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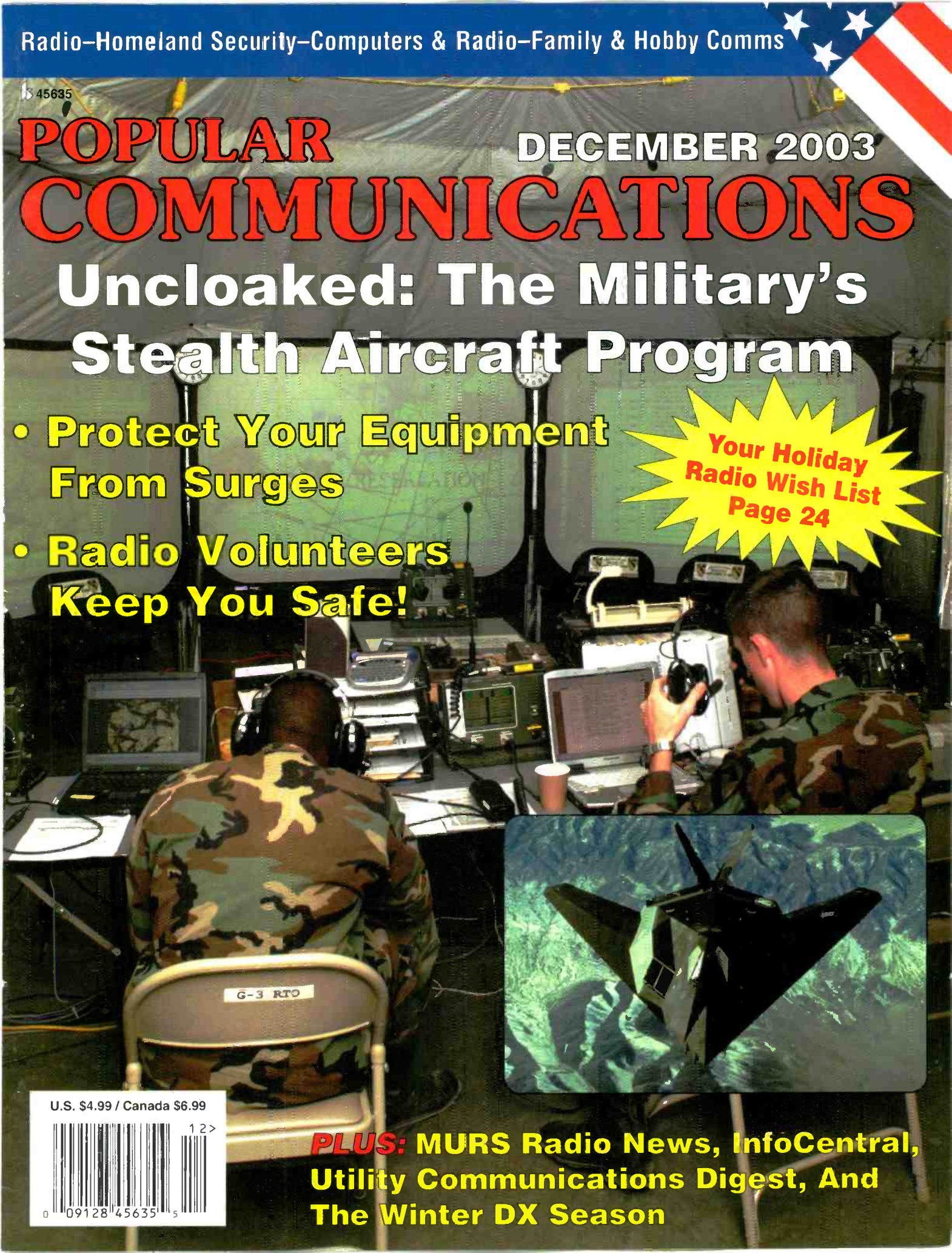
POPULAR COMMUNICATIONS

DECEMBER 2003

Uncloaked: The Military's Stealth Aircraft Program

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**Your Holiday
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Page 24**



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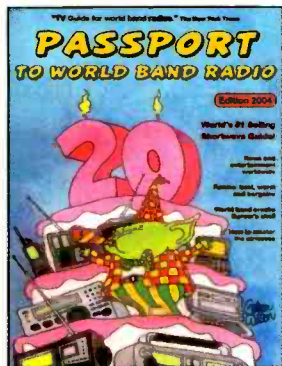
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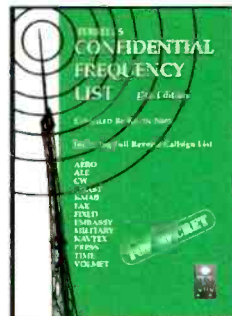
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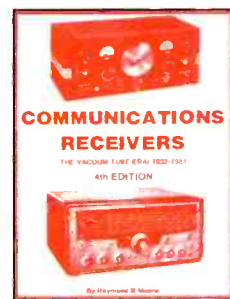
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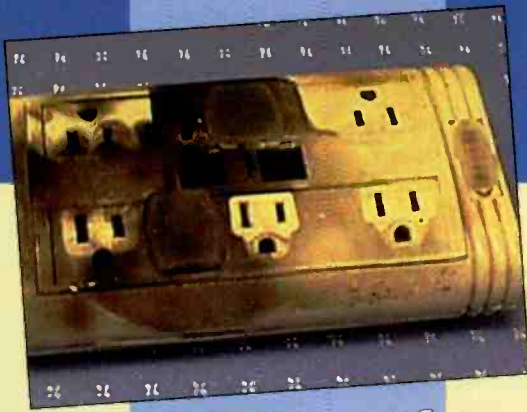


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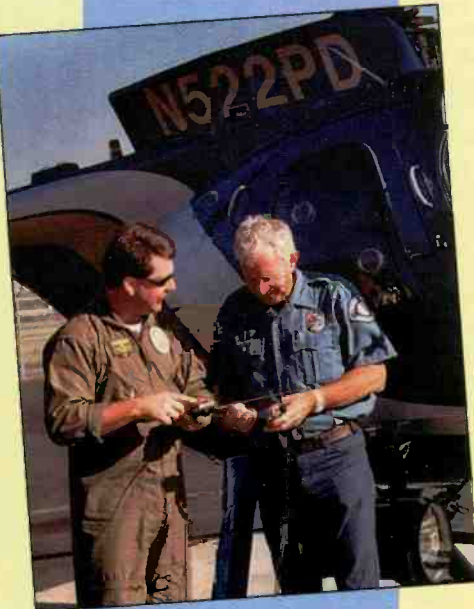
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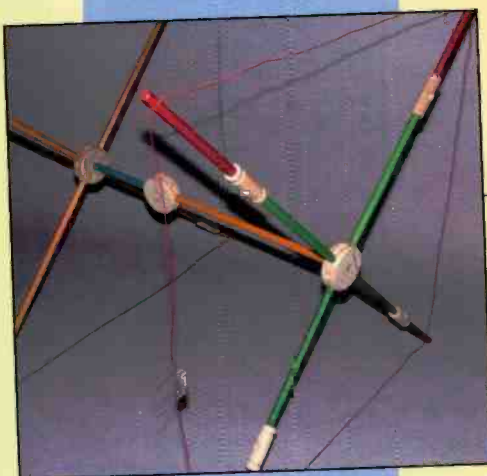
On The Cover

Tracking the "war"—and perhaps stealth aircraft at the National Training Center, Ft. Irwin, CA. This month's "Utility Communications Digest" takes you inside the super-secret world of black-project aircraft programs. (Photo by Larry Mulvehill, WB2ZPI)

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- High speed .0001 second gate time
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Happy Holidays: Survey Results Pour In!

First, a very sincere Happy Holidays to each and every one of you—and thanks for being part of our success over the years. I can think of no better way to thank the many hundreds of you who continue to respond to our monthly surveys than to dig into the mailbag and reward four of you with a free one-year gift subscription (or extension) to *Pop'Comm*. So, even before we get into the nitty-gritty of what you've been telling us, here are the four winners: Walter Sorenson of Massachusetts; Stu Tyler of Virginia; Don Sanders of Indiana; and Paul Anton of Michigan

Congratulations to each of you! Don't forget that your monthly survey cards are looked at very seriously here at *Pop'Comm*, where we take many hours each month to compile the data and put it into a meaningful article for you—and our advertisers. So here are the results we've been promising you.

Each month we get an average of 120 survey cards from our readers; certainly a sufficient number to give us an excellent idea of how you use your radio to not only have fun, but learn something in the process. Speaking of learning and staying on top of events, we recently asked you about your main source of news and information (beyond the neighborhood gossip!). Of the 122 folks responding to the survey, 48 percent said the good old network TV news was your main source, while about 30 percent said the newspaper was your "number one" source, followed by the old standby, shortwave radio, which netted about 28 percent. As important as the Internet seems to be these days, only about 13 percent of you said it was your main source of news and information. Foreign TV news shows and overseas satellite broadcasts both numbered quite low, about three percent; news magazines were only slightly higher.

The Computer And Your Radios

Regular *Pop'Comm* readers know that Joe Cooper is Mr. Computer. His

"Computer-Assisted Radio Monitoring" column is becoming ever more popular as more of us learn how to merge both technologies into what would only be described as mind-boggling 20 years ago. Anyone who remembers the days of 10-channel crystal scanners and typewritten frequency lists at your local radio retailer (they were as valuable as gold!) should, in my opinion, should be embracing the technology. Computers can turn a 500-channel scanner into a mega-speed monitoring machine that stores and retrieves more information than we ever thought possible a few years ago.

"Apparently the computer is indeed catching on in our radio hobby, and about 52 percent of you reported using a computer in conjunction with your radio monitoring."

Apparently the computer is indeed catching on in our radio hobby, and about 52 percent of you reported using a computer in conjunction with your radio monitoring. But, for whatever reason, another 45 percent of you reported not using the computer with your radios. The data is further broken down as follows:

Eleven percent report using a computer to control receiver functions; 63 percent report not using it to control receiver functions; 11 percent report "sometimes" using it to control receiver functions; and 12 percent report they're not interested in that aspect of the hobby.

We also asked you if you use a computer to store and manage frequencies and data: 33 percent said yes; 34 percent said no; 14 percent said sometimes; and 21 percent expressed no interest in using the computer, as they were happy with a pen and notepad.

On The Road Again

Frankly, you can never tell when you or a family member will need a mobile or

(Continued on page 78)

POPULAR COMMUNICATIONS

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Surge Protection: Separating Myth From Fact

You've Got More Electronics Than The Entire Neighborhood— Here's How To Protect It

by Harold Ort, N2RLL, Editor

Take a couple of minutes and look at all your radios, switching power supplies, computers, and home entertainment equipment. Chances are you've got a lot more invested in electronics than you may realize. I know you'd miss all those radios if they suddenly got fried—even more so if their loss *could have* been prevented. Fact is, unlike what many folks believe, surges or spikes are the norm, not the rarity. But you can protect your investment.

The Basics: How And Why Surges Happen

A surge, also known as a "spike" is a very short-duration—lasting only a fraction of a second—fluctuation in voltage that can reach thousands of volts (and amps or current!). Some causes of surges include large appliances or nearby heavy equipment switching on and off, power sub station and transformer problems, and, by far the major cause of surges, lightning strikes.

Today most electronic devices and household appliances are microprocessor controlled, making them very sensitive to surges. We'll only cover surges entering your equipment through the electrical mains, *not* direct lightning strikes, which, while devastating and usually life-threatening, is a topic we'll explore in a future issue, including proper shack grounding techniques and protection.

Surge Protection

Surge protection devices, or suppressors, use one of three basic methods to clamp the spike:

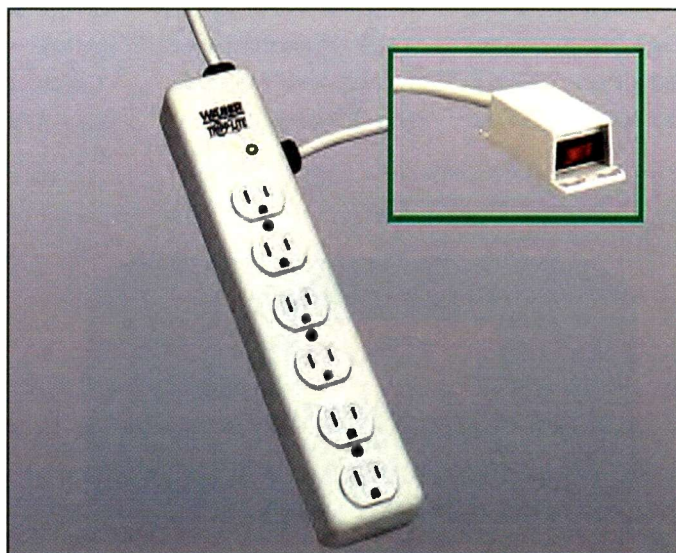
- gas discharge tube
- metal oxide varistor (MOV)
- solid-state semiconductor

Underwriter's Laboratories calls surge suppressors "transient voltage surge suppressors" and they also test manufacturer's suppressors, so make sure you see either the UL or other safety testing label on the box or suppressor itself. (One company we looked at, ZeroSurge actually went a step *beyond* the standard "UL 1449" certification to receive the UL 1449 Adjunct certification).

Most of the power strips you'll find at the hardware, electronics, or office supply store use MOVs, which frankly offer



Here's Tripp Lite's Isobar4Ultra that includes "multiple layers of metal oxide varistors," a 2200-joule rating, all metal housing, and status LEDs. It sells for \$89.95



The Tripp Lite DG115-SR Waber-by-Tripp Lite Surge Suppressor has six power receptacles, a 600-joule rating, metal housing, and a 15-amp resettable circuit breaker. It costs \$64.48.

little protection and can be instantly fried, leaving your equipment vulnerable. Your best bet is to find a surge suppressor that offers both thermal and surge protection in one strip or box; one with a silicon avalanche diode is best and does a good job of clamping the surge voltage.



This Brickwall 2R15 suppressor is a steel cabinet, two-outlet, series surge reactor current limiter device with 172-volt (nominal) clamping rating. It costs about \$170 from Brickwall at brickwall.com. Their website says, "Surge Protectors That Will Not Fail."

The fact is that surge suppressors don't suppress the spike or surge, they protect your equipment by diverting the spike to ground. MOV surge suppressors are a lot like electrical pressure valves; too much pressure and the extra surge is diverted to ground at your electrical outlet.

More expensive and longer lasting suppression technology uses inductors that essentially soak up surges and then slowly release the energy. But as you might expect, most folks buy the less expensive MOV technology-based suppressors

Pay Now, Or Pay Later— Your Choice

The old expression is a *perfect* advertising phrase for surge protection manufacturers. Not having surge protection on your appliances and equipment is like not checking the backyard for small, but dangerous lawn tools or kid's toys before you mow; sooner or later you'll wish you had taken five minutes to do the smart—and safe—thing!

What *can* you do? The short answer, plenty. But, like anything else, don't just go through the motions with some half-baked protection thinking you've done your best.

One of the more expensive and perhaps better surge protection routes is to have whole-house protection. MCG Surge Protection, founded in 1967 and specializing solely in the design and manufacture of AC power line, data/signal/telephone line, and DC surge protectors, offers such coverage.

"The investment the so-called 'hobbyist' makes in sensitive equipment can be quite sizeable," says Christine Jelley,

Residential customers who require industrial-grade protection are well-guarded from surges, transients, and lightning with MCG's Model 40, a low-profile suppressor offering whole-house shielding. The Model 40 retails for \$360.



CEO of MCG. "We advise installing MCG Model 40 AC Power Line Protector directly at the service panel to provide 40,000A of rugged protection. The units are fully monitored and meet or exceed ANSI IEEE C62.41-1992 and UL 1449, 2nd Ed. specifications."

Another approach you can take is to contact your electric utility about having

a meter-based surge protection box installed at your home where your electric service enters the building. The service could include several smaller plug-in suppression devices for your use as well. Typically the cost is from \$6 to \$10 a month with a one- or two-year contract, plus a \$30 to \$60 one-time installation fee. Simple math then, for a five-year

Specifications And Terms You Need To Know

Enter the often-confusing world of specs and jargon, but it really *isn't* as complicated as the engineering world and manufacturers would have you believe. Here's a selection of some of the more popular surge suppression specs to help you make an intelligent buying decision.

Clamping Voltage: This is the voltage-limiting capability of the device. It's the voltage that will be allowed to pass on to your equipment after a surge is clamped or diverted. A number you'll find quite frequently is 330 volts. It's part of the UL standards, but just remember, the lower the better.

Response Speed, or Speed of Response: In the real world, not a very valuable figure, but you'll see it on some packages. Surge suppressor technology is, for the most part, the same and the need for faster response times is, in reality, unnecessary.

Joules: The higher the value, the more the device can handle without damaging itself. Values range from 100 to 1000 joules. Trouble is the figure is sometimes based on wiring combinations in the protection device, so are you seeing *total* joules or a combination of the wiring? A rating of 600 or higher is fine, but buyer beware: Sometimes manufacturers using MOVs will use multiple MOVs in their unit, giving a high joule rating. Consumers, seeing the higher number think they're getting additional protection. If one of those MOVs goes, you're in trouble, and so much for the manufacturer's claim. You're better off checking out the "maximum surge current" rating for a protector.

Maximum Surge Current: This figure can be several hundred to several thousand amps. Simply put, it's a measure of the protector's ability to handle surges without damaging itself. Lower values are fine, but if a higher value gives you a little more mental comfort, go for it.

Three-Line Protection: Hot, neutral, and ground lines are all protected against surges.

Internal Protection: What happens to the output (load) side of the protector (does it cut off power or are you still protected?) in the event of a surge if the internal elements are damaged. Is there a cut-off and reset feature on the suppressor? You probably want a surge suppressor that incorporates some sort of circuit breaker or fuse, just in case.

Guaranteed Protection: Life, death, and taxes are guaranteed, so be sure to read the fine print. This is a simple measure of the company's confidence in its suppressor.



ZeroSurge's 6000-volt, 3000-amp generator getting ready to—literally fire up a consumer-grade suppressor.



Ionel Stefan at ZeroSurge assembles 2R8 surge suppressors for field testing.

period, for example, could cost \$100 a year for a total of about \$500. You do your own math when it comes to replacing most of your electronics and appliances in the event of a major strike and surge. It's important to remember that this sort of protection is adequate if your appliances and equipment are "one-link," meaning they're just connected to the electrical circuitry of your apartment or home. If they're "two-link" appliances (such as a computer, TV, VCR, etc.), they're also connected to an outside antenna, cable, or telephone line.

Yet another protection method is to purchase—through your electrician—circuit breaker snap-in surge protectors. You'll probably find that you'll need to replace your existing panel/box because these snap-in protectors typically only fit in a box from the same manufacturer.

Your easiest solution is to check out the variety of brands of surge protectors—either small single-unit plug-ins or others that allow you to plug in from one to as many as six or eight appliances. You'll find that some even come with telephone/modem or cable protection. This is an important feature to look for because

your equipment isn't protected from surges if it's also connected to the phone line and your protector doesn't include the "in/out" phone receptacles (or even cable connectors for your cable TV). Many units include a fuse of sorts that completely shuts down output power to your equipment. Make an intelligent decision based on your individual needs, not what a salesperson wants to sell.

Be sure you read the manufacturer's instructions for your surge suppressor because each one is different and offers a different level of protection. And what about those green, red, and yellow lights on the surge protectors? Since there's no industry standard, these pilot lights might mean one thing on one suppressor and something else on another unit.

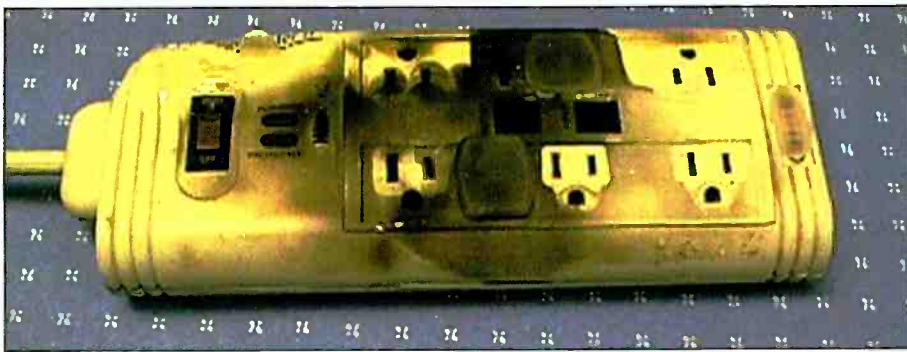
Speaking of standards and how the public is sometimes lulled into a false sense of security, I recall a print ad from RadioShack that advertised a power strip on sale for \$24.99. The ad talked about those failure-prone MOVs saying, "as good as they are, surge protectors don't last forever. Inside each one are components called MOVs. Each time an MOV does its job and diverts a surge, it also uses

up some of its ability to protect. Eventually, all MOVs wear out, leaving your equipment unprotected."

