of good things away from her family, friends, and community. The truth is that even though it may sometimes seem that we are all fighting and competing with each other, the fact is that most people bring more good than bad into the world by their being alive. We really need to work together to eliminate diseases such as Cancer and their lifestyle/environmental causes. Do what you can.

Also, let us remember the men and women in the United States military, and their allies, who are either stationed or fighting in the Middle East and Afghanistan. We are in a difficult time now that will set the stage for the rest of the 21st Century. Let us hope that the outcome will be a sustainable peace. ■



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Tuning In *(from page 4)*

gave a talk at a club, comparing our collective radio hobby to folks taking a Sunday drive in the vehicle of their choice. First, not everyone is going where you're going. That'd be awful boring. Second, many folks just want to get there, alive, and without a ticket. Just because I want to take in the scenery along the way certainly doesn't mean the trucker does.

And so it goes—me in an old Chevy, Johnny in his new Benz, and you in a gas-guzzling SUV. It works for him, and as long as it starts in the morning, it works for me, too. Trust me, CBers and GMRS operators aren't tarnishing our overall radio image. We're doing fine without help, thank you.

What changes peoples' attitudes when they get behind a mic? What makes them say things they'd never say in a crowded room in front of their mom? Beats me, but if you've got the answer, I'd like to know. In the meantime, I'm going to the shack and listen to WWV.

Vacation Broadcast Listener Contest 2003

Frank Parisot, Contest Manager, tells us that the annual contest will run from July 1 to August 31, 2003 this year. It's open to all broadcast listeners and SWLs in the world. To win you must hear only stations in the Americas. *Pop'Comm*, as last year, is a proud sponsor of the contest, along with CRB Books, Universal Radio, Inc., Passport To World Band Radio, and others.

For additional information, go directly to the Vacation Broadcast Contest Website Listener site at <http:// swlcontest.homestead.com/>. If you'd prefer to write for information, contact Frank at P.O. Box 6, Vanves Cedex 92173, France. Please enclose an IRC or $1 for return postage. ■

our readers speak out

letters to the editor

Each month, we select representative reader letters for our "Our Readers Speak Out" column. We reserve the right to condense lengthy letters for space reasons and to edit to conform to style. All letters submitted must be signed and show a return mailing address or valid e-mail address. Upon request, we will withhold a sender's name if the letter is used in "Our Readers Speak Out." Address letters to: Harold Ort, N2RLL, SSB-596, Editor, Popular Communications, 25 Newbridge Road, Hicksville, NY 11801-2909, or send e-mail via the Internet to <popularcom @aol.com>.

Fixing The Cell Phone Dilemma

Dear Editor:

After reading your April Tuning In, I say Right on! I have had the same experience myself when on trips and trying to get a response by calling 911. I certainly hope they get this problem fixed!

Bob Roehrig
Aurora University Telecom/IS Dept.

Mike's Taking His Marbles Home

Dear Editor:

The fact that you elected to print the letter from David in Pennsylvania with its whining screed against licensed amateur radio operators only serves to solidify the decision I made to not renew my subscription to *Pop'Comm*. About a year ago, I started to get sick of hearing in the pages of your magazine about the so-called "Freeband" and how wonderful its operators are. At that time I decided that when the time came to renew, I would just allow my subscription to lapse, unless of course the editorial tone of your publication were to change. It obviously has not. Everyone who writes in Pop'Comm goes on and on about how courteous the Freebanders are...hogwash. Courtesy and professionalism are not exemplified by calling a group of people "snobs" and "Ham-Clique-Kings" and saying that they have "holier-than-thou, high-horse attitudes." It sounds as if David is jealous of something he will never have without working for it. Freebanding is for those who want something for nothing. Hams had to work for their privileges and should continue to be proud of that fact and resist society's trend today to demand everything for nothing—instant gratification.

It is clear to me that this issue will not get fair and unbiased coverage in the pages of your magazine, so on top of letting my subscription lapse, why don't you just stop my subscription altogether. I'm sure I won't miss the one-sided rants against legitimate, licensed radio operators. You can take the money saved and use it to buy a clue regarding earned privileges.