Hmmm, I'll say. Fact is, though, MOVs are not used inside all surge protectors—at least the better ones—and yes, they *are* failure prone. But quality surge suppression doesn't always use MOVs, and, in fact, you're far better off without MOVs in your surge suppressor because it can result in more than damaged electronic equipment, it can be downright dangerous, causing fires.

Better Protection— ZeroSurge's Technology

Better protection is offered by what's known as series-mode designs in surge protection devices. They clamp the surge almost instantly, unlike fuse-designed suppressors, which are slower and failure-prone. One such manufacturer, ZeroSurge of Frenchtown, New Jersey, has a complete line of suppressors using series-mode technology. I visited the ZeroSurge Company and after company president and chief engineer Rudy



Here's something you don't want to see in your home or office. This is what's left after a surge took out this surge protector. It can happen if MOVs go into a "thermal runaway" condition. Best to buy a quality protector!



Here's a look at ZeroSurge's 8R15 Tower. It will be available with patent-pending Spectrum WVR (Wide Voltage Range) technology and can operate over a voltage range of 85 - 265 Volts - truly revolutionary! Cost of the 8R15 Tower is \$199.

Harford gave me the grand tour, he demonstrated how his suppressors are different from consumer-grade surge strips—many of which use MOV technology. Connecting a competitor's suppressor to a large 6000-volt, 3000-amp surge generator, Harford turned on the machine and the voltage climbed, as observed on a lighted meter. Then, zap! The volts and amps went far beyond a normal surge, a loud crack was heard as the suppressor failed to clamp the spike. Of course this was a worst-case demonstration, but fact is, had this suppressor been connected to my equipment, I'd be a sad camper, indeed.

The bottom line on protecting your equipment from powerline surges/spikes is how much protection makes you feel comfortable. It's a lot like buying insurance; you often don't know what you need until it's too late.

For more information on surge protection devices visit <http://www.nema.org>, for info on power quality check out <http://www.epri-peac.com>, and to learn more about lightning see <http://www.lightningsafety.com> and <http://www.lightningstorm.com>.

Surge Suppressor Manufacturers

Brick Wall: Brick Wall Division, Price Wheeler Corporation, 3800 31st Street, San Diego, CA 92104; Phone: 619-544-8390; E-mail: info@brickwall.com; WEB: www.brickwall.com.

EFI Electronics: EFI World Headquarters, 1751 South 4800 West, Salt Lake City, UT 84104; Phone: 800-877-1174; E-mail: efi@efinet.com; Web: www.Efinet.com.

MCG Surge Protection: MCG Surge Protection, Inc., 12 Burt Drive, Deer Park, NY 11729; Phone: 800-851-1508; E-mail: sales@mcgsurge.com; Web: www.mcgsurge.com.

Tripp Lite: Tripp Lite World Headquarters, 1111 W. 35th Street, Chicago, IL 60609; Phone: 773-869-1111; E-mail: saleshelp@tripplite.com; Web: www.tripplite.com.

ZeroSurge: ZeroSurge, Inc., 889 State Rt. 12, Frenchtown, NJ 08825; Phone: 908-996-7700; E-mail info@zerosurge.com; Web: www.ZeroSurge.com.

Start with the basics. Are your electrical outlets the three-prong type with proper ground? Because surge protectors work by diverting the excess voltage in a spike to ground, the device is useless if grounding isn't done properly. Beyond electrical surge protection, are your antennas and shack equipment properly grounded?

My advice would be not to buy the least expensive surge protector strip or plug-in. Instead, speak with the manufacturer, read the fine print and buy quality. And, if possible, stay away from MOV technology. If you do, know that you should buy a protector with status lights so you'll know when it's time to replace your suppressor. So, what are your surge suppression requirements? With all that expensive equipment, I'll bet you don't want a simple power strip with extra outlets for your equipment. Real protection for your expensive gear is worth it in the long run.

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- Built-in antennas for complete portability and socket for supplementary Shortwave antennas
- Includes AC adaptor, earphones, carrying pouch, supplementary Shortwave wire antenna, and batteries

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Key features include:

- Signal strength and battery power level indicators
- Digital clock with selectable 12/24 hour clock display format
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- Alarm with snooze feature and 10-90 minute sleep timer
- Includes built-in antennas, sockets for supplementary Shortwave and FM antennas, earphones, and optional AC adaptor

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Key features include:

- Multifunction LCD shows digital frequency, clock, and more
- Alarm and 1-90 minute sleep timer
- Variable, independent bass and treble controls
- Left/right line-level outputs (stereo in FM)
- Includes built-in antennas, sockets for supplementary Shortwave and FM antennas, convertible nylon handle/carrying strap, earphones, and optional AC adaptor

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Requiring no external power source, the FR200 is a versatile multi-purpose tool for keeping informed, entertained, and safe. Combining AM/FM/Shortwave radio and flashlight in one, the FR200 operates without batteries – powered by its built-in hand-crank generator – allowing you to listen to news, music, and international programming from anywhere, including places where power is a problem.

Key features include:

- AM/FM/Shortwave Tuning (SW1, 3.2-7.6MHz; SW2, 9.2-22MHz)
- Hand-crank power generator recharges internal Ni-MH battery
- Built-in flashlight perfect for emergencies or camping
- Splash-proof ABS cabinet withstands your adventures and abuse
- Can also operate on 3 AA batteries or optional AC adaptor

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Selling Your City On Radio Volunteers

Throughout the United States every city has a plan for the emergency radio volunteer. Some are so much better than others and totally embrace volunteer emergency radio volunteers, while others may recognize a county plan for the radio volunteers, but seldom work close enough with them to ever consider their free service. Still others may perceive no need for radio volunteers and will place them well behind the yellow police or fire tape.

At the high end of the acceptance spectrum, it appears that small rural cities and municipalities regularly work radio volunteers into many of their emergency preparedness programs and always use their assistance whenever an incident warrants wireless help. The remote areas of the Midwest rely heavily on ham radio and CB radio/GMRS operators to update local officials on what is happening on the outskirts.

Larger cities may have a modern UHF trunking radio system for their municipalities, but realize the benefit of radio volunteers to help out during community events. Charity walks, 10-k runs for kids, parades, and bicycle charity rides may enlist the radio operators for their assistance. But police and fire departments might not even know this resource is available to them.

Very large cities are so busy with their multiple outreach programs that they just don't have the staff or budget to manage all these radio operators who are constantly bugging them to use their wireless talents. Even though many of these ham and CB radio groups have provided their own training, their own uniforms, and their own radios, the big city just can't seem to come up with a plan to get them placed in the disaster preparedness picture. So we've got all this talent going to waste.

The Good News

Recent federal programs and grants now encourage cities throughout the United States to work closer with their volunteers for disaster preparation and



This inexpensive FRS radio is popular with local CERT teams.



Hams and REACT team members use GMRS for increased range.



Amateur Radio emergency service volunteers serve their local Red Cross chapter.

mitigation. "You are there. You are part of that very, very first response when it happens locally," said Citizen Core Liaison to the White House, Liz DiGregorio, speaking of volunteer radio operators and licensed ham operators.

"We also want to help prepare every citizen across the country before disaster strikes," said Emergency Preparedness and Response Chief Operating Officer, Ron Castleman, Federal Emergency Management Association. FEMA is promoting the formation of local Citizen's Corps Councils and will assist these councils with education, training, and volunteer service opportunities "that support first responders, disaster relief organizations and community safety efforts..."

To see for yourself how important FEMA regards volunteers and radio responders, go to their website at www.training.fema.gov/emweb/cert. The letters "CERT" stand for Community Emergency Response Team, and it represents one of the first steps a city may take to recruit radio volunteers into a city-run training program with funds coming from FEMA. CERT is a relatively easy sell to your local city disaster specialist because of grants and the emphasis on CERT put forward by FEMA.

The CERT program specifically calls for trained radio operators. "Ham and CB radio links also may be used to increase communication capabilities and coordination," according to page xvii of the *Participant CERT Training Handbook*.

The CERT program can provide an effective first-response capability. Acting at first as individuals within their own families, then later as members of teams, participants use their CERT training to fan out with their radios in a particular area. They're trained to report damage, extinguish small fires, turn off natural gas inlets to damaged homes, perform light search and rescue, and render basic first aid. The radio equipment on their belts or on battery packs at home is a valuable asset members bring to their teams.

CERT training is given by emergency personnel, including firefighters and emergency medical services personnel on your city or county staff. This worthwhile program consists of 17 1/2 hours of training and emphasizes hands-on practice in the following segments:

- Disaster preparedness
- Disaster fire suppression
- Disaster medical operations—Part 1
- Disaster medical operations—Part 2
- Light search and rescue operations

Disaster psychology and team organization
Disaster simulation exercise

If you enter a CERT training program, upon completion you would receive a certificate and a card that identifies you as an emergency response team member during disaster response. As a radio operator member of this CERT team, you will carry additional responsibilities and probably a distinctive communication yellow vest to denote your added responsibility.

Almost every city has a disaster preparedness specialist—a person you need

to contact and ask when the next CERT class is being formed. Tell them you have two-way radio buddies who will be taking the class, too, and I am sure they will welcome your participation.

Licensed radio amateurs will also take the Level 1 Amateur Radio Emergency Communications course, offered on-line as a certification and continuing education program by the American Radio Relay League. The American Radio Relay League (ARRL) now is an official affiliate program of Citizen's Corps, an initiative within the Department of Homeland Security to enhance public

One Radio Does All—The Inside Scoop

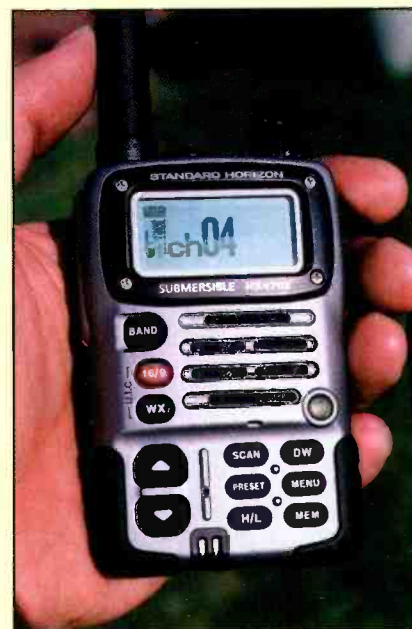
The FCC has granted approval for Standard Horizon (Vertex/Yaesu) to release their multi-service, dual-band handheld for sale, the new HX471. And if you immediately hit your local marine electronics supplier, you might be able to score one of the first-production models.

Its predecessor, the HX470, was first previewed almost a year ago at the Miami Boat Show. Most everyone figured it was just another marine VHF handheld. Yes, it was indeed a marine VHF handheld, but it also offered the marine digital selective calling emergency feature, plus FRS, MURS, and AM/FM broadcast! The radio could download a GPS position and then send it as a distress or general call datagram on VHF Channel 70 (156.525 MHz) to other DSC-capable radios. At the time, the crew at Standard Horizon made it quite clear that any mention of the HX470 should identify it as a concept radio, indeed capable of doing all of these different radio services, but subject to FCC approval before it could be offered for sale. Unfortunately, it didn't receive that approval. I suppose the FCC may have hit a snag when the company included five channels of Multi-Use Radio Service programmed in a radio that also included all of these other bands.

The FCC has, however, given its approval to the HX471. This new dual-band, quad-mode radio can do all Family Radio Service channels, all marine VHF channels (it will even survive underwater for 30 minutes!), weather alert reception on all VHF weather channels, plus AM and FM broadcast band reception. It also tunes AM aircraft frequencies.

As it turns out, the model hitting the shelves this holiday season is the HX471 *without* the built-in five channels of multi-use radio service. I was informed that all those original products were absolutely forbidden for sale in the United States. But down at the local marine electronics store, a few (a hundred maybe? Possibly built for export?) models have been turning up at the bargain table "as is" for "spare parts."

Good places to try your search would be Consumer's Marine Electronics (800-332-2628), Boater's World (800-826-BOAT), and West Marine (800-BOATING). All three of these stores will be selling the new HX471 shortly, and maybe you can get a line on any of the original sample units available "as is" for "spare parts."



Here's a look at what's perhaps the ultimate radio. It can do FRS, GMRS, MURS, marine channels, plus has weather alert.



Paul and Diane Hill were first in their county to establish a CERT neighborhood watch FRS radio net.

For more information, e-mail Dan Miller at www.arrl.org/cce or call 860/594-0340. You can also contact the Certification & Continuing Education Program Coordinator, Howard Robins, WIHSR, at hrobins@arrl.org.

You do NOT need to possess an amateur radio license to be a member of the ARRL. Associate membership and signing up for the course should get you a seat in the class.

Class is given via computer and there is also a course book. Dan Miller, K3UFG, of the ARRL has created an emergency communications course program that will not necessarily require you to become computer-bound every evening. In fact, you can even challenge the final exam just by reading over the book. But you'll get a lot more out of the course by going online and working around the different ARRL sites to better understand how to pull information in an emergency off of specific web locations.

What About REACT?

CERT communicators might also be respected REACT members. REACT teams have accomplished an extraordinary marriage of GMRS, FRS, business band, and ham radio. Saddleback Valley (California) REACT (www.saddlebackvalleyreact.org) has a new tri-fold brochure entitled, "Using Your FRS Radio in an Emergency." It talks about the importance of Channel 1 as a call channel when something big happens in the community and a CERT team may need to be formed.

Well-known emergency radio communicator Robert Leef (www.rkleef.com) has authored a paper entitled, "Is Your Neighborhood Communicating?" This is another great tool for CERT members to encourage neighborhoods to equip themselves with inexpensive FRS equipment. Combine this information with recent three-part articles in this magazine on how to license yourself as a GMRS operator and hook up to FRS Channel 1 with an outside antenna and 5 watts of power. You now have a good idea how to put a top CERT team command post on the air with one big, monster signal! Also, look up the hot FRS site, at www.F-R-S.org, and you can read all about local neighborhood communications on FRS Channel 1.

All these wireless tricks will be sought after by your city disaster preparedness specialist. When the news that you have them finally trickles down to the police and fire departments, they may realize all those radio operators who drove to that last scene do indeed have some specialized equipment and operating skills to add to the picture. Best of all, no money comes out of the budget and a CERT program grant takes care of the costs! And when *everyone* on staff sees the quality of the individuals carrying these different types of radios, they will quickly see that radio volunteers indeed have a place in their emergency communications operating handbook.

Your Move

So get started with a question to your local jurisdiction about who is in charge of the CERT program or the city disaster preparedness plan. Whoever that person is, he or she will certainly understand the importance of getting a program going using the volunteer radio operators in connection with, or comprising, a Citizen's Emergency Response Team.

Now go and log onto those websites and see all the information there is on how to put this plan in action! Let me know your results so we can report on them in this column. ■



Ham operators, like columnist West, team up with CERT members for a lost child search exercise.

preparedness and safety. As an affiliate, the ARRL will be linked from the FEMA and Citizen's Corps website, at www.fema.gov/nwz03/nwz03_138.shtm, and can, of course, be accessed through its own site at www.arrl.org.

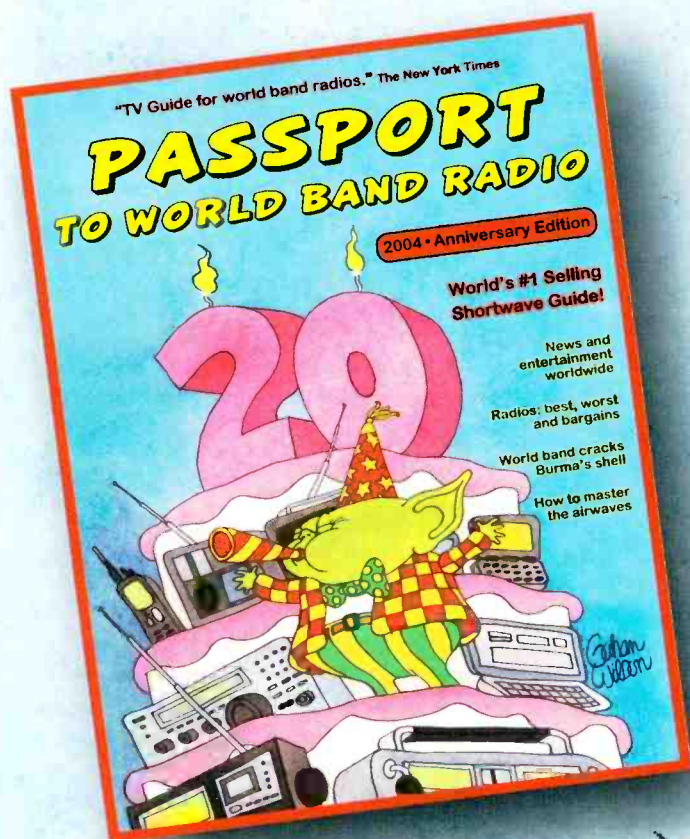
Your individual CERT group, made up of licensed ham radio operators, closely resembles the Amateur Radio Emergency Service (ARES), open to all ham operators, not just ARRL members. ARES is the largest emergency radio group and is found in almost every area of the country. Specific knowledge of the ARES organizational structure and the duties and responsibilities of key ARES positions is important, and you learn more about these matters as you progress through the three levels of the amateur radio emergency communications course.

Thanks to a United Technologies Corporation grant, the \$45 registration fee paid on signing up for the course is reimbursed upon successful completion of the course. The emergency communications Level 1 course is open to all amateur radio ARRL members on a first-come, first-served basis.

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How To Make Expedient Antennas

One thing we emergency communicators always face is the need for efficient antennas when working in the bush or from a mobile/portable field location. Wouldn't it be great if we could take VHF/UHF gain antennas with us on an EMCOMM deployment? Face it—*anything* beats the "rubber duckie" antenna on your HT! Given a little ingenuity and a couple of trips to places like Wal-Mart, Target, RadioShack, and The Home Depot, we can get the job done.

Expedient antennas are not new. Ask any ham radio operator who has spent a Field Day weekend with a hunk of wire thrown over a tree limb and a quarter-wavelength radial (counterpoise) laid out over the ground. For HF comms that's about as expedient as you can get!

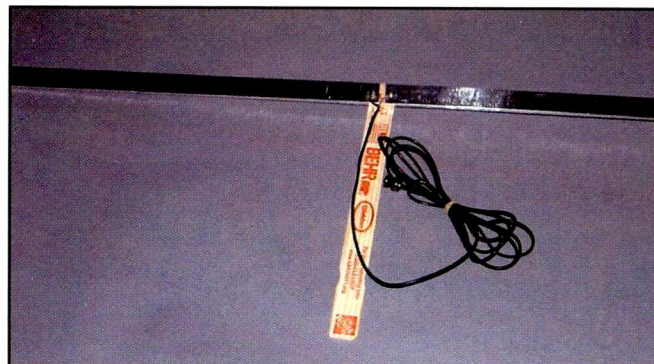
The really nice thing about VHF/UHF antennas is that they are quite small compared to HF antennas. Not only are they easier to transport, they are also easier to handle in the bush and can be made from most anything that will conduct.

There are companies that specialize in easily transportable VHF/UHF antennas, should you not want to try your hand at building one or two of the ones described in this article. Allen Lowe, NØIMW, of Arrow Antennas (www.arrowantennas.com), has an outstanding selection of portable antennas for VHF/UHF along with a host of fox hunting (Search & Rescue, SAR) accessories. MFJ Enterprises (www.mfjenterprises.com) has probably the largest selection of antennas and ham radio accessories in the world and their prices are great! Finally, John Bee, N1GNV, of Quicksilver Radio Products (www.qsradio.com), offers a large selection of portable and mobile antennas along with emergency communications products.

Actually, Uniden (Bearcat) has a nifty little pocket-portable VHF antenna that they package with their BCT-7 Information Scanner. It consists of a length of what appears to be RG-174 mini-coax terminated in a BNC connector. The other end is split, leaving about 21 inches of the center conductor (still encased in the coaxial dielectric) exposed. There are two plastic suction cups, one on the very end of the exposed center conductor and the other at the junction of where the shield starts up on the coax. Effectively this is a quarter-vertical antenna with the shield of the coaxial cable running to the scanner being used as the other quarter section of the antenna.

In reality this is *not* a true half-wave antenna. If Uniden wanted to make an efficient transmitting antenna that would also double as a scanner antenna, it would have been better to leave the shield attached and just part the center conductor at around 19.5 inches (1/4 wavelength on 2 meters). They could then have added a third suction cup at the end of the shield to facilitate placement of the antenna elements in a vertical or horizontal dipole configuration.

This pocket-portable antenna will work on 2 meters by simply cutting back the center conductor to 19.5 inches (from where the coax shield starts to the tip of the exposed center conductor) and re-affixing the suction cup to the end of the exposed center conductor. I have used this antenna with my dual-band



Here's the finished product. A standard yardstick, some metalized duct tape, a couple of screws, washers, and some RG-174 coax is all you need to make a dipole antenna for VHF. This one is cut for 2 meters (approximately 39 inches end-to-end) and will drastically improve the communications ability of the average 2- to 5-watt, 2-meter handheld (HT).

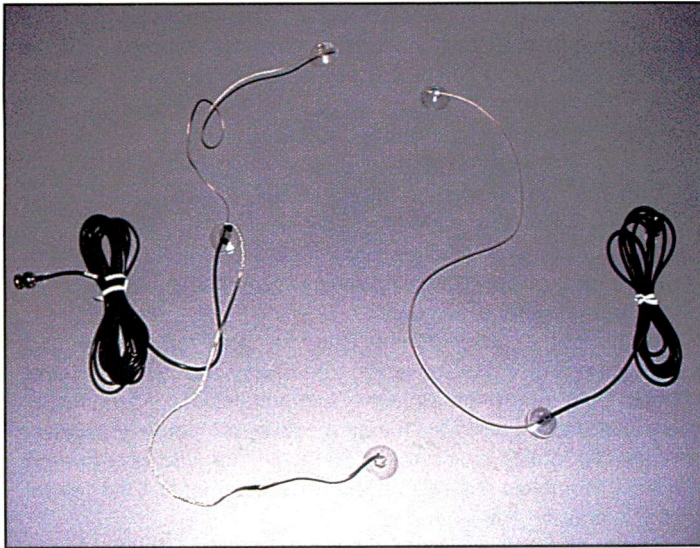
HT and it works great for the kind of antenna it is. It is definitely a step above the standard rubber duckie antenna that comes with the HT. It does provide gain and an omni-directional pattern when used as a vertically polarized antenna. And, yes, it goes with the HT everywhere!

All Dressed Up And No Antenna!

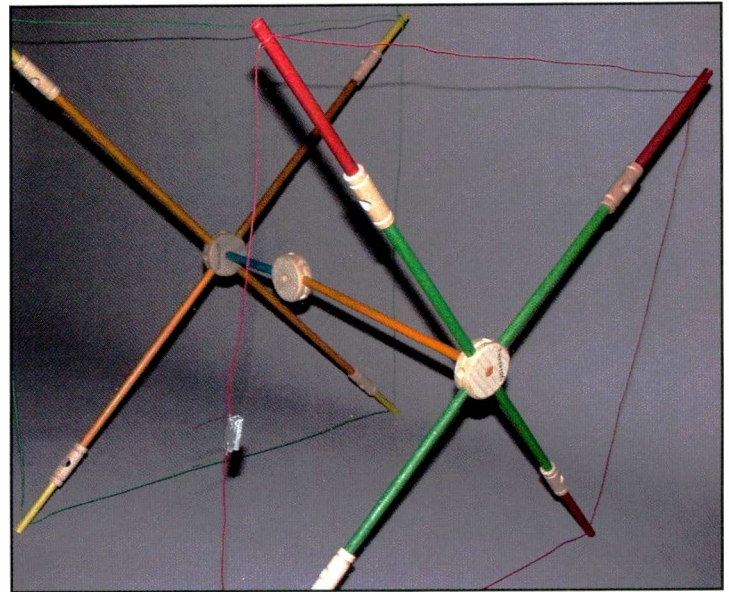
Okay, suppose you find yourself in the middle of a situation where you need an external antenna and all you have is your HT and a rubber duck. What now? Fabricating an expedient antenna can be not only fun but also really very simple.

Let's start with a given: We need a half-dipole cut for 2 meters to hit an ARES net and pass traffic. A half-wave antenna for 2 meters is roughly 39 inches long. That means a 1/4-wavelength at 144 MHz is roughly 19.5 inches in length. These are nice dimensions to work with, as they are pretty close to 1 meter in length. Should you happen to have a meter stick (like a yard stick only different) you're in business. Since America is not on the metric system, you'll probably be stuck with a yard stick. They're available at most home improvement stores, like The Home Depot, for about 50 cents apiece. Buy at least two for this project. While you're there, pick up some aluminum dryer vent tape (it looks a lot like duct tape only shiny on the outside with an adhesive backing).

Take one yard stick and lay it on the workbench or table top. Cut a 39-inch length of aluminum dryer vent tape, peel off the backing, and apply it lengthwise to the yardstick, leaving approximately 1.5 inches overlap on each end. Since the aluminum tape is about two inches wide, you'll have to start on the flat side of the yardstick and apply it full length, then turn the yardstick over, wrapping the aluminum tape around the edge of the yardstick and sticking the tape down on the opposite side. Be sure to press the tape down firmly to the sides so



The Bearcat pocket portable antenna is on the right. This one came with the BCT-7 "Info" scanner. On the left is my homebrew version of a 2-meter dipole using approximately 22 feet of RG-174. Both elements can be stretched out to form a vertically or horizontally polarized VHF dipole, which can be attached to a nearby window. The additional feedline (about 20 feet) can then be arranged for comfortable operation with the HT in a handy location.



The "Tinker Toy" quad in all its glory! Construction is ultra simple. The configuration shows the quad vertically polarized, and all you need to do is hook a feedline (RG-174) up to the center insulator on the driven element (the little gray thing) and you're in business with a real gain antenna on VHF.

that it adheres to the yardstick and doesn't peel off. What you have fabricated essentially constitutes a 1-meter element, or, since we're dealing with 144 MHz, a 1/2-wavelength element for 2 meters.

Take a pocket knife, utility, or hobby knife and, starting at the very center of the yardstick, cut through the aluminum tape all the way around the "element," leaving approximately a 1/4-inch-wide gap in the center of the yardstick. Remove this small amount of tape. You now have a half-wavelength dipole antenna awaiting the installation of some feedline.

Normally, you'd use RG-58, RG-8X, or possibly RG-174U with the appropriate RF connector to couple to your HT, if you had it handy. But what happens if you don't have access to any of the standard coax cable normally associated with radio applications? Is there any cable TV in the area you're in? If so, grab a length of RG-6U or RG-59U (whichever the cable company installed) and use that for feedline. Your emergency kit should include a good selection of RF adaptors, including F (female) to PL-259, F (female) to BNC (male), F (female) to SMA (male), BNC (female) to PL-259, and BNC (male) to SO-239 to interface various types of coaxial connectors with your HT or your VHF transceiver. Since cable TV uses F connectors, connect an F (female) to whichever connector matches your rig's output and hook it up.

What if you don't have access to any form of coax? Try lamp cord. That's right, good old "zip cord" used to supply 120 VAC from the old wall outlet to a lamp or TV or other appliance. Unplug the cord, lop off the AC plug end, cut the other end where it enters the appliance, and you now have some feedline for your expedient 2-meter dipole. Split each end about 1 inch, bare the wires about a 1/2-inch back, and use some small wood screws to hook each side of the coax/zip cord to either side of the dipole element. Paperclips or small alligator clips will work in this application, too; just ensure that they secure the feedline to either side of the dipole elements and don't touch together.

What about the other end of the zip cord? There are various adaptors available that will take one or two wires and terminate them into a BNC connector. These are used extensively in the test equipment arena, and you should have a couple just for times like these. Hook the zip cord feedline to the test lead-to-BNC adaptor and then terminate that into the back of your rig or HT.

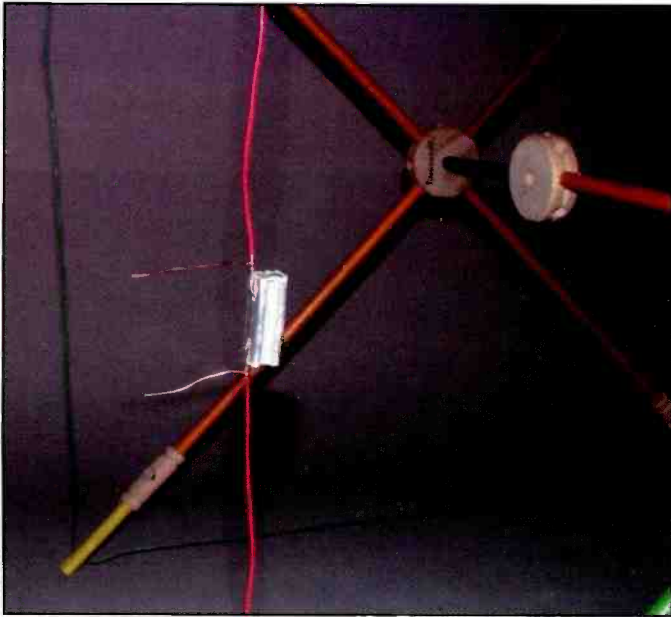
At about this point someone is sure to point out that AC zip cord is *not* very efficient at VHF. You're right. It's not efficient at HF, either, but in an emergency you really don't care as long as you're on the air and communicating.

What does all this prove? Using a little "outside-the-box" thinking and some items commonly found around the home you can fabricate an antenna that is much more efficient than the rubber duck on your HT. By duct taping a short piece of another yardstick or paint stirrer perpendicular to the 1/2-wavelength dipole at the feed point, you can secure the expedient dipole to a pole or similar support outside your operating area for a short time. This will get the antenna up and in the clear, allowing much better reception and transmission. Remember, you are not looking for a permanent installation that will withstand a Force 10 gale, but an inexpensive quick solution to the problem of getting on the air in short order.

"Tinker Toy" Quad

In past years, I've fabricated several 2-meter quad antennas using thin strips of wood and #22 AWG "bell" wire. I used these expedient quads for transmitter hunting and some antenna experiments. I don't know why I didn't think of the "Tinker Toy" idea before, but it came to me one night, while unable to drift off into sleepy-land (see photo for the completed quad).

All the support structure is fabricated using standard Tinker Toy parts. The wire is #22 AWG solid hook-up wire, available at RadioShack, or you can use #26 AWG found in most telephone cabling used in the home. Each "side" of the quad driven



Here's a close-up of the plastic insulator (scrap plastic) used for the feedpoint of the quad. The coax is connected across this insulator, with the remainder of the coax being taped to the boom. The quad can be hand-held and pointed in the desired direction to initiate communications.

element is approximately 19.5 inches, resulting in a total wire length of approximately 78 inches for the driven element (that's the one the coax is connected to). A center insulator is fabricated from the barrel of a pen, leg of a clothes pin, or some other common item that is a non-conductor. The coax is soldered to each side of the driven element, across the center insulator.

Tape the coax down the length of the "boom" and down a piece of broom stick which has been duct-taped perpendicular to the "boom." This gets the coaxial feedline out of the way and reduces interaction with the driven element. It also improves the structural integrity of the quad.

Traditionally, a two-element quad has a driven element and a reflector. The reflector is approximately five to 10 percent *longer* than the driven element. Ten percent of 19.5 inches is very close to 2 inches. That means the reflector would be approximately 80 inches in length, or 20 inches per side (as opposed to the 19.5 inches per side on the driven element). Okay, what are you waiting for—build it!

Adding the reflector on the boom will balance out the driven element and hand-holding this quad is easy. Now, at this point, you might want to try adding a third element, or director, in front of the driven element. (Remember, the director is in front of the driven element and the reflector is behind the driven element.) The director is five to 10 percent *shorter* than the driven element, which means that the overall length of the director will be about 76 inches (or 19 inches per side as compared to 19.5

Making An Expedient Half-Wave Coaxial Dipole

While RG-174/174A is *not* my first choice for coaxial feedline above 15 MHz, it can be pressed into service quite effectively as a means to provide an expedient coaxial dipole for 2 meters.

Using the information provided in the 1996 *ARRL Handbook*, pg. 19-5, Fig. 19.4 (cable attenuation dB per 100 feet), I was able to determine that RG-174(A) coax, while not rated above 80 MHz, could be expected to yield a 14 dB loss per 100 feet at 150 MHz. This interpolation resulted in extending the logarithmic graph lines and the linear attenuation lines for RG-174(A).

Applying the results from the *ARRL Antenna Compendium Vol 4*, pg. 198, as outlined in the sidebar on rating HT antennas, I was able to conclude that a 25-foot length of RG-174(A) coax could be made into a coaxial dipole antenna. This is done by separating the center conductor and dielectric from the shield (see photo), and offers a reasonable amount of gain over the standard "rubber duck" antenna on most HTs.

RG-174(A) losses at 150 MHz are roughly 14 dB, hence a 25-foot section of coax would have a loss of 3.5 dB at 150 MHz (slightly above 2 meters). A 1/2-wavelength antenna, according to the test data provided by KF4OW and W4RTZ, provided a +8.9 dB of gain over the "rubber duck" antenna during their tests. Factoring in the losses of the RG-174(A) (3.5dB), leaves us with an overall gain of 5.4 dB over the "rubber duck" antenna. This is almost a full S-Unit on a calibrated meter!

All this means that, although very lossy at VHF, RG-174 coax can be expected to provide a gain factor when employed as feedline for a 2-meter expedient antenna system. This also means that you shouldn't be afraid to try something "different" just because the experts and the tables in the books con-

clude that you can't expect that kind of performance from something like RG-174(A).

Finally, there's the real world of emergency communications. In fact, you can have a 25-foot-length of RG-174(A) coax made into a half-wave dipole for 2 meters, and you can place this antenna in a nearby window or in a location that will allow better RF radiation than a half-wave vertical antenna attached directly to the HT. You *are* going to realize much more gain than calculated on paper. Ergo, your communications capabilities are greatly enhanced.

Of course, you can buy or build a 1/4- or 5/8-wavelength whip antenna for that HT. RadioShack has a selection of collapsible whip antennas that can be epoxied into a PL-259 coaxial connector. Place a file mark on the whip at the 19.5-inch point and pull the whip out to that point and you'll have a quarter-wave vertical for your HT. I've built two of these: one for 6 meters (using their 6-foot whip) and another for 2 meters.

Commercially made gain antennas for HTs are offered by many antenna companies that specialize in amateur radio antennas. However, like the Uniden pocket-portable, none of them collapse into a small package that easily fits into a shirt pocket. Another plus with using the pocket-portable is the fact you can set the HT down on a flat surface, using a speaker/mic or headset/mic arrangement and have both hands free to write message traffic. Try that with an unwieldy 5/8-wave whip sticking out of the top of your HT!

Of course, you can position the pocket-portable on a window for better access to the outside of a building and be several feet away from the window (limited by the length of the coax feed line) at a convenient operation position. With the on-board whip, however, you're limited to where you can go with the HT/whip combo and still maintain contact.

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inches per side on the driven element). This adds several dB of gain, so your little Tinker Toy quad will become a veritable "death ray" antenna! Actually, a three-element quad exhibits about a 5- to 6-dB gain over a dipole. Not bad for a few sticks and some wire, huh?

A word about element spacing. Typically, any directive antenna array gets its front-to-back gain, front-to-side rejection, and useable bandwidth directly from the spacing of the individual elements. The "normal" spacing between elements on a two- or three-element quad is about 1/4 wavelength, or approximately 19.5 inches at 2 meters. In actual practice, you can close this spacing up to about 18 inches without drastically altering the overall gain and rejection figures. Bandwidth will be somewhat narrower but that's not a big deal since we're primarily interested in the FM portion of 2 meters. Using 18-inch spacing for the elements will result in an overall length of 3 feet for the three-element quad.

You will find this type of antenna quite satisfactory for transmitter hunting (finding an ELT, maybe?) and search and rescue (SAR) work. It requires a little more work, but the results are nothing short of spectacular when viewed in context of the ultra simplicity of the design and fabrication. For those who've never participated in transmitter hunting or SAR work, you should know that, due to the nature of an FM signal, as you get closer to the source of the signal, your FM receiver tends to overload. Because of this, the S-meter will respond sluggishly or not at all,

yielding a full scale reading. Using a quad antenna, by simply rotating the antenna 90 degrees (from vertical polarization to horizontal polarization), you will encounter a 20 dB drop in signal level. You have a built-in 20-dB attenuator in your antenna! Rotating to the opposite polarity gives the receiver a chance to respond better and get you in closer to the ELT or hidden transmitter.

Once you're close to the signal source, remove the quad antenna and go to the rubber duck and you will be able to get within a hundred feet or less of the signal source. At that time, remove the antenna all together and you should be able to walk within a few feet of the signal source! Cool, huh?

Naturally, if you want a more robust quad design, you can take your Tinker Toy quad and duplicate the measurements while using some 3/4-inch-square pine as spreaders, or possibly some larger diameter doweling. A broom stick makes a great boom as well as a handle.

Imagination Is The Key

These two examples of expedient antennas are only the tip of the iceberg. Use your imagination and you can come up with novel expedient designs of your own. Borrowing a phrase from Marine Force RECON: "improvise, adapt, and overcome." Just because you don't have what you need at the time doesn't mean you can't fabricate something from the things you find locally to get you on the air.

HT Antenna Performance

Before we condemn the "rubber duck" antenna found on most VHF/UHF HTs to an early grave, pick up a copy of the ARRL's *Antenna Compendium Vol 4* (\$20, ARRL Order # 4912) and check out the tutorial starting on page 198. Ken Pierpont, KF4OW, and Ed Brummer, W4RTZ (both of whom are good friends of mine), put together a very comprehensive look at HT antenna performance, which is outlined in this article. Since both are former NASA scientists, their methodology was meticulous, their data reproducible, and their results enlightening.

They tested a standard "rubber duck" antenna that comes stock with most VHF/UHF HTs, along with 1/2-wavelength, 5/8-wavelength, and 1/4-wavelength antennas made commercially. The results are very enlightening. For instance, they referenced the "rubber duck" as 0.0 dB. Their test results indicated that a simple quarter-wave whip (no radials) gave a +4.9 dB gain over the duck. The commercial half-wave antenna yielded +8.9 dB! Another way of looking at this is to reference the half-wave antenna as your "standard" at 0.0 dB, which means the "rubber duck" antenna yields almost a -9 dB of attenuation! That is a reduction of received signal strength of 1.5 S-units, or the equivalent of going from a 5-watt RF output down to 750 milliwatts output! So much for efficiency.

Body language played a large part in how the "rubber duck" performs. Tilting the HT away from the body of the operator and facing the desired station resulted in a gain increase! Conversely, if you wanted to null out an offending station, turn your back to the station and keep the HT at a 45-degree angle and you can greatly reduce the pick up from the offending station.

There is not enough room in this column to go into the details, but suffice it to say that knowing how HT antennas work and which ones work most efficiently may make the difference between communicating or not with your VHF/UHF amateur HT. This article makes for some very interesting reading. (Go on, buy the book!)

Till Next Time

Don't forget that preparedness is NOT an option! And be sure to let us know about your emergency communications preparations and experiences. ■



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Your Holiday Radio Wish List!

Happy Holidays! It's that time once again time for our annual holiday wish list. It's become a bit of a tradition that we take the December issue to review some of the new products that you may be interested in adding to your wish list for the holiday season. Let's go!

A New Radio?

New radios are always a great gift for the scanner enthusiast. The problem can be choosing which one and letting Santa know what's on your list without being too blunt. I'll leave that problem to you and Santa as I haven't found a good solution either.