Mike Cornwall, R. Ph., KB9WQJ

Dear Mike:

I see that somebody needs to hear a happy song before bedtime. After reading your letter I went back through the past 18 months of *Pop'Comm* checking for positive references to Freebanding by our columnists. Now, I'll admit it was a quick check, but unless I missed something, the few favorable comments about Freebanding come from *readers*. Of course we don't print all the letters we get about this hot-potato topic—there just isn't enough space.

You said "Everyone who writes for *Pop'Comm* goes on and on about how courteous the Freebanders are...." Hmmm. Who would that "everyone" be? Not Kirk Kleinschmidt in the "Ham Discoveries" column. Not Alan Dixon in the "On-The-Go" column, nor Rich Arland in the "Homeland Security" column. That leaves a few other columns, from "Broadcast DXing" and "Utility Radio Review" to the "Wireless Connection" column where Freebanding just doesn't fit. So frankly I don't know what you meant by "Everyone," but sometimes people see things I can't.

Mike, I do agree with your comment that hams should be proud of their earned privileges. But my gut tells me that your real gripe isn't merely with Freebanders, it's likely with CBers (and other unlicensed spectrum users), too. They may not have taken a test to get on the air, but then again taking a test doesn't make one a good radio operator, nor does successfully completing a crossword while waiting for your car to be repaired make you a mechanic. It takes work, time, patience, and practice.

Fact Or Fiction?

Dear Editor:

If the CB Freeband is made legal, as soon as radios become available to cover it, it will be just like the rest of CB.

Lawrence Earl

Turning On The Radio!

Dear Editor:

I worked as a paramedic in 1984. A friend and fellow firefighter gave me a copy of *Pop'Comm*—he thought I might enjoy it. I did, and have all of [the issues] for the past 18 years. I don't collect much but I treasure the magazine. I often look up old stories, search for frequencies, and even read Uncle Tom's editorials. Well, when I found out about the 20th Anniversary Contest I had a great time and it only took four hours to answer the questions—not because they were hard but because I enjoy reading the articles over again. We have a very good magazine. You guys may own it but we all make what it is by doing what we do, TURN ON THE RADIO. So tell old "David-I-don't-have-enough-*Pop'Comms*" that I think it should come out weekly. Just kidding, as I know you folks have a life and families, but I could have a few more coffee tables if it did. Oh, and I have two scanners, but one is broken.

It's great to have the old-time radio column back. I miss Alice's column but it looks like Shannon is going to fill the void. Shannon's first column was great. I am looking forward to a lot more from her and I won't start "the picture thing" now. Thomas Hood is always great to read—great choice. Thanks for a very good magazine.

Paul W. Butler Sr., WØGE, Liberty, Missouri

clandestine communiqué

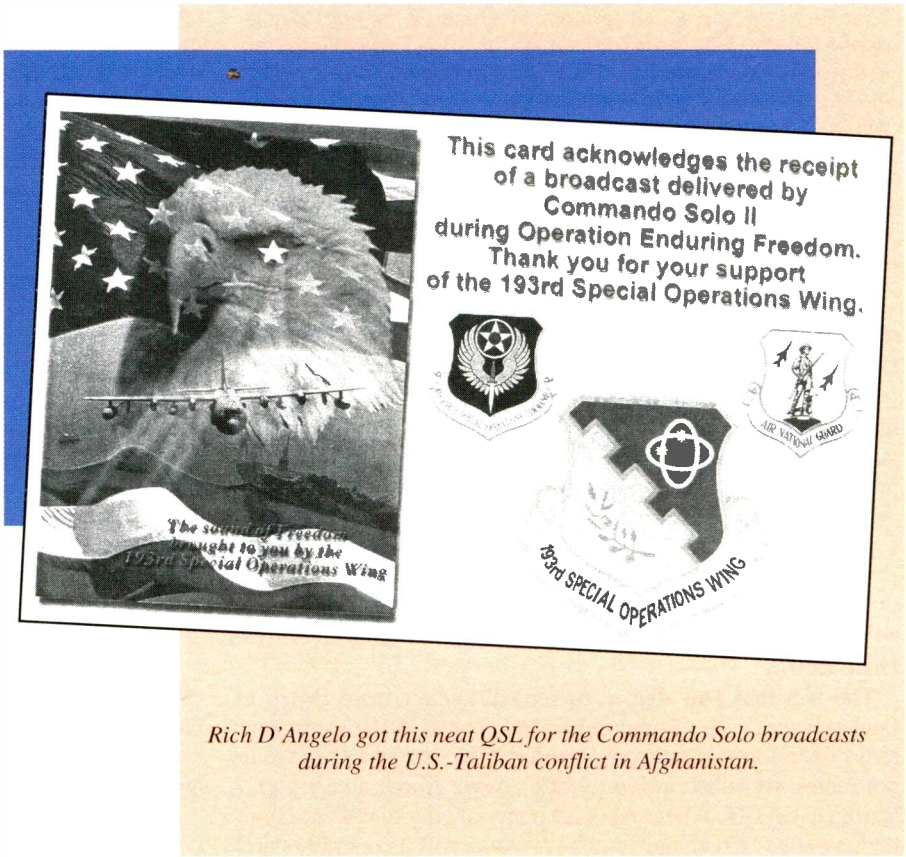
tuning in to anti-government radio

by Gerry L. Dexter

Commando Solo Back In Action!

At this writing the giant U.S. military EC-130 aircraft are in the skies over Iraq dropping propaganda leaflets. Whether the associated Information Radio broadcasts are coming directly from the plane or from some ground location or a bit of each, as was the case with Afghanistan, remains unclear. The Information Radio broadcasts are on the air from 1500 to 2000 on 756 and 693 mediumwave, 100.4 FM and 9715 and 11292 shortwave. North American reception of the high frequency transmissions has been weak and spotty in the East and nil at my Midwest location.

More and more political opposition groups are discovering how relatively easy and inexpensive it is to get their message out via shortwave radio. One fairly new such effort, mentioned briefly last time, is the United Lao Movement for Democracy, now airing **Hmong Lao Radio**, based in St. Paul, Minnesota, and aired via transmitters in Tashkent, Uzbekistan, on **12070** Fridays from 0100 to 0200. You can contact ULMD through P.O. Box 2426, St. Paul, MN 55106.



Rich D'Angelo got this neat QSL for the Commando Solo broadcasts during the U.S.-Taliban conflict in Afghanistan.

New Star News, And Another Taiwan-Based Station

The endlessly fascinating New Star Broadcasting Station, believed to be beaming music and coded numbers from Taiwan to Mainland China is now using these frequencies: **8300** (designated as "channel 4"), **9725** (designated as channel 3), **11430** (channel 1) **13750** (channel 5) and **15388** (channel 2). As we've noted before, North American listeners can hear this one from time to time, although there is no specific schedule. The station is on for 15-20 minutes each hour and is heard during our morning hours.

Another Taiwan-based clandestine beamed at the mainland is the **Voice of China** with Chinese language broadcasts from 2230 – 2330 on **7270** and 0800 – 0900 on **11940**.

Clandestine Target: Saudi Arabia

For the first time in my memory Saudi Arabia has become a clandestine radio target. **Sawt al-Islah**, or **Voice of Reform**, is operating on **7590** and/or **9930** from 1900 to 2000, including some English. That hour-long schedule is rather loosely followed, as the station has been heard as early as 1845 and as late as 2130. The broadcasts suffer from some jamming and are believed to be via the Kvitsoy, Norway, site used for Norwegian domestic radio relays, Radio Denmark, and Democratic Voice of Burma (and likely more to come). The address for this one is MIRA, B.M. Box: MIRA, London WC1N 3XX, England.

One of my personal favorites, the **New Star Broadcasting Station**, is said to have scaled back its operations so that technical improvements can be made to its facility, supposedly in Taiwan. Perhaps we'll hear this one at somewhat better levels in the near future. Frequencies to watch are **8300, 9725, 11430, 13750, and 15388** around 1300, 1400, and 1500 for musical opening and Chinese number groups.