Probably the most excitement this past year has been around the new Uniden Trunktracker series. The 250D and 785D receivers offer the ability to add a card and receive APCO-25 standard digital signals. These are top-of-the-line scanners and will serve you well in almost any area. Realize that there are signals that even these new super receivers can't decode, so it may not be the answer to all your problems. Anything that's encrypted won't be received, nor will some proprietary digital systems (EDACS digital, for instance). If all of this is Greek to you, you should check with someone in your area to find out what will work.

Also be aware that the receiver and the digital card are sold separately. This can add quite a bit to the total cost if you need it. But keep in mind that these are great trunktracking scanners all by themselves. The portable 250D and the base/mobile 785D would be a very worthwhile addition to any shack even without the digital card. You can always add it later.

The Shack's New PRO-96

Not to be outdone, RadioShack has announced (and by the time you read this, will probably have available) a new receiver called the PRO-96. There isn't a lot of information available at press time, but it looks to be a high-end new generation handheld trunking scanner. It may be worth a look before you jump in with both feet! Stay tuned, and we'll try to bring you details as they become available.

Drop Below 30

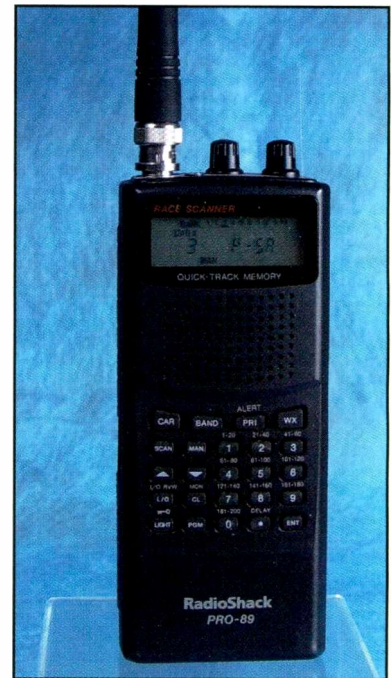
How about exploring some other parts of the band? If you're into scanning, you might want to think about asking for a receiver that covers a portion of the frequency ranges that you don't currently have. If you've not explored trunking, you might be interested in a basic trunktracking scanner (make sure there's something to listen to in your area!) Most of the trunktracker scanners are also very good conventional scanners, even if you don't have trunking in your area yet—remember "yet" is the key word!

How about a shortwave receiver to check out the action below 30 MHz? I'd strongly recommend a receiver capable of SSB reception so you can listen to both the broadcasters *and* the util-



Long a favorite with scanner enthusiasts, you can check out the PRO-2052 trunking scanner at your local RadioShack for \$249.99.

If you don't need trunking, this PRO 89 from RadioShack makes a great conventional scanner, or even a second radio to listen to non-trunked communications in your area. At \$129.99, it's a real bargain! →



ity stations that are to be found in the HF range. Many of the utility station action is similar to the scanner frequencies you're used to listening to, but with longer range.

Computer Control

If you've been reading this column for any length of time, you've probably realized that I'm a big fan of computer-controlled scanning. At the low end, there's computer-assisted scanning where the computer is used to save keystrokes and reprogram the radio quickly. This all by itself is a major enhancement to your scanning, as you won't be afraid to reprogram the radio for a special event since your normal memories are safe in the computer and only a minute or so of reprogramming time away.

Computer control takes this one giant step further. The computer becomes the brains of the scanner, and the radio is just used as a radio receiver. This yields a whole host of advantages which



This Grundig shortwave receiver might be just the ticket to get you into the lower frequencies. It also has an excellent air band receiver so all is not lost if you hate shortwave! The Satellit 800 is available at Universal Radio and other retailers for \$499. Often, reconditioned units are available at great savings!

Perhaps portable is more your style. They don't get much more portable than the Sony SW-100!

are outside the scope of this column, but if you're interested, let me know and we'll revisit this issue in a future column.

There are many methods of computer-controlled scanning. Of course, the first thing you need is a computer-controlled receiver. There are many on the market and you should look around to see what receiver suits your needs best, and then shop around again to find software that works for you.

Probe 1K

One program that is new and worth mentioning if you have the right equipment is Datafile's Probe 1K for the ICOM PCR-1000. Probe has always been an excellent control program, and PCR-1K transfers most of this functionality to the very excellent PCR-1000 receiver from ICOM. Probe-1K is a DOS-based program, which may turn some people off at first glance. If you're stuck in a Windows world, it may not be for you.

The cool thing about it is that you can run DOS on any old computer, including stuff that people are throwing away. I've found some old Compaq 486 machines that needed a bit of work (reformat of the hard disk) and have lots of serial ports. What a perfect application for these old computers—and you won't have to tie up your main machine with scanning. Once you've tried computer control, you'll want a full-time dedicated system, and this is perfect.

Don't sell Probe 1K short because it's DOS based. Under the hood is a very capable scanner control program. Probe 1K was written only for the scanner enthusiast, and, in fact, the program doesn't even cover HF activities. But what a scanner controller!

So what do you get? A whopping 99 banks of 1,000 channels each, if you choose to fill them all up. You can have 4,000 groups (each with 99 banks, etc.) stored in a single directory on your computer, and if for some reason that's not enough for you, you can play some tricks with directories and get a virtually unlimited number.

Scanning is where Probe-1K really shines. As activity is found on a given frequency, information is brought up on screen you've entered related to that frequency. At the bottom of the scan screen is an area for recent activity, so you can look to see what chan-

nel was just making strange noises. It's a great tool for hunting new frequencies and activity.

One of the most impressive functions in Probe-1K, besides its data management, is its SmartScan feature. This allows you to have activity on one frequency trigger a shift in the banks being scanned. For instance, if you scan the fire alarm frequency as part of your normal listening, you probably don't need to scan all the car-to-car and other frequencies that fire departments use when something is happening. Your scanner will run faster because it doesn't have to waste time checking these dead channels.

You can set Probe-1K to listen to the fire alarm channel as part of the normal scan. If it hears something there, you can tell it to add in the callback frequencies for a certain amount of time (additional activity will reset the timer), or you can have the program automatically shut down the other frequencies you were scanning and just focus on a Smartbank of fire related frequencies. In either case, when the timer expires, the program will put everything back to the way it was when the activity started.

If your primary interest is scanning the public safety bands, this is a program worth checking out. More information can be found at their website at www.probe1k.com.

Become Part Of The Action!

You might want to get out of the listening habit and become part of the action you're listening to! Many transmitters no longer require a license and can be extremely handy for home or work applications. FRS and MURS radios are available just about everywhere these days.

However, what I had in mind for your wish list was a study guide for one of the amateur radio exams. Getting your ham license has become a very good idea for scanner listeners in many states, and having a transmitter handy just in case something happens is never a bad idea either. There are many study guides available from all sorts of sources including RadioShack, the American Radio Relay League, and *Pop'Comm's* own Gordon West's school! Check them out and see how easy it can be to become a licensed ham! Hey, Harold did it, you can too!

Antennas

Scanner nuts never seem to have enough antennas. Of course, on a handheld they're easy to change and swapping them back

and forth can be advantageous for various conditions or frequencies of interest. Base users can also gain some mileage by changing antennas from time to time. Perhaps you've been using an antenna model you're not quite satisfied with, or perhaps you've got a second scanner that could use a little signal boost, too. On the other hand, if you're hearing all that you care to, a new antenna is probably not a good choice.

If you don't have a telescoping antenna for your handheld radio that can be adjusted for various frequencies, you probably should. These *are* great for handhelds, of course, *and* handy for testing base and mobile scanners, too. I recently tested a radio I thought was defective. Just before giving up and sending it back to the manufacturer for replacement, I thought to check it with a direct connect antenna—and it worked! My coax connector was bad and the radio was trying to receive with no antenna. Once that was fixed, it was a great receiver. Those little antennas do come in handy!

If you're still using the antenna that came with your radio, you're really a good candidate for an upgrade. Look around and see what strikes your fancy, but keep in mind the other major consideration in antennas: frequency coverage.

All antennas, not just those for handhelds, are built with particular frequency ranges in mind. The telescoping system I mentioned above has the advantage of having adjustable length, which means adjustable frequency response, too. I have a tendency to use ham antennas for my scanners because they're so widely available and because they're close to the frequency ranges I'm interested in monitoring on the scanners.

You may be able to get significant performance increases on a single band by using commercial antennas built for just that frequency range, but you're likely to sacrifice bandwidth (the ability of the antenna to perform over a wide range of frequencies). On a handheld, that may not be a major concern, depending on the antenna's intended use. For instance, if you mostly listen to stuff in the 154- to 158-MHz range, finding a commercial antenna that operates there will probably improve performance. You may not hear much outside that range, however, so you'll have to assess the frequencies you listen to. Trunktracker users who listen mostly to the trunked system in their city tend to benefit considerably from an antenna designed for the 800-MHz range.

Base antennas, however, present a whole different set of problems. The major concern with a base antenna is likely to be performance over a broad range of frequencies you're interested in, followed by how much room the antenna takes up in the attic or outside. Are you going to have to add structural support to the mast or tower in order to support the "wind load" of the antenna? Something to keep in mind as you're shopping.

Weather Radio

If you live in an area of the country that's subject to severe weather you should have a weather radio. I can highly recommend the WR-500 from ShareCom (www.sharecom.com). The WR-500 (\$149) features a unique LCD display that shows the county you've dialed in for SAME (Specific Area Message Encoding) message notification. You can set the unit to monitor multiple counties and choose the types of alerts you want to hear so you're not bothered by test alerts and other things that don't affect you.

A unique feature of the WR-500 is the 3,200 unique county maps stored in memory. You can scroll across the state and the



The WR-500 weather receiver features this unique map, which shows the area you're focused on. Of course, it includes standby mode for receiving only emergency information.

WR-500 will update to the correct frequency for that area, as well as program in the appropriate SAME code. Check it out if you're in the market for a new weather radio. You do have one, don't you?

Other Accessories

Handheld radios may benefit from one of the many amplified speakers on the market. Since handhelds are always fighting a battle between battery life and performance, the audio stage is frequently weak. Trying to use a handheld in the car, or even at home, can result in ear strain trying to hear over the ambient noise. An amplified speaker will solve that problem in a big hurry.

Speakers can also be tailored to the voice range that you listen to on your scanner. Sometimes, depending on the radio you have, just a bigger speaker will make the audio a bit easier to listen to. Sometimes you might want a communications speaker available from the major retailers for a variety of applications. RadioShack has a few speakers that work well for scanner applications. I've been using the RadioShack Minimus 0.3 (40-1254, now discontinued) with some success for years. While not the best possible speaker, it does serve the purpose of getting the audio out into the room, and it's cheap and small enough that a number of them can be used without making a major dent in shelf space.

Have a look around at some of the not so usual places. Sure, RadioShack carries a full line of speakers and accessories. However, with the computer boom, many computer stores and non-specialty stores also carry some cheaper amplified speakers that may be just the ticket for your scanner. Keep in mind that you don't need a real high-fidelity speaker to reproduce the voice information that most of us listen to on our scanners. In fact, a high-fidelity speaker may work *against* you. These speakers will often have a whine or ringing sound to them. This isn't anything wrong with the speaker, but rather the speaker's attempt to reproduce some of the CTCSS or tone squelch tones your scanner is allowing through to the audio amp. It's annoying to listen to, but doesn't hurt anything either.

Finally, external speakers can be used to separate the audio. Say you have more than one radio, the simple act of using your



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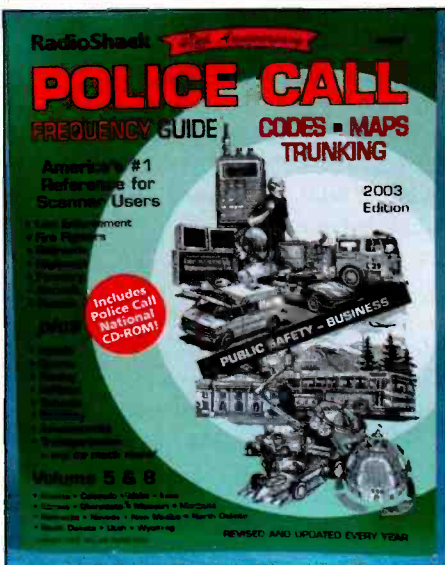
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Everyone should have this reference guide in their library. There's a CD ROM included with nationwide frequency listings and lots of great information. It's available at RadioShack for \$19.99—a great stocking stuffer!

ears to determine where the sound is coming from can help you distinguish which radio is active. External speakers can be mounted in the ceiling or walls, or just placed at opposite ends of a desk. The idea

is to put them in spots that allow you to hear the difference!

Depending on where your scanner is located in relation to the rest of the house, and more importantly the activity in your house, it might be helpful for domestic tranquility to have a set of headphones around. These can come in very handy for those late night listening sessions, or for listening to the scanner while others are watching TV nearby. Some shortwave listeners find they prefer listening through headphones all the time, while others almost never use them. The only problem with headphones and gift-giving is that picking a pair that you'll be comfortable with might be a difficult task for anyone but you.

Also be aware that headphones come in stereo and mono (mostly stereo for obvious reasons). Some receivers will support the stereo headphones by putting the signal into both ears, but most do not, providing audio in only one ear. That might not be all bad, as it leaves the other ear open for room noises, but it can be annoying if you want to concentrate on the radio. There are adapter plugs to solve this problem, or you might prefer a pair of headphones that are optimized for communications listening, which are available

from any of the major manufacturers of ham and shortwave equipment.

Another audio accessory that I get asked about with some regularity is audio filters. For shortwave listeners, these are a great help, depending on your receiver's capabilities. However, for scanner listeners, I don't think they are quite as useful.

In my personal opinion, you'll get much more mileage out of a pure amplified speaker. If you also listen to shortwave, you might well find a use for one, and then you can hook it to your scanner to see how well it works. Some units, including the TimeWave 599+, have dual receiver inputs! By the way, if you're into shortwave listening, I highly recommend the Timewave if the price doesn't put you off. MFJ also has a nice DSP filter also that's also worth a look—I have heard good things about it but never actually used one myself.

Don't Forget To SCAN!

Holiday scanning can be interesting, too. Police, fire, and ambulance services all tend to be busy this time of year with the increased activity and traffic problems. It's a good idea to plug in the frequencies for your local mall, if you don't

already have them in your scanner. Even small shopping centers have maintenance people and often security for the holidays that use radios.

You can find store and mall security on just about any business frequency, so you may have to do some hunting to find just what you're after. In some cases, the security is provided by off-duty officers who are equipped with police frequencies and a special unit number. Larger malls will all have their own system.

Another good place to look is the itinerant frequencies, particularly within individual stores (larger stores all have security staff of their own these days). Equipment operating on these channels is widely available to anyone. They're required by definition to operate at low-power levels and, while it's plenty to carry the signal within a building, you may not be able to hear them unless you are close by. Larger centers will have dedicated frequencies, possibly several channels to keep security and maintenance functions separated. Two of our local centers even use repeaters, which makes listening all that much easier since you can hear both sides of the conversation.

Finally, you may have some luck finding frequencies in more traditional references like *Police Call* and *Monitor America*. Both of these excellent references should be in your library as a good starting point for frequency information. For some cities, *Monitor America*, in particular, actually lists mall and shopping center frequencies directly.

Shopping center and mall monitoring can be pretty interesting listening from time to time, and very entertaining the rest of the time. Most of the security officers and others whom are heard on the radio are not professional communications specialists, to say the least. And, during the holidays, there are likely to be a number of part-time staff added to help with the increased work load. Part-time staff need directions and answers to questions that customers may ask hundreds of times a day, but for this particular employee the question hasn't come up before, and must be answered over the radio by a senior employee. Sometimes it's answered for the 100th time by that particular senior employee and the answer is somewhat "less than polite."

Our local mall also runs into parking problems around the holidays, and a whole detail of folks is dedicated to helping solve that problem and transporting

staff and guests to off-site parking. And, to say the least, security is tighter and there are likely to be more problems in general during the holiday shopping season with so many people coming and going, and unfortunately, more opportunities for unscrupulous types to take advantage of as well. Check it out.

If you don't have the frequencies already, it's a bit of a fun challenge to identify them. If you can't find anything listed at all, or don't have access to the frequency directories, go have a look around the store or mall you're interested in. See if you can spot any antennas on the roof, or if you can spot someone using a handheld radio. The length of the antenna *may* give you some indication, but not always.

In the good old days, you could tell what frequency band they were operating on just by how long the antenna was on the handheld transceiver. That information was very helpful to narrow the search. However, today's modern antennas, particularly on portables, have many shapes and sizes and don't always correlate well to the band they're designed for. As an example, I have an 800-MHz rubber duck antenna that's much longer than several common VHF-Hi antennas.

Perhaps you can find a friendly mall employee and get them to let you look at the radio itself. Sometimes they have meaningful labels (sometimes even the frequency itself), but sometimes not. Good hunting!

Frequency Of The Month

Our frequency for this month will be **155.835**. Let me know what you can hear. Even if you don't hear anything on that frequency in your local area, you can still enter with that information! We'll put them all in the drawing when it comes up!

Speaking of drawings, we have a winner! Our winner this month is **Mike Wilkinson**. Mike sent his entry in on 155.640 and says 155.640 is the Mahoning County Sheriff in Ohio, and also the Hancock County Sheriff in West Virginia. Congrats Mike!

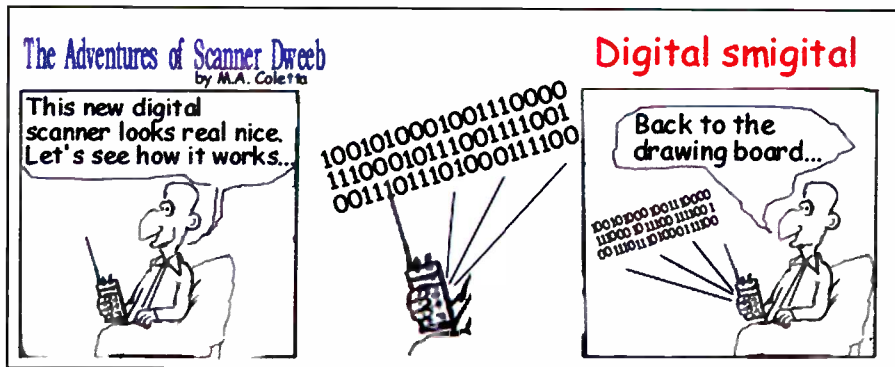
A new reason to enter the frequency of the month contest: Gerry Dexter of *Popular Communications* and Tiare publications has generously offered to provide several copies of *Cop Talk*, the Tiare book about scanning and listening to public safety communications. We'll draw these from the same names as the "Frequency of the Month" entries. In the meantime, you can find out about *Cop Talk* by checking out Tiare's website at www.tiare.com/coptalk.htm.

Of course, if you're **Ray Martin** from Florissant, Missouri, you won't have to put this book on your Christmas wish list—you'll have one compliments of Tiare publications. Special thanks to *Pop'Comm's* own Gerry Dexter for donating these great books! Enjoy it Ray!

Your Input Needed

Please don't hesitate to write in with questions or suggestions. If you're entering the "Frequency of the Month" and *Cop Talk* drawing, please put the frequency in the subject of the e-mail, or on the outside of the envelope. Also, please put your full address in the entry so we can send you the book if you win. Entries without address information will not be eligible for book drawings, but will still be entered in our regular "Frequency of the Month" drawings."

Send things via regular mail to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126, or questions and suggestions via e-mail to radioken@earthlink.net. Until next month, good listening! ■



Airline Wireless Device Policies

It's the government against the airlines...again. Only this time the fight is over cell phone use aboard commercial airliners. Several airlines have made announcements stating that it's okay to use your cell phone aboard an airplane as long as the plane is on the ground. The FCC and the FAA, however, are teaming up to ban the use of cell phones from the moment the plane's doors are secured for departure until the plane lands at the end of the trip. It will be up to individual airlines to establish rules regarding use of phones before the

doors are closed and after landing. And, of course, all this could change when an ongoing study of this issue is completed within two years. Bottom line? Listen to the safety briefing for the rules pertaining to your flight.

Powell Issues Wireless E911 Call To Action

FCC Chairman Michael Powell has issued a call to action urging state governors and state and local public safety officials to be active participants in the roll-out of E911, not passive observers. "We know that wireless enhanced 911 technology works—and

can save lives," Powell said in a speech before the Association of Public Safety Communication Officials (APCO) International. The chairman also warned that the FCC will not hesitate to take strong enforcement actions, including fines and imposing binding deployment schedules, against wireless companies who delay deploying wireless E911 services. The FCC is rolling out a wireless 911 nationwide public awareness campaign emphasizing wireless E911 coordination, outreach, and education. Powell said consumers should ask questions about E911 capabilities when purchasing cell phones and wireless service contracts.

v.i.p.

spotlight

Congratulations To Kenneth Kuchenmeister Of Minnesota!

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 should be included.

Each month, we'll select one entry and publish it here. 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.

Our December Winner: Kenneth Kuchenmeister Of Wyoming, Minnesota

Pop'Comm reader Ken Kuchenmeister tells us,

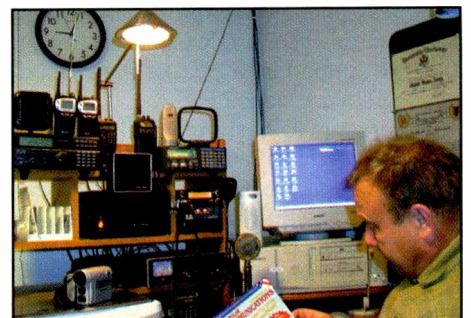
For me it started when I was sitting outside in the yard listening to the small portable battery-operated transistor radio I had purchased. I'll always remember that great time, with the announcer giving the blow-by-blow description of the fight between two boxers. Then the memorable times listening to the Country Western singers on the car radio on the way to visit my grandfather. Then there was the time I

built a crystal radio in junior high school. Later FM came along, giving radio the best sound and so many channels.

I'll never forget the many hours on the telephone talking to my friends in high school. Shortly after high school I went into the military for three years. There I went to school as a Fixed Station Microwave Systems Repairman. Classes like theory of electricity, radio transmission, test equipment, and mapping were included. A year later on the job at Camp Friendship, Thailand, I operated radios like the FRC-109, 1.5-watt line-of-sight fixed station microwave, MAR-98, SW mobile trailer radio, and the LAR-3, a 100-kW troposphere scatter radio. I was also promoted to NCOIC. Those times were also great!

Then home at the age of 22, the CB craze was on with activity on Channel 19, SSB, power amplifiers, and beam antennas. Then I received teletyped messages off the shortwave radio. I've also operated 10 meters, 70 centimeters, 2 meters, and FRS radios. Police scanners with cellular unblocked is always fun! At the present time I also operate metal detectors.

Here's Ken Kuchenmeister in his Minnesota shack, complete with a D-104 microphone!



DXpedition! A Tale Of Three Sites

How far will mediumwave DXers go to catch exotic signals? There's apparently no limit. The following three reports from both coasts and deep South America indicate just how far. It's extreme DXing at its best!

DX Clams

The Boston Area DXers (BADX) get together every year for a seafood dinner followed by DXing from a remote location in Massachusetts. The annual event has been appropriately dubbed "DX Clams." This year, Tom Walsh, K1TW, coordinated the DXpedition with the Patriot DX Association, a local amateur radio club, as an opportunity to introduce hams to the art and science of AM broadcast band DXing.

In his report to the Patriot DX newsletter, Tom wrote,

The objective of the DX Clams is to visit a local seafood restaurant for a meal of New England's finest clams and then head to Granite Pier in Rockport, Massachusetts, to set up a bunch of mobile listening stations just prior to sunset. The goal of the radio portion of the evening is to receive international DX on mediumwave, particularly transatlantic stations.

This year, despite a light rain, the site nevertheless was impressive, with a half-dozen cars with quite an array of antennas. The predominant receiver in use was the fantastic Drake R8 series (i.e., R8, R8A, or R8B), a dream receiver for this type of work because of its outstanding selectivity and pass band tuning system. However, any good general coverage transceiver may be employed for international mediumwave listening, especially from a wonderful seaside location such as Rockport. The predominant antenna setup was a pair of phased antennas; typically a mediumwave loop and a short whip, with a phasing unit that allowed nulling of the powerful USA-based mediumwave transmitters, thereby opening up the band for international DX.

Well, propagation was very auroral. That meant transatlantic paths to the highly sought Europe, Africa, and Middle East were not working at sunset. Attention quickly shifted to South America and a number of powerful signals from places such as Venezuela were heard even on my car radio. Since transatlantic propagation was so dismal, we (BADX and Patriot DX) spent more time getting acquainted and shared some good stories. By 9:00 or so, we began drifting away, which was a shame as it turned out that the diehard BADX guys were treated to some late openings to Africa and Europe.

Mark Connelly, WA1ION, participated in the DXpedition and echoed Tom's sentiments about such a gathering of DXers, above and beyond the logs. Mark said, "Despite on and off rain and less-than-stellar propagation conditions, those who attended this year's DX Clams outing still were able to enjoy the most important aspect of it all: good friendship and interesting conversations."

Before the DX started rolling in, antenna phasing was demonstrated for Patriot DX. Phasing produces steerable cardioidal or unidirectional reception, beaming in signals from one direction while nulling interfering signals from the opposite direction. The beam steering capability was demonstrated at 900 kHz, where WJJB Brunswick, Maine, was the dominant signal. After nulling out WJJB, co-channel WSNH



Patriot DXers admire the phased arrays perched atop these cars in Rockport, MA to catch transatlantic mediumwave signals during the DX Clams expedition.



Boston-area DXer Gary Thorburn, KD1TE, is ready for action with his homebrew remote-tuned loop during the DX Clams expedition.

Nashua, New Hampshire, was received loud and clear. Further tweaking of the phase null produced reception of CKDH Amherst, Nova Scotia. The same phasing technique was used to peak transatlantic signals to the east, while reducing interference from local radio stations. Strong signals were received from Algeria, Ceuta, France, and Spain.

Welcome to Grayland

The best mediumwave DXpedition sites are often on the seashore. Grayland Beach, Washington, has become a favorite

site for some hardcore mediumwave DXers. With 750-foot long Beverage antennas aimed west and southwest, the targets were exotic transpacific signals for John Bryant and the gang at this prime location. John summarizes the results of the latest outing:

In general, conditions were typical of poor high-sunspot year transpacific propagation, with few signals present as audio before dawn enhancement. Many of those present at dawn rose only to poor or fair levels. However, more New Zealand signals were present than I have become used to in recent years. The highlight of the DXpedition was, for me, a tentative log of 8AL from Alice Springs in the Australian Outback.

As with the BADX event, this DXpedition provided a chance to field test the latest equipment. A highlight was seeing Winradio's new 303i in operation. John reported

Its panoramic spectrum display (plus or minus about 15 kHz) was most impressive and clearly useful as a DXing tool for split-frequency signals on mediumwave. When combined with Nick Hall-Patch's vaunted DX Radar (which displays the full broadcast band, albeit abstractly) we really should have the tools for drift-net DXing.

Patagonia DX

One brave broadcast DXer went on a trek to the end of the world to check out the extreme Patagonia region of Argentina in the name of DXing. The intrepid Rocco Cotroneo explained, "I had always wondered what conditions were like down there, if I could find a place comparable to legendary Nordic AM DX sites, Newfoundland, Grayland, or like Australia and New Zealand DXped sites." So, armed with an AOR 7030 receiver, wire, recording equipment, and documentation, off he went on a dream DX challenge. With the assistance of the Rio Gallegos ham radio club, Rocco met a sheep farmer heading out to his remote farm with supplies and his four dogs. "Just know that we have no electricity after 10 p.m. and we eat lamb twice a day, everyday," warned the farmer. Rocco had his camping battery—many a DXer has been known to survive on less.

The plan was to chase after broadcast signals from the South Pacific. One wire antenna was aimed at Australia and New Zealand, the other toward Asia and South Africa. Said Rocco,

Surprisingly, the dial was crowded with local and semi-local signals. I had expected a

quieter situation. Patagonia is well away from densely populated areas. Central Argentina is 2,000 km away as are the most populated areas in Chile. All Buenos Aires stations were strong and stable, as well as Santiago's. Peru on 1470 and 1500, and the big Brazilians (1040, 1100, 1220, and 1280) made up easily the big distance. Another interesting discovery was the huge number of split, off-frequency stations, most presumably from Chile and Peru.

Although some transpacific DX targets were received before the battery gave up in the pre-dawn hours, the number of signals from the United States was a real surprise. The first DX came in at the top of the dial where the AM expanded band was initially crowded with Argentinean pirates. Rocco continued,

At 0400, after a long non-stop music program followed by ABC news, 1700 kHz was revealed to be Oldies Radio KQXX Brownsville, Texas. Later at 0520 everything was clear, and I was experiencing a U.S. west coast opening. On 740 traffic and weather together with San Francisco temperatures announced the All-News KCBS. At 0600 on 1530 kHz, an exciting KFBK jingle from Sacramento, California. Then a big signal on 1090; I am almost sure it was the nightlong Sporting News Radio from XEPRS across the border from San Diego.

As with all DXpeditions, those involved were already planning their next adventures before the completion of current activities. Whether solo or as a group, there's nothing like a DXpedition to add some spice to the hobby. For more about our tale of three sites, there are some Internet websites worth visiting. Audio files and photos from Patagonia can be found at www.faiallo.org/patagonia.html. Bookmark the BADX site at www.anarc.org/naswa/badx for advance announcement of the next DX Clams expedition. Visit BAMLog at <http://members.aol.com/baconti/bamlog.htm> to find links, photos, and reports from these and other world renowned DXpedition sites.

Broadcast Loggings

Here are selected loggings from the DX Clams and Grayland DXpeditions; all times are UTC.

549 2XC R. Rhema, Gisbourne/Napier, New Zealand, at 1230 typical contemporary Christian music format, coming in quite nicely. Only logging, but several other Rhema stations noted on the band. First morning in several years at Grayland that a significant number of

Kiwi stations were present. (Bryant, WA) **657 2YC Southern Star**, Wellington, New Zealand, at 1145 presumed this at threshold level with quiet contemporary Christian music. Improved later. (Bryant, WA)

738 RFO Papeete, Tahiti, at 0445 low levels of audio, female singer in French, first noted at 0415. (Bryant, WA)

783 8AL ABC Alice Springs, Australia, at 1245 first spotted by fellow DXpeditioner Don Nelson. By the time that I got there, there were only high notes of semi-classical music breaking through parallel 2485 kHz. Wow! Sure would have liked to hear more. (Bryant, WA)

819 RTM Rabat, Morocco, at 0105 parallel 612 kHz with vocal and drums; fair, over a het from 830 St. Kitts and nulled WNYC. (Connelly, MA)

837 Centro Regional da RDP, Pico da Barrosa, Azores, at 0110 parallel 666 kHz with a Portuguese male vocal; fair, over others. (Connelly, MA)

891 Chaîne 1, Algiers, Algeria, at 0244 parallel 549 kHz with pop Arabic music at low audio level; through WAMG slop. (Connelly, MA)

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891 5AN ABC Metro Service, Adelaide, Australia, at 1152 a sports talk show with a remote horse race call at 1156. Good level at dawn. (Bryant, WA)

1000 ZYK522 R. Record, Sao Paulo, Brazil, at 0247 undoubtedly this with fast Portuguese talk; good, dominating the channel with only a Spain-999 het as interference. (Connelly, MA)

1110 YVQT R. Carupano, Venezuela, at 0045 salsa music; loud signal, and at 0226 many IDs, slogan "Radio Carupano, tu A.M." absolutely local-like. (Connelly, MA)

1125 R. Sport, Napier/Hawkes Bay, New Zealand, at 1200 monitored for almost half an hour with satellite-fed simulcast of XETRA parallel KLAC and 1503 R. Sport, Wellington. Extraordinary programming for New Zealand! Good signal at times. (Bryant, WA)

1332 RAI R. Uno Synchronos, Italy, heard at 0229 briefly good

with jazz-influenced nightclub style Italian female vocal and saxophone accompaniment. (Connelly, MA)

1503 2BS Bathurst, Australia, at 1217 a wide-ranging music show with a guest historian of pop music, heard for several hours prior to dawn, sometimes at fair to good level. No ID caught, but definitely an Aussie commercial oldies program. Could have been new 3KND in Melbourne, but they are directional to protect Bathurst to their northeast. (Bryant, WA)

1584 RadiOle, Ceuta, heard at 0159 a pop-rock vocal, then tropical Latin American style fast dance music; good. (Connelly, MA)

Thanks to John Bryant, Mark Connelly, WA110N, Rocco Cotroneo, Gary Thorburn KD1TE, and Tom Walsh, K1TW, for sharing their DXpedition experiences. 73, Happy Holidays and Good DX!

PENDING

New Call	Location	Freq.	Old Call
WJTK	Boston, MA	1150	WBPS
KRMZ	Portland, OR	1150	KKGT
WNYN-FM	Athol, MA	99.9	
WAHL			

CHANGES

New Call	Location	Freq.	Old Call
KDXE	North Little Rock, AR	1380	KRNN
KMZT	San Rafael, CA	1510	KTIM
KTLK	Santa Barbara, CA	1340	KIST
WFLI	Fort Lauderdale, FL	1400	WFFL
KPTO	Pocatello, ID	1440	KBET
WWFT	Nicholasville, KY	1250	WUGR
WLXE	Rockville, MD	1600	WKDM
WRDT	Monroe, MI	560	WLLZ
WMGT	Stillwater, MN	1220	WEZU
KCTO	Cleveland, MO	1160	New
WSNH	Nashua, NH	900	WOTW
WKDM	New York, NY	1380	WLXE
KBET	Winchester, NV	790	KPTO
WECU	Winterville, NC	1570	New
WCOL	Columbus, OH	1230	WZNW
KPOJ	Portland, OR	620	KTLK
WQTK	Moncks Corner, SC	950	WWJK
WLRT	Hampton, VA	1490	WBYM
KUUX	Pullman, WA	650	New
KCOO	Coolidge, AZ	89.9	New
KDIS-FM	Little Rock, AR	99.5	KYFX
KOSL	Jackson, CA	94.3	KNGT
KJCQ	Quincy, CA	8.5	New
KQNC	Quincy, CA	8.1	New
KFLL	Susanville, CA	8.1	New
WDRR	Lehigh Acres, FL	07.1	WRLR
WCKT	Port Charlotte, FL	100.1	WRLR
WNRW	San Carlos Park, FL	98.5	WDRR
WJZT	Woodville, FL	97.9	WKEP
KISY	Gooding, ID	100.7	KHJR
KZID	Orofino, ID	98.5	New
WKCC	Kankakee, IL	91.1	WTKC
KANS-FM	Emporia, KS	96.1	KRWV
KKYD	Osage City, KS	92.9	KANS

WYCM	Charlton, MA	90.1	WBPV
WJWT	Gardner, MA	91.7	New
WWTE	Wellfleet, MA	90.7	New
WICV	East Jordan, MI	100.9	WIZY
WBZV	Hudson, MI	102.5	WMXE
KJZI	Minneapolis, MN	100.3	WLWL
KULO	Sauk Centre, MN	94.3	KMSR
WCKK	Carthage, MS	98.3	WSSI-FM
WOJB	State College, MS	88.9	WITT
WYAB	Yazoo City, MS	93.1	WMGO-FM
KBBM	Jefferson City, MO	100.1	KLIK-FM
KADL	Imperial, NE	102.9	KLHK
KPKK	Amargosa Valley, NV	101.1	KPUP
KLRH	Sparks, NV	88.3	New
WBON	Hampton Bays, NY	107.1	WWXY
WVTK	Port Henry, NY	92.1	WJVT
WEHM	Southampton, NY	92.9	WHBE
WUIN	Carolina Beach, NC	106.7	WJZY-FM
WBNU	Shallotte, NC	103.7	WCCA
WYBL	Ashtabula, OH	98.3	New
WKLN	Wilmington, OH	102.3	WSWO
KWYA	Astoria, OR	89.7	KZNX
KOLW	Milton-Freewater, OR	97.9	KTHK
WGL	Philadelphia, PA	98.1	WGL-FM
WPHD	South Waverly, PA	96.1	WMTG
WRXV	State College, PA	89.1	New
WMTT	Tioga, PA	94.7	WPHD
WHZQ	Cross Hill, SC	94.1	WCRS-FM
WXBT	West Columbia, SC	100.1	WSCQ
WBZH	Harriman, TN	92.7	WUFX
WKHT	Knoxville, TN	104.5	WBON
KZBJ	Bay City, TX	89.5	New
KDHT	Cedar Park, TX	93.3	KXMG
KGLF	Doss, TX	88.1	KSHJ
KNGT	McQueeney, TX	97.7	KVCQ
KMAZ	Mercedes, TX	106.3	KTJN
KQXX-FM	Mission, TX	105.5	KBOR-FM
KQBO	Rio Grande City, TX	103.1	KCTM
KBTE	Tulia, TX	104.9	KLGD
KEGA	Oakley, UT	101.5	KPKK
KWYQ	Longview, WA	90.3	KZOE
WXCR	New Martinsville, WV	92.3	WNMR
WUSP	Nekoosa, WI	105.5	New
WPJP	Port Washington, WI	100.1	WGLB-FM

MURS Radio News—What Do You Know About MURS? Plus GMRS And MURS Mobile Radio Features We'd Like To See

The Multi-Use Radio Service (MURS) has existed for some three years now, but what do you *know* about MURS? Regular *Pop'Comm* readers have long been aware that MURS is the VHF Citizen's Band, created from former FCC Part 90 licensed commercial and Itinerant Business (IB) Service frequencies. Most of you first read about MURS in our November 2000 issue in the "Washington Beat" column. Yes, *Pop'Comm* was among the very first publications to break the story, while certain other hobby/consumer magazines and radio communications trade journals were sleeping!

I've had a number of requests for MURS-related items here in "On-The-Go Radio" over the past couple of years, but until recent months, there has been little to report! This is changing now, so we have a MURS "exclusive" later in this month's column. First, however, let's consider ideal mobile and handheld radio configurations for both GMRS and, of course, MURS.

How About Dedicated GMRS And MURS Radios?

As we noted in last month's column, the right combination of features and options could well result in a highly marketable GMRS mobile radio product. Well, the same goes for MURS. And that could result in an entire product line of marketable GMRS, as well as MURS, units. Rather than leave this up to my own perceived requirements though, experienced GMRS operator John H. Guetherman, WPXJ598, of Peoria, Arizona, offers up his own thoughts this month. John is an experienced ham (KB7MIB) and CB operator (SSB-83T) and has given this "concept" radio a good deal of thought. He shares his requirements for top-of-the-line GMRS and MURS mobile radios, which he would also like to see available as handheld models. According to John,

This is the list of what I want in a GMRS or a MURS radio. (Not a dual-band radio, but two separate radios, portable and mobile versions.) I'm also a ham, and most of these ideas came from what capabilities I've seen advertised for VHF/UHF ham radios.

Some folks have told me that commercial radios that are already available will do all of this for me. From what I've seen, however, most commercial radios must be computer programmed by a technician, or cloned from another radio if you or the other person has the proper cable; or if you're lucky, you might find the apparently not-so-public instructions for front-panel field programming. One gentleman told me he had to sign a non-disclosure agreement to get those instructions. Naturally, he didn't give me the instructions; he only stated that he did get them.

A purpose-built GMRS or MURS radio with the capabilities listed below would eliminate those headaches. Now, if only there was enough of a market size for radios such as these to be profitable to the manufacturers. But, at least I'm thinking about what it is that I want in a GMRS and a MURS radio. Just maybe, if someone in the industry reads

VHF "Class J" MURS (Voice & R/C) Channels

Channel	Color-Dot	Frequency (MHz)
1.....		151.820 %
2.....		151.880
3.....		151.940
4.....	Blue-Dot.....	154.570 *
5.....	Green-Dot.....	154.600 *

% Common-Calling, as well as general communications.

* Formerly shared extensively with other radio services, at 12.5 KHz (5.0 KHz deviation)—"conventional narrowband". Other channels are 2.5 KHz

Figure 1. MURS Frequency Chart.

this wish list, that'll get the ball rolling towards reality. But I'll never know if I don't make my wish list public, right? So here goes.

1. GMRS- or MURS-only frequency coverage in the firmware, with the ability to assign any frequency, or frequency pair in the GMRS, to any memory channel, via the front panel or microphone keypad or via computer or radio-to-radio cloning. So, if I want to play around with the combination/order of the frequencies/channels to find which works best for me, I can. And what works best for me may or may not work for anyone else.