Another clandestine is about to acquire legitimacy. The Sri Lankan government has granted rebel group Liberation Tigers of Tamil Eelam (LTEE) permission to import radio broadcasting equipment. This is part of the fallout from an agreement between the government and LTEE to end the latter's two-decade struggle for independence. The move has caused no end of controversy and condemnation by other opposition groups. It's doubtful that Voice of the Tigers was ever logged in North America due to its very low power and a time/frequency combination not amenable to reception here.

Clandestine Catches

Richard D'Angelo of Pennsylvania has a very nice crop of clandestine logs he's

made over the past month or so. Let's see what he got:

Voice of New Sudan, 6985 heard at 0350 with open carrier, group vocals to big Ben like chimes at 0400, opening announcements and ID in Arabic, and then talks about Sudan and music.

Payam-e-Doost Roost Radio, 7460 from 0226 with open carrier, Russian site test tones, fanfare, and woman with clear "Payam-e-Doost ID and talks in Farsi. Website was mentioned as <www.BahaiRadio.org>. Off without an ID at 0315.

Radio Barabari, 7470 via Lithuania at 1706 with long talks in Farsi and brief music segments. Several nice IDs during sign-off routine at 1728.

Voice of Freedom/Free Patriotic Movement of Lebanon, 11515 at 1615 with mostly music and short Arabic talks. They gave an e-mail address as <radio@tayyar.org>. Signed off with orchestra music at 1700.

Voice of the Islamic Revolution in Iraq, 7100 at 0326 sign on with instrumental music, ID, and marches. Then into the Koran and brief talks and music segments. News at 0350. Also on parallel 9535 with heavy QRM.

Presumed **Radio International, 7460** at 0225 sign on with familiar Russian test tones until instrumental music at 0232 and man in presumed Farsi, then a mix of talk and music until sign off at 0415.

Radio Solidarity on **15275** at 1600 sign on with brief music, woman announcer with ID and news in the Tigrean language. Then flute music at 1606 and a long talk at 1608. The carrier was terminated in mid-song at 1629.

Hmong Lao Radio, 12070 (see above) at 0132 with traditional music and man announcer in presumed Hmong between selections. Apparent ID and sign off announcement at 0159, brief flute IS until carrier was cut at 0200.

Voice of Biafra International, 12125 at 1914 with political talk about Nigeria (in English). Nigerian vocal, ID, and a discussion about the Nigerian president.

Nice work! How about you joining in the clandestine hunting and reporting? Your logs are always very welcome, as are QSL copies, station schedules, address or website/e-mail information—whatever you run across relating to the clandestine broadcasting scene! Until next time, good hunting! ■

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loose connection

radio communications humor

by Bill Price, N3AVY <chrodoc@earthlink.net>

A Visit From Norm

I'd like to share with you my poem about the rejuvenation of nature: Spring has sprung; the grass has riz—I wonder where old Normie is?

To be sure, I know where he is: he's in New England savoring the end of what may be his last miserable cold season and awaiting the onset of his last miserable mud season—something that we in Cowfield County, Virginia, live through each year as well.

I know his whereabouts because even though I've never strung an antenna here in the Old Dominion, Norm has discovered e-mail through his account at work (you didn't think he'd *pay* for it, did you?) and now avoids making any long distance calls at all. I can just hear the glee in his heart when he types to me "and it's *free*! It's not even *my* computer!"

Norm, for those of you who don't know him from previous columns, is a true and great friend. A guy you'd want next to you in a foxhole (if you even know what a foxhole is). And if you could tolerate a little interference to your broadcast radio and TV, he'd make a good neighbor as well—particularly if you'd let him run his guy wires into your yard and if you thought towers were, uh, beautiful to behold.

Another reason I know Norm's present location is that he's planning his occasional pilgrimage to visit me, my wife, and a lot of his "stuff" that he's left here for various reasons, mostly that his car is overloaded as he passes through.