For example, if I want to simply have MURS 151.820 MHz in Channel 1, 151.880 in Channel 2, I could. If I want to do 151.820/CTCSS 127.3 Hz in Channel 1, 151.820/CTCSS (tone-coded squelch) 173.8 in Channel 2, 151.820/TX CTCSS 141.3/receive or Carrier Operated Squelch (CSQ or COS) in Channel 3, etc., I could.

If I want to simply have GMRS 462.550 MHz in Channel 1, 462.575 in Channel 2, or if I want 462.550, 462.5625, 462.575, 462.5875, etc., I could. If I want to do 462.550 repeater/CTCSS 127.3 Hz in Channel 1, 462.550 repeater/CTCSS 173.8 in Channel 2, 462.550 simplex/transmit CTCSS 141.3/receive CSQ in Channel 3, etc., I could.

I want the capability to customize it in whichever way I choose, and I want the freedom to reprogram on the fly, while on a vacation or other road trip without a computer, for example. Naturally, the total number of memory channels would have to exceed 22 in a GMRS radio, and five in a MURS radio, to accomplish what I've outlined.

2) Memory channel scanning with busy/nuisance channel lockout, priority channel function.

3) GMRS only: Repeater/talk-around selection by one button/key press or a toggle switch. (The firmware should automatically prohibit this on the interstitial channels to prevent accidental transmissions on FRS Channels 8 through 14.)

4) GMRS only: Reverse-split check. Allows you to check the 467-MHz side of a repeater pair to determine if you are close enough to switch to simplex. One key press.



The RadioShack model 19-1210 mobile transceiver for MURS and licensed business itinerant use. (All photos courtesy of N3HOE.)

5) Fifty-tone Continuous Tone-Coded Squelch System (CTCSS) and 104 (x2) code Digital Coded Squelch (DCS), front panel/microphone keypad programmable. Tone and code search/scan. Ability to do split encode/decode CTCSS, whether I want separate tone frequencies for encode and decode; or encode only, receive in CSQ. As few key strokes as possible, this should not be a complicated process. One key press open-squelch monitor capability of assisting a conscientious operator to abide by the requirement to monitor before transmitting would be ideal. This way, at least with an initial transmission, the operator has to monitor for other conversations already going on. This would eliminate the excuses, "I didn't know anyone else was already talking" and "I didn't see my busy light was on," etc. Not a perfect solution, but a better one than the extreme Busy Channel Lock-Out (BCLO) idea. At most, the BCLO could be an optional feature that the user can decide whether or not to implement for his or her own use.

6) Sixteen-key DTMF (Touch-Tone) encode/decode for selective calling. (Connection to the public-switched telephone network being illegal in both the GMRS and the MURS, this would not be for making autopatch phone calls.)

7) MDC-1200 (or other signaling format)—ad for ANI (Automatic Numeric Identification), like Caller ID, and perhaps some of the other functions available to it (if permissible, in the MURS, I believe it is; in the GMRS, I'm not sure.)

8) Alphanumeric display. I've seen 8-, 10-, 12-, and 14-character displays mentioned in various manufacturers' websites.

9) Multiple power output levels, front panel or microphone keypad selectable.

a) MURS: 0.5 watt low/1 watt medium/2

watts high; or 0.5–1 watt low/2 watts high power output.

b) GMRS:

i) Base/Mobile: 5, 10, 20, 40 watts on the eight main frequencies/frequency pairs. Some variable range to set-and-forget on the seven interstitial channels (the shared-use FRS Channels 1 through 7.—ad) to achieve 5 watts ERP (the maximum allowed power on these particular channels.—ad). The exact power output would depend on the combination of antenna gain and coax loss that your system uses. And I would like to be able to switch between a quarter-wave, which would allow a higher power setting, and a collinear, which would require a lower power setting. So, perhaps simply a low and a high selection to allow me to switch as my needs required. If others only used one antenna all the time, the same power setting could be set in both low and high. The radio would need to recognize what frequency you've programmed into a memory channel so as to automatically select which power output setting you have access to.

ii) Handheld: Low and High; or Low, Medium, and High power settings, high being 4–5 watts. One- to four-watt variable range to set-and-forget on the interstitials like the base/mobiles. (ERP being based on a half-wave, you could use up to a half-wave UHF duckie on an HT at 5 watts on the seven interstitials.)

10) Multiple battery choices for a handheld. Alkaline, NiCd, NiMH. Long-life (7.2 volts/1600 mA for example) or High-power (12.0 volts/1000 mA for example). High-power wouldn't really be needed for a MURS radio at just 2 watts. A battery eliminator, and/or perhaps a drop-in mobile and/or base adapter capability for mobile/base use.

11) Commercial-quality (or Mil-Spec) com-

struction, not "bubble-pack" (consumer-grade) quality. And a handheld radio doesn't have to be shirt-pocket size for me. I'm sure other people, especially those with large hands, find those micro-sized portables difficult to work with.

12) A MURS radio should include the 10 NOAA/NWS channels. A GMRS radio could include the FRS Channels 8 to 14 in receive-only mode.

13) A detachable antenna is mandatory. And having other antennas (1/4 wave, 1/2 wave) as accessories is desirable. If a non-standard antenna connector (non-BNC) is used, an adapter needs to be made available as well.

14) For a MURS radio, perhaps a second, separate VHF high-band scanning receiver section? And for a GMRS radio, perhaps a second, separate UHF/UHF-T band scanning receiver section? This could be an asset to those users who are involved in Block Watch, REACT, or other public service groups, allowing them to monitor/scan MURS or GMRS, as well as public safety and other frequencies at the same time, without using up valuable memory channels that could be dedicated to MURS or GMRS.

I think a software-defined radio could handle the requirements I've listed here. (*The vast majority of commercial-grade two-way radios and wireless telephones made in recent years are already software-defined applications.—ad*)

I haven't come up with a price that I'd be willing to pay for a radio with the above capabilities yet. I'm not sure what a radio like that *should* be worth. Like I stated, I don't want bubble-pack quality. And I don't want to see them become bubble-packs (*as in mass marketed—ad*) either.

That's all for now. But I am constantly refining this list as time goes on.

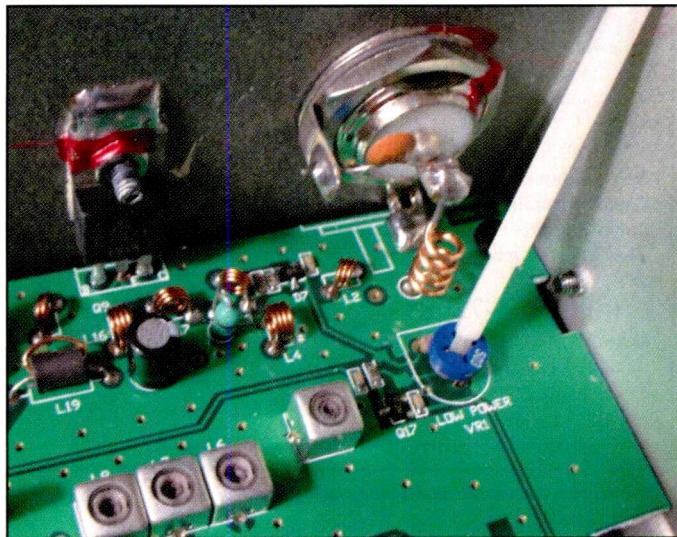
Excellent work, John! Let's hope now that one or more manufacturers will step up to the plate and produce the products you describe. Until then, we will have to make use of what is presently available, or what has been recently available as new, and can now be found on the used radio equipment market.

Digital Confusion On GMRS?

There appears to be some confusion among GMRS users as to whether digital speech modes are authorized in GMRS. The answer is quite simple: No. Digital voice is not authorized in GMRS. Licensees should check FCC Rules, Part 95, Subpart E, §95.631(a) regarding this. Digital speech modes can be either emission modes F2E or G2E, or other modulation schemes ending with "2E." As if



Transmit power adjustment setup conceptual illustration. A single coax jumper runs from the 19-1210's antenna connection to an RF power meter's TX connector. A small dummy load (5 watts) is screwed onto the meter's ANT connector.



My alignment tool is inserted into the radio's Low Power adjustment pot VR1 (see text).

this is not clear enough, the FCC goes on to state in §95.631(e), "No GMRS or CB transmitter shall employ a digital modulation or emission."

We can plainly see that these modes are not included among those allowed in GMRS. Case closed.

Going Mobile With MURS

The Multi-Use Radio Service is the newest of the FCC's Personal Radio Services for voice communications. MURS, however, is also available for packet and other data uses. It is the first and only VHF Citizen's Band authorized under FCC Rules Part 95, Subpart J, or "Class J" CB radio, if you will. Somewhat like FRS radio, our present UHF-FM Citizen's Band, MURS is a low-power radio service for short-distance communications. And, like FRS, MURS has to date been primarily used with handheld portable radio equipment. But that is just about where the similarities end.

Whereas FRS units are limited to just a 1/2 watt of transmit power with fixed, unity gain antennas, MURS equipment is allowed 2 watts transmitter power, with detached antennas, including high-gain types! Since MURS has no integrated antenna requirement, another world of possibility exists that was more or less impractical in FRS, and that is the world of mobile-unit and base station radio configuration. MURS can be designed for true mobile radio installation, with the transceiver mounted inside a vehicle and a roof or cowl-mounted gain-type mobile antenna. Likewise, MURS can be configured for base station installation, with an in-building transceiver and a rooftop high-gain antenna.

MURS' popularity in connection with handheld radio equipment use is largely due to business users who were previously required to be commercially licensed under FCC Part 90. Our five MURS frequencies had been removed from licensed commercial service in November of 2000 when MURS was created. Commercial users are permitted to continue using these channels on an unlicensed basis. Since these had formerly been low-power commercial frequencies (1 watt at that time), only

a handful of radio equipment had been made available to users. Business users needing mobile radios sought one of the higher-power commercial frequencies available for that purpose, naturally. Consequently, there had been essentially no mobile radio transceivers available that were suitable for MURS use. That is, until...

We had finally decided to hit the road with MURS. But, what with? I had long been aware that RadioShack offered a 5-watt "Business Band" mobile radio (stock number 19-1210) that automatically dropped power to just under 1 watt on the designated low-power frequencies, five of which turned out to be the five MURS channels, of course. Okay then, this would work, but only at something less than half-power on an already low-power radio service. "Not quite acceptable" I had surmised, at least for our own uses here at the "On-The-Go Radio" office.

It was not until several months back that fellow MURS enthusiasts notified me that there is a "modification" available for this RadioShack product that allows the factory-programmed low-power channels to be continuously adjusted to as much as 5 watts. I had not found this modification listed on the usual amateur-related and scanner-related websites, so I had already long given up on the idea of using the 19-1210 for MURS. But, this "modification," which is merely a simple internal adjustment, addressed my one concern about this unit, directly. Now the RadioShack 19-1210 would meet our needs for a mobile MURS unit very well!

Ironically, it was just about the time I learned of this modification that RadioShack had decided to discontinue marketing their 19-1210. Oh, brother! RadioShack has a long history of retiring its better product offerings long before the end of their useful lives. This is not a complaint against RadioShack, but rather a simple wish from a consumer's perspective. My guess is that if RadioShack had published power adjustment information in this product's user manual, at least later in the production run when MURS became authorized, these units would have been selling better than perhaps they had been.

I was ahead of the situation just enough to obtain one of these nice little radio sets, still new (not a "demo" pulled from a dis-



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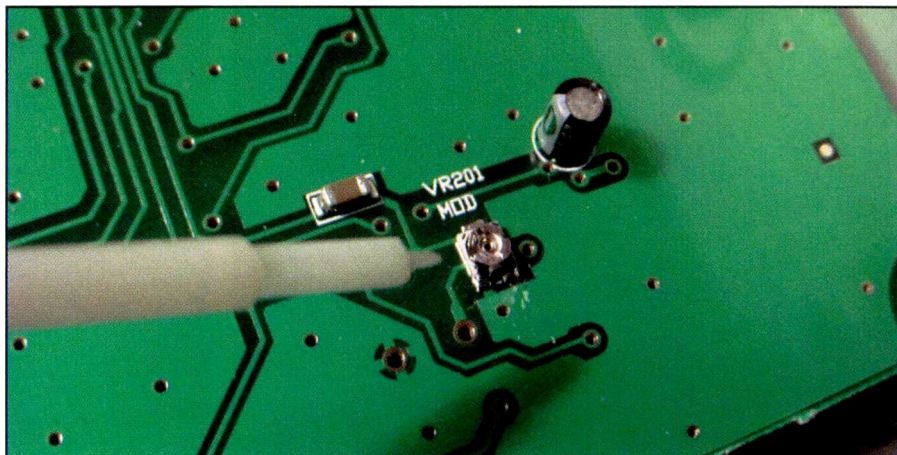
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VR201's label indicates that it is the modulation adjustment pot. Don't touch this one unless you know exactly what you're doing.

play case) in its box, down the street at the local store. And my timing could not have been better as far as cost is concerned. I obtained my 19-1210 at its lowest clearance price, which had apparently gone down in successive steps over a period of a few weeks. I won't say here what that price was, but it was so ridiculously low that I paid for it with the coin change in my car's ashtray, plus just a few crumpled "ones" out of my shirt pocket! I would have bought a half-dozen at that price, had they been available.

The RadioShack 19-1210 is a simple two-channel mobile FM transceiver, suitable for under-dash mounting in just about any vehicle. Besides the channel selector, it has a combination on-off-volume knob, and a squelch knob. It also has a CTCSS (tone-coded squelch) on-off selector to enable or disable a user's pre-selected CTCSS tone frequency. Both frequency programming for the set's two channels and CTCSS selection are accomplished by a series of DIP switches located under a removable cover underneath the set. Instructions are included for user-selection of the 38 available CTCSS codes, and the nine frequencies available in both MURS and licensed business channels.

The 19-1210 comes out of the box with two of the five MURS channels already programmed in. These are Channel 5, also known as "Green-Dot" (154.60 MHz), and Channel 4, also called "Blue-Dot" (154.57 MHz). These are in the transceiver's first-channel and second-channel positions, respectively. (It's anyone's guess as to why these are pre-set out of numerical order.) So just the way this unit comes, it may be used immediately for MURS purposes without any adjustment or programming.

Since we now see how this radio can be brought up to full authorized power, its

only drawback of any real concern for our purposes is that it can only be programmed with your choice of two of the five MURS channels. Well, my primary concern had been the transmit power output. With that problem to be quickly solved, I decided I could live with only two MURS channels at my fingertips at any given time. But which two?

My choice for the first channel slot on the 19-1210 was easy: MURS Channel 1 (151.82 MHz), of course! Why? Because following the *Midland-1 Listens* initiative, MURS Channel 1 is the national common calling channel standard for MURS. (Our regular readers know that *Pop'Comm* has published extensively about the *Midland-1 Listens* concept in recent months' issues.) Even at about three years of age, MURS is still in its infancy in terms of regular, recognizable user patterns, including any other credible efforts at establishing a common calling channel. And it doesn't hurt that MURS Channel 1 then lines up nicely with the Channel 1 indicator on the transceiver. So, Channel 1 is clearly a natural.

Now, what about that second channel slot? MURS Channel 2? Let's first take a quick look at traffic loading on the five MURS channels. First, as far as previous business licensees on these frequencies are concerned (most of whom likely still use these channels), MURS Channels 4 and 5, also known as *Blue-Dot* and *Green-Dot*, respectively, are by far more heavily loaded than the other channels. A database search of the most recent licensees, nationally, shows thousands and thousands of licensees previously assigned one or both of these two color-dot MURS channels, with virtually only handfuls of licensees previously

assigned to MURS Channels 1 through 3. The two MURS color-dot channels are both in the 154-MHz range, while the first three MURS channels are in the 151-MHz range. Channels 1, 2, and 3 have no color-dot designations, which is a pre-existing industry standard rather than FCC identification.

If allowed easy access to only two MURS channels due to practicality considerations, such as model 19-1210 users have, many of you would likely want a quiet second channel for whatever business or personal uses you have in mind for the band. In my case, however, I intend to continue examining MURS' low-power propagation while mobile, so I deliberately chose the busiest channel in my main area of travel. This will allow me the most frequent opportunities to examine portable-to-mobile and mobile-to-mobile, as well as portable-to-base station range possibilities.

Next, I had to choose a single CTCSS tone for my 19-1210 mobile. After several casual user surveys, it became quite evident that there is no consensus at all on CTCSS tones use, just as in FRS radio. Next, I looked to the one other Personal Radio Service that uses CTCSS codes, GMRS. In that licensed, high-power mobile radio service, there is a single squelch code national standard that has had broad geographical acceptance. That is the "Travel Tone" (141.3 Hz), which is used for traveler assistance and distress signaling, predominantly on the GMRS de facto calling channel, "675," which is 462.675+ MHz.

So, for my own mobile trial runs, I elected to give 141.3 a go-round. I will watch the continuing evolution in MURS to see if this or any other CTCSS code becomes

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either an assistance or calling Travel Tone, just as in GMRS. Only time can tell.

With everything else set to go in my 19-1210, it was finally time for the power adjustment. Opening the top of the case reveals the component side of the main circuit board. Viewing the opened-up unit from its open top, with the front panel facing you, you can see the power adjustment to the right, toward the back. The 19-1210's "low-power" adjustment potentiometer (VR1) has a blue plastic upper surface, making it easy to spot (see **Figure 1**). I found that turning the pot counter-clockwise *increased* the transmitter power output.

I connected the *antenna* terminal of an RF power meter rated for ~150 MHz to a dummy load rated for at least 5 watts at VHF frequencies. Then, we connected the meter's *transmitter* terminal to the transceiver antenna terminal by means of a short coaxial cable. While keying the mic's transmit button without applying modulation (in a quiet room), I was able to gently rotate the "low-power" pot until it was just tipping 2 watts. I had to be careful: this adjustment easily went to somewhere above 5 watts at its extreme range of adjustment!

I checked this against the two channels I had programmed into my transceiver for consistency. It turned out that the power on one of my channels was just a hair higher than on the other. The trick here was to make sure that the channel exhibiting higher power was the one that I set right at 2 watts. This way, the remaining channel came in at about 1.95 watts. Had I done this the other way around, one channel would be correctly set to 2 watts, but the other channel would be a bit over 2 watts and, therefore, in violation of FCC regulation. This imbalance is merely a design quirk and not likely to be anything warranting any further concern. With the power adjustment done, I put the top of the case back into place and completed the mobile installation of my 19-1210.

Why am I reporting on this now-discontinued radio product at this point in time? The answer is because this transceiver has suddenly become a hot commodity among MURS enthusiasts. And, as it turns out, the RadioShack 19-1210 is still readily available on the used equipment market, particularly on e-Bay. While prices at the time of this writing are not what they were when RadioShack was selling out of them, they are well below the

former prevailing catalog price of somewhere around \$120. And you will not necessarily be getting used equipment. I found several of these units from several sources being represented as "new," "new in original box," or as former display models.

I went ahead and bought one of the units represented as being new. The vendor I dealt with delivered as promised and my newly arrived second 19-1210 was in its original box, including all accessories and parts, just as packaged by the manufacturer. Although my transceiver and its box did appear to have been somewhat "handled," perhaps by a few previous potential buyers, it had obviously never been installed or modified. And all of the accessories clearly had never been touched and were in their original sealed clear plastic wrappers.

I programmed and adjusted this unit and tested its programmed frequencies and CTCSS tones both before and after the programming, on both transmit and receive, using a signal and tone generating unit. It works great! I will be using this second 19-1210 in a base station configuration, alternately testing the radio's back-of-set rubber-duckie antenna and a gain-type rooftop antenna. I may report

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my observations on MURS usage in a future "On-The-Go Radio" column if enough interest is shown.

What's Next?

What does the future hold for MURS? This is a hotly debated subject among MURS enthusiasts. And I do mean *hot!* I've noticed two distinct considerations of MURS that will affect its evolution in the near-future.

The first is that MURS is a multi-mode service. It is not intended only for voice operations. Data is also permitted. And there is great interest in establishing packet nodes and networks in MURS. We need to bear in mind that MURS presents a rare opportunity for *unlicensed* (actually licensed-by-rule) packet operation for hobbyists.

I have always felt that it is foolish to authorize data or image modes on a shared-channel basis with voice communications. This will be certain to generate contention between voice and data operators in MURS. But the former Kennard FCC administration during the creation of MURS totally endorsed a mindless anything-goes attitude toward varied and

multiple *modes* in any number of wireless services. There is a long story of technology "competition" behind this Commission decision, of course.

The second consideration as MURS continues to develop is whether or not MURS should encourage inter-user communications in the first place. Traditional use of our MURS frequencies was *intra*-user comms. For example, any number of users at a single business would communicate almost exclusively with other personnel at that same business. There had been *no inter*-station calling, and that was that. And a significant number of MURS aficionados would rather keep it that way.

Although MURS is *not* intended as a hobby radio medium, it is rapidly headed in that direction, despite the enormous volume of incumbent business use. Even those who spurn inter-station calling tend to hang together in Internet forums as if in clubs. Nonetheless, each radio service needs a common calling channel if for no other reason than to seek assistance in emergencies. And indeed, we have one: MURS Channel 1.

Somehow, a number of MURS enthusiasts have gotten the idea that a calling channel implies or requires emergency exclusivity as with CB Channel 9. And a number of these same folks seem to think that "calling" in MURS will involve operators calling "CQ" and "Breaker-Breaker!" These preconceptions are idiotic. No one is pressing for this sort of on-air protocol, if you can even call it that. Is anyone naive enough to believe otherwise? People just need to be able to say things such as, "Anyone know where I can find a gas station open at this time of night?" Is this a problem? Not at all.

Anyone want mull over a really radical idea for MURS? I'll leave you with this one before we close for the month (it's still scuttlebutt at this time, so I clearly label it as such): Will MURS evolve into a new highway-traveler service in place of, or in addition to, 11-meter CB radio? MURS mobile units' 2-watt transmit power closely rivals 27-MHz CB's 4-watt AM power on the road. Our traditional CB will perform better in hilly terrain and in certain other circumstances, but by perhaps only a *negligible* margin.

An inconsequential tradeoff in transmit range might be considered well worth the mostly static-free and skip-free reception of VHF-FM radio. Consider that so much of highway two-way radio traffic occurs at very close range, such as in caravans, between vehicles momentarily passing,

and in navigating the grounds of a major truckstop. Consider also that with numerous CTCSS codes, and inevitably dozens of DCS squelch codes as well, it will at least be possible to literally *squelch* out unwanted stations using abusive language and (I hope not!) dirty signal amplifiers. I have anecdotal evidence that truckers in western Canada have been using FM on frequencies in the 150- to 155-MHz range for CB-style highway comms for perhaps a year now. I emphatically state, however, that I have been unable to confirm such casual reporting.

So why do I bother to mention an unverified tale in this column? I do so simply in an effort to solicit observations from *Pop'Comm* readers living in or driving through western Canada. Please let us know here at "On-The-Go Radio." Are any Canadian truckers using VHF-FM? Are they using U.S. MURS channels? MURS is not authorized in Canada to my knowledge. Whether that changes in the near future, as it did with FRS, remains to be seen.

Regardless of what various MURS interests may say, do remember this: If you have an interest in what MURS radio can do for you, then don't hesitate to get into it. Use it for any or all authorized purposes as you see fit. Have fun with it, and let it serve you well. Don't let others tell you how or how not to use this most interesting radio service. Instead, use your own imagination in your choice of equipment and configurations, and use courteous operating procedures and habits.

GMRS Acknowledgement And Recognition Package Offer

I have one final and very important item to discuss. Many of you remember and had participated in my *GMRS Acknowledgement and Recognition Package* offer, which was discussed in this column in our September 2003 issue. I have had to discontinue this offer due to logistical circumstances beyond my immediate control and means. In any case, I want to heartily thank the *many* of you who responded so enthusiastically to this offer! Thank you for your participation, and thanks to everybody for enjoying "On-The-Go Radio" each and every month.

Have a joyous holiday season, my friends. Stay safe on New Year's Eve. We'll see you again as December passes by in a blur and a whirl of activity! ■

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Indoor Active Antenna

Rival outside long wires with this tuned indoor active antenna.

"World Radio TV Handbook" says MFJ-1020B is a "fine value... fair price... best offering to date... performs very well indeed."

Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as a preselector with external antenna. Covers 0.3-30 MHz. Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$14.95.

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world band

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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	UTC	Freq.	Station/Country	Notes
0000	9780	Yemen Radio	AA	0300	4976	Radio Del Pacifico, Peru	SS
0000	6175	Voice of Vietnam, via Canada	VV	0330	11580	KFBS, Saipan, No. Marianas	CC
0030	4940	Radio Amazonas, Venezuela	SS	0330	17850	Radio Exterior de Espana, via Costa Rica	SS
0030	21605	UAE Radio, Dubai		0400	11765	BBC via South Africa	
0030	9830	Voice of Turkey		0400	12010	Radio Sawa, via Morocco	AA
0030	9645	Voice of America Relay, Thailand		0400	5020	Solomon Is. Broadcasting Corp.	
0030	17505	Radio Sweden		0400	15360	BBC Relay, Singapore	
0030	13740	Voice of Vietnam		0400	9650	Radio Korea Int., via Canada	
0030	15395	Radio Thailand		0400	11820	Radio New Zealand	
0030	11605	Radio Taiwan Intl	CC	0400	6137c	Radio Unamsil, Sierra Leone	
0100	11550	Radio Taiwan Int		0400	9000	Deutsche Welle via Russia	GG
0100	11500	Voice of Russia via Tajikistan		0430	6020	Radio Victoria, Peru	SS
0100	4910	Radio Zambia		0430	12015	Voice of Mongolia	
0100	11825	Voice of Russia via Vatican		0430	11770	Radio Mexico Int.	SS
0100	11625	Vatican Radio	FF	0430	15550	Radio Free Asia, via Northern Marianas	unid
0100	5446.5	Armed Forces Network, Puerto Rico		0500	15220	Radio Japan via Ascension Is.	JJ
0100	11905	Radio Tashkent, Uzbekistan		0500	15495	Radio Kuwait	AA
0130	5047	Radio Togo	FF	0500	11585	Kol Israel	HH
0130	6055	Radio Exterior de Espana, Spain	SS	0500	17545	Kol Israel	EE/HH
0200	11920	BBC Relay, Singapore	Hindi	0500	3320	Radio Sondergrense, South Africa	Afrikaans
0200	6150	Radio Singapore		0500	9750	Radio Japan	
0200	11820	BSKSA, Saudi Arabia	AA	0500	9885	Radio New Zealand	
0200	15160	Voice of America Relay, Philippines		0500	15345	RTV Marocaine, Morocco	AA
0200	11655	Voice of America Relay, Sao Tome		0500	9875	Radio Vilnius, Lithuania	
0200	12140	Radio Liberty, USA, via Sri Lanka	Kazakh	0500	6045	Radio Universidad, Mexico	SS
0200	15205	Deutsche Welle Relay, Rwanda		0500	11690	Radio Jordan	
0200	13705	Radio Rossii, Russia	RR	0500	17830	BBC Relay, Seychelles	
0200	4825	Voz de la Selva, Peru	SS	0500	17505	Norwegian Radio	NN
0230	11640	Voice of Russia	RR	0500	11910	Radio Romania Int.	
0230	7120	BBC, via South Africa		0500	9580	Radio Serbia Montenegro	
0245	9440	Radio Romania Int		0600	3240	Trans World Radio, Swaziland	unid
0300	11720	Radio Pilipinas	Tagalog	0700	15435	BSKSA, Saudi Arabia	AA
0300	4890	Radio Macedonia, Peru	SS	0730	15390	Deutsche Welle Relay, Rwanda	unid
0300	11680	Korean Central Bc. Stn, North Korea	KK	0800	9525	Voice of Indonesia	unid
0300	6185	Radio Educacion, Mexico	SS	0830	15150	Voice of Indonesia	
0300	4996	Radio Andina, Peru	SS	0830	15084	Voice of Islamic Republic of Iran	Farsi
0300	15735	Norwegian Radio	NN	0900	15640	Kol Israel	EE/FF
0300	11570	Radio Pakistan	local	0900	7295	Radio Malaysia	
0300	4770	Radio Nigeria		0930	13695	All India Radio	Hindi
0300	11710	Voice of Korea, North Korea	FF	0930	11620	All India Radio	Hindi
0300	11795	Radio Free Asia, via No. Marianas	CC	0930	15330	Trans World Radio, Guam	
0300	17800	Voice of Nigeria					
0300	9785	Radio Netherlands Relay, Bonaire					

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0945	9655	YLE Radio Finland	Finnish	1500	13610	Radio Damascus, Syria	FF/EE
1000	5678	Radio Ilucan, Peru	SS	1530	15265	Channel Africa, South Africa	
1000	17615	RDP Int., Portugal	PP	1600	6090	Radio Bandeirantes, Brazil	PP
1000	48790	RRI - Wamena, Indonesia	II	1600	15395	UAE Radio	AA/EE
1000	15160	Radio France Int.		1600	15595	Vatican Radio	II
1000	15565	BBC, England		1600	9635	VOIRI, Iran	
1030	9990	Egyptian Radio		1600	7295	RFE/RL, via Greece	unid
1030	15115	HCJB, Ecuador		1600	17640	BBC Relay, Cyprus	
1030	11800	RAI, Italy	II	1600	6135	Radio Aparecida, Brazil	PP
1100	9475	Radio Denmark, via Norway	DD	1630	9600	Radio Rebelde, Cuba	SS
1100	4930	Radio Barahona, Dominican Republic	SS	1630	4717	Radio Yura, Bolivia	SS
1100	17485	Radio Prague, Czech Republic		1630	6195	BBC Relay, Antigua	
1100	11955	Radio France Intl, via Gabon	FF	1630	9840	Voice of Vietnam	
1100	7110	Radio Ethiopia	Amharic	1630	7270	Radio Tirana, Albania	unid
1100	3300	Radio Cultural, Guatemala	SS	1700	9540	Radio Tirana, Albania	
1100	17780	KWHR, Hawaii		1700	15400	BBC Relay, Ascension Is.	
1100	11765	Radio Tupi, Brazil	PP	1700	12020	Voice of Vietnam	JJ
1100	15475	Voz Cristiana, Chile	SS	1800	11760	Radio Havana Cuba	SS
1100	9760	Cyprus Bc Corp via BBC relay	Greek/ Wknds	1800	6090	World University Network, Anguilla	
1100	9600	Radio Rebelde, Cuba	SS	1800	15345	Radio Nacional, Argentina	SS
1130	11760	China Radio Int	FF	1800	12080	VOA Relay, Botswana	
1130	11990	Radio Prague, Czech Republic	Czech	1800	5952.5	Radio Pio II, Bolivia	SS
1130	15680-	China Music Jammer		1830	4876	La Cruz del Sur, Bolivia	SS
1200	5985	Radio Congo	FF	1830	15470	Adventist World Radio, via Austria	
1200	11935	Voz Cristiana, Chile	SS	1830	5400	La 101, Argentina, SSB relay	SS
1200	6070	CFRX relay CFRB, Canada		1830	11710	RAE, Argentina	
1200	9515	Radio Canada Int.	FF	1830	6010	Voz de tu Concencia, Colombia	SS
1200	5985	Radio Senado, Brazil	PP	1830	6350	Armed Forces Network, Hawaii	SSB
1200	11780	Radio Nacional Amazonia, Brazil	PP	1830	7210	Radio Belarus	
1200	4915	Radio Anhanguera, Brazil	PP	1900	9465	Far East Broadcasting Assn, via Austria	
1200	6210	Radio Fana, Ethiopia	Amharic	1930	9590	Radio Budapest, Hungary	
1200	15510	VOIRI, Iran	unid	1930	11725	Radio Cairo, Egypt	
1230	4052.5	Radio Verdad, Guatemala	SS	2000	11765	KNLS, Alaska	
1230	10330	All India Radio	Hindi	2000	12060	Voice of Hope, via Madagascar	
1230	17705	Voice of Greece, via Delano, USA	Greek	2000	13640	Radio Telefis Eireann, via Canada	
1230	13650	Radio Japan		2000	15615	KSDA, Guam	
1230	9865	Radio Vlaanderen Int, Belgium, via Russia		2000	17775	Radio Tashkent, Uzbekistan	
1230	4985	Radio Brazil Central	PP	2000	6215	Radio Baluarte, Argentina	SS
1300	12080	Radio Australia	Pidgin	2000	3290	Voice of Guyana	
1300	15475	Africa No. One, Gabon	FF	2030	4800	Radio Buenas Nuevas, Guatemala	SS
1300	11905	Swiss Radio Int'l, via Fr. Guiana		2030	4800	Radio Lesotho	
1300	9680	Radio Republik Indonesia	II	2100	4820	Radio Botswana	
1300	4960	Radio Cima, Dominican Republic	SS	2100	7255	Voice of Nigeria	
1300	13685	Voice Int., Australia		2130	7275	RT Tunisienne, Tunisia	AA
1300	17840	Radio Sweden		2200	4890	NBC, Papua New Guinea	
1330	7130	Deutsche Welle Relay, Sri Lanka		2200	4915	Ghana Broadcasting Corp.	
1330	6060	Radio Universo/Radio Tupi, Brazil	PP	2200	4955	Radio Nacional, Angola	PP
1330	9580	Radio Australia		2230	4976	Radio Uganda	
1330	15240	Radio Australia		2230	5010	Radio Cristal, Dominican Republic	SS
1330	4885	Radio Clube do Para, Brazil	PP	2230	11750	HCJB - Australia	
1330	9400	Radio Bulgaria		2230	7165	Nei Menggu PBS, China	CC
1330	21740	Radio Australia		2300	9665	China Radio Int, via Brazil	
1400	15630	Voice of Greece	Greek	2300	4832	Radio Litoral, Honduras	SS
1400	7290	Voice of America Relay, Sao Tome		2300	11890	Radio Jamahiriya, Libya, via France	AA
1400	15265	Central Broadcasting System, Taiwan	CC	2330	15065	Radio Pakistan	
1430	9870	Radio Korea Intl		2330	9835	FEBC, Philippines	CC
1430	9560	Radio Korea Int, via Canada		2330	11734	Radio Tanzania, Zanzibar	Swahili
1430	15680	Voice of Hope, via Germany					

radios & high-tech gear

review of new, interesting, and useful communications products

New Uniden BC350C Scanner

Uniden has just released information on their new BC350C, a compact mobile/base scanner that features a built-in Service Scan system; you don't even have to program the scanner to use it. Similar to the BC350A, it comes with six Service banks for monitoring police, fire/emergency medical services, marine, air, weather, and CB frequencies. This new scanner includes a fully programmable bank that allows users to store their favorite frequencies.



Uniden's new BC350C is a state-of-the-art mobile/base scanner that scans over 3,600 channels.

The BC350C scans over 3,600 channels. There are two Service Scan banks; police and fire/EMS also have programmable channels to store additional police and fire/EMS frequencies, so if a user finds a new active frequency for either service category it can be added to the bank for that category.

Uniden says the BC350C is, "one of the most user friendly communication products available today." Additional features include Turbo Search that allows the unit to search 300 steps per second (5-kHz step band only) and seven banks (six pre-programmed Service Banks and one standard, programmable Private Bank). These banks include:

- Police: 1,769 factory-programmed police frequencies with 30 open channels allowing you to program additional police frequencies into this bank.
- Fire/EMS: 280 factory-programmed fire/EMS frequencies plus an additional 20 open channels for you to program local fire/EMS frequencies into this bank.
- Air: 1,519 factory-programmed frequencies which cover the complete air band, 118 to 136.975 MHz.
- MRN: 51 factory-programmed frequencies which cover the complete marine band.
- WX: 10 factory-programmed frequencies covering eight NOAA weather service broadcasts and two Canadian marine weather broadcasts.
- CB: 40 factory-programmed frequencies covering CB communications.

For more information on the new Uniden BC350C, contact Uniden Corporation at www.uniden.com or directly at 800-297-1023.

Midland's new WR-300 NOAA receiver with a built-in AM/FM receiver is a slick-looking lifesaver. Every home and office in the country needs one of these radios with the S.A.M.E.

technology that allows a user to program it to hear only emergency alerts for a specific county or geographical area.



Midland's NOAA Weather Radios Enhanced By "All Hazards" Alerting Role

Spurred by terrorist alerts and related national security warnings, AMBER missing-children announcements, toxic-hazard cautions, and air-quality messages, the role of NOAA Weather Alert Radios has taken on a new urgency for all Americans as an "All Hazards" broadcast warning system.

The new enhanced profile of these special emergency alert receivers from Midland Radio positions them as important in a home or workplace as is a smoke detector to save lives and protect property.

There has been substantial news coverage recently about the benefits of All Hazards/Weather Emergency Alert Radios. These alerting receivers have provided the critical advance warning time needed to prevent death and destruction, especially during tornado and hurricane outbreaks.

The new All Hazards/Weather Alert Radios monitor the seven VHF frequencies across the country operated by the National Weather Service (NWS) that can only be received by these special radios. NWS is a division of NOAA, the National Oceanic and Atmospheric Administration, operating under the U.S. Commerce Dept.

Midland's All Hazards alert radios include desktop and portable models that offer advanced features including S.A.M.E. (Specific Area Message Encoding) user-programmable reception. S.A.M.E. enables a listener to set the radio to monitor just one or multiple nearby counties, thus avoiding "false alarm" messages intended for areas that are much further away.

Midland's desktop receivers, like the new Model WR-300 (\$79.95 suggested retail) with FM/AM clock radio, is ideal for bedside nightstand and kitchen countertop use. It should be left in silent standby mode all night to monitor for possible emergency alerts when all TVs and radios are off.

These All Hazards/Weather Emergency Alert Radios receive 24/7 weather forecasts for local areas throughout the country, as well as weather-related waterway, mountain, and roadway information. When an urgent warning is disseminated, a very loud tone is broadcast that triggers the radios to automatically activate when they are in standby mode.

Red alert LEDs and alert announcements in the LCD display are triggered and then the warning message is broadcast on the

radio's speaker. The unit can display over 50 text messages that indicate the nature of the S.A.M.E. alert, such as "TORNADO" or "FLOOD WATCH."

Midland Radio Corporation, headquartered in North Kansas City, Missouri, markets a full line of All Hazards/Weather Emergency Alert Radios, Two-Way Radios, CB Radios, Antennas, and Accessories. Contact Midland by e-mail at mail-to:info@midlandradio.com or visit the company's website at http://www.midlandradio.com/. Be sure to mention you saw it in *Popular Communications!*

2004 Police Call Frequency Guide Includes CD-ROM

Editor Rich Barnett informs *Pop'Comm* that every copy of the 2004 *Police Call Frequency Guide* (on sale October 25) will include a nationwide *Police Call* CD-ROM (Version 5.0) at no extra cost, continuing a policy begun three years ago.

Police Call, informally known as the "Scanner User's Bible" and now in its 41st year of publication, includes radio frequencies for emergency agencies and 18 other categories of radio users, such as federal government, aircraft, public utilities, transportation sports, education, and entertainment. Additionally, there are sections about trunked systems with their talkgroup codes, an exclusive Consolidated Frequency Usage List, a 10-page Listener's Guide, Radio Codes and Signals, Maps, and a Glossary of Radio Slang and Terminology. It's everything a listener needs to enjoy the hobby or be a better professional two-way radio user.

Police Call books and the *Police Call* CD-ROM are updated annually to reflect the thousands of changes that are made during the year. The one CD ROM includes the data from all seven volumes, plus additional features of interest to radio listeners.

Police Call is sold by selected retail electronics dealers and mail order firms (many of whom can be found on the Internet) as well as in RadioShack stores. Look for the familiar cover, which will be orange this year. The suggested retail price of each regional volume is \$19.99, including the CD-ROM.

B&K Precision 50,000-Count Dual Display Bench DMM

B&K Precision's line of professional test instruments has a new addition: the Model 5491A Bench Multimeter. Utilizing a standard 115-VAC outlet as the power source, the new PC-compatible benchtop unit provides an easy-to-read display with 50,000-count accuracy. Priced at \$495, the 5491A offers a very accurate, feature-packed True RMS bench DMM at a reasonable price. Because of the low price and high accuracy, the unit is an ideal tool for use in any high school, technical trade school, college and university laboratory, as well as in Research & Development and other benchtop applications.