We prepare for visitors and guests in different ways. For instance, when we thought that Princess Margaret was dropping by (I believe she has horses stabled nearby) we top-dusted everything, put some fresh gravel over the mud in the driveway, and vacuumed and fluffed the throw-pillows on the sofa. When Bill Gates was thinking of coming for a weekend, we cut down all the apple trees to keep him from getting upset. With Norm, it's not like that at all.

I remember one Thanksgiving when Norm joined us. Norm is a bit to the right of center, politically, so we took our turkey right from the supermarket to the nearby vet to have its left wing carefully removed and re-attached on the right side. That Norm wouldn't have to look at a left wing—it always gets him started.

Poor Norm is allergic to cats, though, and we have two who share the inside with us. Because the weather will be warm, they can spend the days outdoors while Norm is here, but we know that as a veteran sneezer, he will know they have roamed the house all winter.

Laying in a good stock of food in the larder is never difficult for Norm, and for that we thank our lucky stars. So long as we remember that he DOES NOT like anything that even resembles mayonnaise or sour cream, we're in good shape. And true to his kind, generous nature, he always sees to it that he takes "Me and the Mrs." out for a nice meal at one of our nicer local eateries.

"...I really don't want to string an antenna up to the top of that 200-foot silo behind the big barn."

I must always dig out some of my ham radio gear and sprinkle it liberally around my "office," which doubles as a junk room, harmonica repair shop, home for the ratties (Rattie and Gladys), and my library. Because Norm is a guy, I don't have to neaten the place up any (though I will give the ratties' cage a good cleaning) because I have spent time in Norm's apartments in the past. Even *he* is neater than I am.

One of the tougher parts of Norm's visits is convincing him that I really don't want to string an antenna up to the top of that 200-foot silo behind the big barn. I always defer to the landlord, telling Norm that he doesn't allow any wires strung around this part of the farm because of the lightning hazard. Norm always offers to intervene for me, offering to give our landlord plenty of evidence showing that there will be no increased danger to any of his structures due to the addition of wire antennas. So far, though, I've kept them apart. The truth is that my landlord wouldn't care if I made a giant parachute ride where we could take a death-defying leap from the top of the silos and float down as we "hit the silk," just so long as we didn't try to hold him liable.

"Even he is neater than I am."

The latest event in Norm's life is that he has just completed a course of study that makes him a qualified herbalist, or botanist, or zoologist, or someone who heals people by unconventional (non-traditional) means. My dear wife Shannon (not her real name, which is Sharon) is well versed in non-traditional or "alternative" healing, as she is a certified massage therapist as well as a certified practitioner of many other healing modalities. She has always been able to laugh at "crazy Norm and his radios," but now the worm has turned. Norm may spend all his time visiting with her, discussing this modality and that herb, and I may be left to eat frozen leftovers as they sit up till the late hours discussing the benefits of catsclaw, or goat's foot, or horse' petoot and the methods of dosing and administering. By the time they're done, I may find myself begging him to help me put up an antenna, like in the good old days.

And so that you, dear readers, are not left out, feel free to write me in 37 words or less why YOU might like to have Norm visit for a few days. We'll run it by the legal department and, if it's okay, one of you lucky readers might just awake to find Norm on your couch for a long weekend. ■

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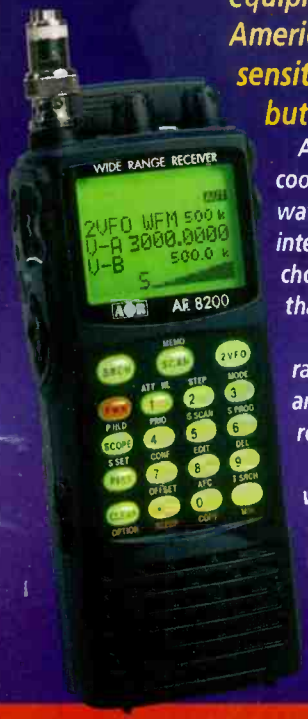

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