Unique features of the new Model 5491A include resistance measurement up to 50 Mohm, 10 Mohm resolutions, frequency measurement up to 500 kHz with 0.01-Hz resolution. dBm measurement with variable reference impedance from 2 to 8000 ohms, fast electronic and closed-case calibration, display hold, RS-232 interface, and rack mount option.

The 5491A measures 4.1 x 10 x 12 inches (HWD) and weighs 6.6 pounds. For more information, contact B&K Precision at 22820 Savi Ranch Parkway, Yorba Linda, CA 92887; Phone: 714-921-9095; Web: www.bkprecision.com. Be sure to tell them you read about the new Model 5491A DMM in *Pop'Comm!*

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Refinishing 101: A Primer For Minimalists

It's easy for me to take for granted that everyone who collects antique radios is "into" refinishing. Unfortunately, that's hardly the situation for many of our readers.

Here's a good example. Several columns back I mentioned the use of toners when refinishing cabinets. Soon afterwards I received this letter from reader Victor Commisso:

I read your column every month and I always learn something from it. I'm glad you talked about the furniture repair aspect of radio restoration because that often gives me more trouble than the electronics. Simple refinishing (just to cover scratches or marks or to restore a shine) gets to be a problem when you can't get the new coat to adhere properly. This month you mentioned perfect brown toner. That is, you mentioned it but didn't say anything more about it. I'm not familiar with the product. What is it, where do you get it?

Victor, I'm sorry for the lack of clarity. Toner is lacquer with dye added for coloring. Toners are normally used as the first coats on a piece that is being refinished. In other words, toners serve the same purpose as dyes (wood stains) used on wood before being finished with polyurethane. Radio cabinets did not have stains applied; instead toners were used to make wood look like walnut, or to mask cheap poplar veneers with opaque coats of perfect brown or extra dark walnut finishes. Toners are what give the lacquers the deep, honey-colored finishes. They aren't used as a finish coat because the process of rubbing down the finish will remove toner, resulting in variations in the wood color. Toners are usually followed with several finish coats of clear or satin lacquer, depending on the desired appearance of the radio.

Most woodworker supply houses carry toners. Contact Van Dyke's Restorers¹ and request a catalog. You can buy spray cans of lacquer toner (walnut, dark walnut, extra dark walnut, Van Dyke brown, perfect brown, cherry, black, are a few examples), or you can buy the dyes to mix with clear lacquer to produce toners for spraying with a gun. Restoration supplier Bill Turner² also carries some of the more popular shades in pressurized spray cans, as do our fine supporting advertisers Antique Electronic Supply³ and Radio Daze⁴.

Lacquers must be applied on a very clean surface. If stains were applied, especially oil based, they *must* be thoroughly dried before spraying, and that can take weeks! Any prep products that contain any amount of silicone (and many do) will cause the lacquer to crater and not adhere. Some folks use an initial coat of shellac, which will make the old surface compatible with the lacquer. Some people feel toners will spread more evenly over a shellac base than when applied directly to bare wood. A few restorers also use wood stains on the cabinets before spraying on toner or clear lacquer coats. The pretreatment with stain lessens the amount of toner needed, and in some cases, makes for a deeper and richer looking finish.

Unlike antique furniture (with some exceptions for rare ultra-expensive higher-end pieces), radios are considered appliances and aren't held to the same standards as antique furniture. Besides, few radios meet the 100-year rule, which precludes them from being true "antiques" in the strict definition of the

word. Yet, right or wrong, it seems that sets with properly refinished cabinetry command the best prices. I assume in part this is because these sets are destined to be prominently displayed in homes rather than museums (and wives generally prefer "new" to "old").

There's a point that divides many collectors into two camps: is it better to keep a radio that reflects its age by showing some wear, patina, and indications of use; or should the cabinet be stripped and fully reconditioned to as-new condition? We've discussed this before, and I am sure it will remain a topic for debate for many years to come! I think there's a happy medium between these two extremes that would satisfy most of us. So, Victor, here's a tip on how to clean up those scratches without worrying about stripping, refinishing, or incompatible finishes: Sometimes you can re-spray a finish with fresh lacquer after a good cleaning. Sometimes this works, sometimes it doesn't, and more extreme measures (stripping, refinishing) will be needed.

How I Do It—First Step: A Good Cleaning

Before delving into extremes, it's still worth investigating whether a simpler restoration technique might restore a finish to a very displayable condition. As I said before, some sets respond well, others may be too far gone. You'll have nothing to lose by trying!

Start by cleaning the cabinet! In 50 or 70 years of existence, cabinets will have wax and furniture polish buildup, cooking and tobacco residues, dirt, oils, etc. These are hiding the true condition of the original finish.

There are three good products for cleaning cabinets: naphtha, Gojo (non-pumice) hand cleaner, and Kotton Klenser creme cleaner. The first two are found at your local hardware store, the latter is available from antique restoration supply houses. There are several versions of Kotton Klenser made for different applications; you'll want the one made for cleaning wood antiques. Thanks to John Goller, K9UWA, for making us aware of this product. John (who is retired) and his wife Jean, N9PXF, are heavily into radio restoration work; he tells me they buy Kotten Klenser by the gallon!

Naphtha and Gojo can simply be wiped on and off with a clean rag, but be aware that the Kotton Klenser product is a bit more aggressive—it *will* remove a weakened finish if left on the cabinet for too long. Always do a test on a small area of the cabinet (where damage will not show) before applying any treatment to the entire cabinet! When in doubt, read the directions on the container.

BriWax: A Great Tool!

BriWax is another neat product I was introduced to by another collector. It's a paste wax that comes in several different formulations. For our purposes, the one with the so-called *original* formula is the one to use. Original formula BriWax contains

toluene, a chemical that softens lacquer. The BriWax paste is applied by rubbing it over the lacquer using either 0000 furniture-grade steel wool or a white Scotch-Brite ultra-fine refinishing pad. The toluene works to soften and reflow the lacquer finish in scratched areas of the cabinet, while building up a paste wax finish.

As soon as the BriWax has dried, buff it to a high-gloss using a clean rag (a piece of old bath towel is ideal) as you would with any other paste wax. Once the BriWax is buffed to a high sheen, it can followed with a good additional application of antique paste wax to further enhance the appearance. I use Butchers, but there are other equally good brands.

AK 447 Test Case

The finish on the RCA 10T tombstone cabinet featured in an earlier column was restored using BriWax. The radio had several deep and ugly scratches in the lacquer finish; I was almost tempted to strip and refinish the radio, but the BriWax did wonders.

For another, more recent example, refer to **Photo A**, which shows my newly acquired Atwater Kent 447 tombstone cabinet as received (note the numerous scratches). The cabinet is 100 percent original and shows its age with the scars



Photo A. The cabinet, speaker, and chassis were shipped separately, each was double-boxed to ensure safe transit. The cabinet is virtually untouched—a virgin example! Unfortunately, there are some deep and noticeable scratches, and the wood detail is obscured by years of grime buildup.



Photo B. The cabinet is cleaned by applying Kotton Klenser, a creme-like paste cleaner. Kotton Klenser can remove severely damaged finishes, so some care is needed.

it's acquired over its life. The Kotten Klenser initial cleaning is being performed in **Photo B**. Years of dirt and grime are melted away, revealing the beauty of intricate veneer wood patterns. The BriWax paste wax suggested earlier is being applied with steel wool in **Photo C**. The restored AK 447 cabinet is shown on display in my radio room in **Photo D**. Not perfect, but most definitely brought back to a point where few collectors would even consider refinishing it.

John Hagman's Method

When John wrote us outlining his preferred method for bringing back badly scratched and worn cabinet finishes. I was sure he was pulling my leg! Yet John is very particular when it comes to refinishing, so I have no doubt his advice is good as gold.

Here's what John suggested in response to my query:

The Minwax product is the original, oil-based stain. Ammonia or Top Job can remove it if you're unhappy with the results. An old trick used to cover scratches is to use a dark Danish oil finish like Watco dark walnut. (*It was also noted that Watco could soften a finish if left on too long.—pb*) I like to use Minwax oil stain (dark or special walnut is usually right, it doesn't have to be an exact match) the same way, as it has more color and colors deep scratches somewhat better, and also dries faster.

The procedure is rapid and simple. I always remove the grille cloth, as otherwise you can't



Photo C. BriWax is applied using a furniture-grade 0000 steel wool. The BriWax is worked into the surface with the steel wool. Toluene in the wax softens the lacquer surface. Combined with the abrasive action of the steel wool, minor imperfections (scratches, etc.) are evened out and filled.

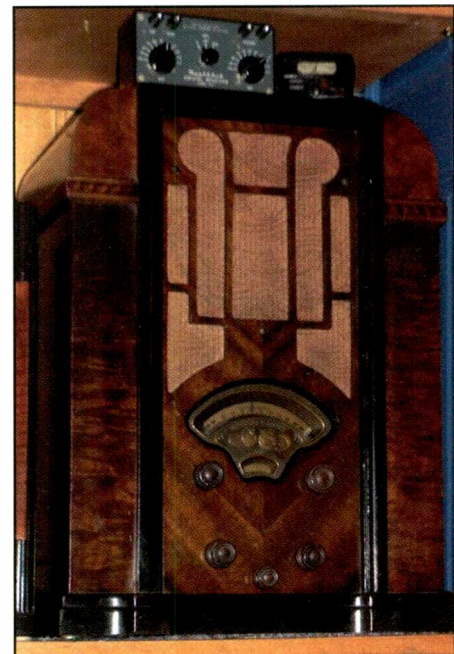


Photo D. After a final application of Butcher's wood paste wax and subsequent buffing, the radio is back together and on display next to my other favorites!

really get the grille bars and one usually stains the irreplaceable cloth. Also, the knobs should be removed. Remove all paint specks first by flicking off with a razor (carefully!) or with Goof Off or alcohol. I use #0000 steel wool (or white Scotch-Brite for better condition sets) and rub on a liberal coat of Minwax, working it into all crevices well. After five minutes or so you wipe it hard and don't touch it for about 12 hours. Minwax softens and slightly reamalgamates the lacquer. It also essentially cleans and resurfaces the old finish at the same time.

Minwax (or Watco) really does an amazing job restoring the gloss and filling in scratches—especially if you rub it on vigorously with fine white Scotch-Brite, and wipe off carefully to a polish as I did. Do try Minwax on badly



Photo E. This fine console was restored by John Hagman by applying Minwax stain, which was then buffed to a high sheen. The scratches can only be seen by close inspection, in person. (Photo courtesy: John Hagman)



Photo G. John brings the radio back to displayable condition by applying a new finish coat of Minwax. The Minwax, applied with a white Scotch-Brite, acts to soften and reamalgamate the damaged lacquer, much in the same manner as the toluene in BriWax. (Photo courtesy: John Hagman)



Photo F. This Airline console needs some attention? Strip and refinish time? (Photo courtesy: John Hagman)

scratched sets! You have to buff it out just once—soon—and then avoid touching it for a day or so. But, Minwax dries tac-free (as far as dust is concerned) in maybe two hours. If you haven't tried it you owe it to yourself. It ages well, too—I did this three years ago to a set and it still looks great. Unlike Howard's

it's not a silicone-based shine (i.e. temporary and hard to re-lacquer should one day it come to that).

I just did my new RCA C13-3 with this method. A little confession: this radio had plenty of deep scratches before I gave it the Minwax treatment I described. You can still see some of them (in person) if you look closely.

John's RCA C13-3 console radio is shown in **Photo E**. Still not convinced? **Photos F** and **G** are before and after shots of another of John's consoles (an Airline 62-1355) that underwent the Minwax treatment. When time permits, I have a few sets I'll try John's techniques on this winter and I'll show you the results.

One final tip: avoid the 4-ought steel wool carried at your local hardware store! The steel wool must be furniture grade, and the hardware store variety will contain random coarse strands that will scratch your finish! There is a difference! Using either the Watco or Minwax treatments is the same as refinishing a radio.

Need A Holiday Gift? A Look At Two New Zenith Books!

This month I am pleased to review two long-awaited and eagerly anticipated

Zenith reference books for collectors, recently released by Schiffer Publishing in two volumes (see **Figures 1** and **2**). They are *Zenith, The Glory Years, 1936–1945, Illustrated Catalog and Database* (\$24.95) and *Zenith, The Glory Years, 1936–1945, History and Products* (\$34.95). Both are by Harold Cones, Ph.D., John H. Bryant, FAIA, and Martin Blankinship and continue the saga started with the first volume, *Zenith Radio, The Early Years, 1919–1931*.

I suspect most Zenith collectors will be drawn to the *History and Products* volume just for the section featuring gorgeous color portraits of Zenith radios. Section III spans some 40 pages, and features three to five unique examples per page. But there's a lot more of interest to be found once the rest of the book is explored. The first section presents, in black and white, numerous fascinating photos of the inner workings of the huge Zenith factory in Chicago, Illinois. You'll see the faces of the people behind the Zenith name, from the working girls on the floor assembling the products to the boardroom icons behind Zenith's success, such as Commander Eugene McDonald, Hugh Robertson, and Gilbert Gustafson.

Many of industrial designer Robert Budlong's cabinet and dial sketches—realized and not—are featured, courtesy of his family. Advertising plates, some in color, movie scenes featuring famous actors alongside Zenith products, annual reports to stock holders (and much more) combine to give the reader a feel for Zenith's halcyon days, its contributions to the War Effort, and an insider's look into the history and what made the company tick. The book is a must for Zenith collectors and radio historians.

The second volume, *Illustrated Catalog and Database*, was released first due to printing delays, which caused some initial negative reaction in the collecting fraternity, mostly because few realized this epic offering was being published in *two* companion volumes.

The first part of the book presents numerous early black and white advertising photos and literature for the various product years between 1936 and 1945. The second section gives charts for model versus year cross referencing, and also year, model, style, chassis, tube count, power, coverage, sales price, rarity, and a suggested price range for current collector value. A section cross-refer-



Figure 1. Cover art for Zenith, The Glory Years, 1936-1945, Illustrated Catalog and Database.

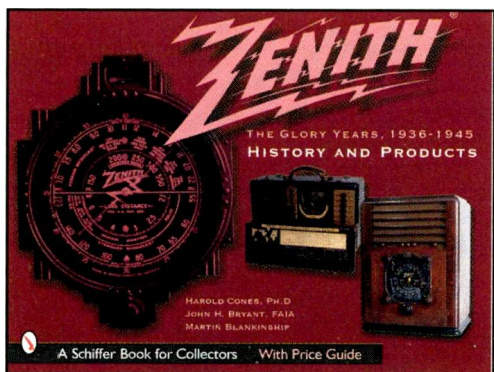


Figure 2. Cover art for Zenith, The Glory Years, 1936-1945, History and Products.

ences model to Rider Manual or Zenith Service Manuals. Production data for chassis types, chassis distribution (radio style and year), and other important historic and reference data are preserved in this volume.

A special thanks to the folks at Schiffer Publishing and the authors for making these works available to collectors.

What's Your Project?

Until next time, Happy Holidays! Please let me know what you've found at those garage sales and are restoring. I can always use an article and photos of your work.

References

1. Van Dyke's Restorers, PO Box 278, Woonsocket, SD 57385; Phone: 800-558-1234.
2. Bill Turner, 1117 Pike St., Saint Charles, MO 63301; Phone: 636-949-2210; E-mail: Dialcover@webtv.net.
3. Antique Electronic Supply, 6221 South Maple Ave., Tempe, AZ 85283; Phone: 480-820-5411; Web: www.tubesandmore.com.
4. Radio Daze, 7 Assembly Drive, Mendon, NY 14506; Phone: 716-624-9755; Web: www.radiodaze.com.

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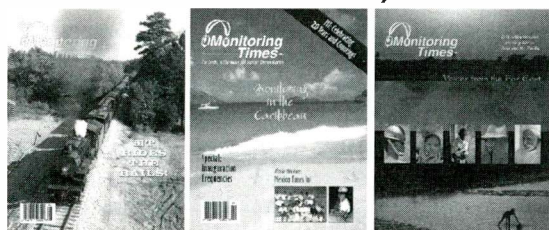
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A New Australian Station On The Air

A tasty new DX target has presented itself on shortwave. Australia's Aboriginal Resource and Development Services has begun broadcasting on **5050** from a little place with the delightful name of Humpty Doo in the Northern Territory near Darwin.

The new ARDS station exists to serve the native Yolngu who, it's said, are in serious trouble as a people—culturally, economically, and physically—so the broadcasts are an effort to improve their situation. The station doesn't have a name yet but does have the call letters VKD963. The broadcasts are 24 hours a day but use only 400 watts of power, so catching this one should prove to be a real challenge. Your best bet is likely to be very late at night, near to your local sunrise. Their address is ARDS, Box 1671, Nhulunbuy, NT 0881. Reports can also be sent by e-mail to dale@ards.com.au.

It appears that the always-shaky **National Radio of Cambodia** is trying to resurface on shortwave again after a period of silence. Signals have been noted around 1200 and 0000 on their normal and slightly variable **11940** frequency. The broadcasts are in the Khmer language and reception quality has been poor, as is the audio quality. But then, even in its best days, this was not an easy catch!

Those **World Music Radio** broadcasts direct from Denmark we mentioned a while ago should be on the air by now. They say they'll be on the air in English 24 hours a day, with 10 kW, programming largely pop hits from the 1970s and later. The frequencies are **6290**, **7700** (in digital mode), and **15810**. In addition, **5790** will be used for Danish programming from 0700 to 2300. The transmitters are at Karup; the address for reports is P.O. Box 112, DK-8900, Randers, Denmark.

The **Italian Radio Relay Service (IRRS)** has announced the opening of International Public Access Radio, a plan designed to make more airtime available to groups and individuals interested in getting their message out to a wider audience. IRRS is now using 20 kW on **5775** and their IPAR office is making spare time available if you have the interest and the lira.

All India Radio is talking about beginning a 24-hour news service, which would air on its various shortwave channels as spare "capacity" is available. But it seems there are several caveats attached, all of which dance around the same bottom line question: "whither shortwave?"

It looks as though lack of funds is playing its usual role again, this time in the expected closing of the Khabarovsk transmitters of the **Voice of Russia**. This will create problems for Asians desiring to hear VOR programming in Chinese, Japanese, and Korean, even though Khabarovsk is only one of several sites relaying this programming. Of course, such a move also eliminates another Russian DX target, but who's counting?

Financial cutbacks have also killed off the **Radio Prague International** relay via WRMI, Miami, which by the way, we've noted carrying VOA programming on its **15725** "daytime" channel.

Our book winner this month is **Brian Alexander** of Pennsylvania, who receives a copy of the 2004 *Passport to World Band Radio* courtesy of Universal Radio. We've said it before and we'll say it again: you should have a copy of Universal's catalog in your shack library. It's jammed with wonderful goodies including everything from "that's pretty neat" to "I gotta have that!" You

Robert Brossell

From: issa conde <issaconde@yahoo.fr>
To: Robert Brossell
Sent: Tuesday, August 12, 2003 10:40 AM
Subject: Re: Verification of Reception Report

C'est avec un réel plaisir, que nous avons reçu votre rapport d'écoute. Nous vous disons merci pour toute l'attention portée à notre station de radiodiffusion. Nous émettons de CONAKRY capitale de la rep de GUINEE.(West africa)
Recevez Monsieur ROBERT BROSEL, l'expression de notre sentiment de profonde gratitude.

Let the bubbly flow! Robert Brossell of Wisconsin celebrated the receipt of this e-mail QSL from the notorious Issa Conde, director of Radio Conakry, after a five-year effort. Cognates!

can get a copy by phoning 614-866-4267, e-mailing them at dx@universal-radio.com, or writing to them at 6830 Americana Parkway, Reynoldsburg, OH 43068.

Now here's the usual plea for your informational support in the form of your loggings (by country, double spaced, your name and state after each) photos of you in your shack (please?), station schedules and information, spare QSLs or clean crisp copies, and station pictures. We welcome whatever you think might be of interest!

Here are this month's shortwave logs. All times are in Coordinated Universal Time (UTC). AA, FF, SS, etc. are language abbreviations (Arabic, French, Spanish). If no language abbreviation is indicated, the broadcast is assumed to have been in English.

ALBANIA—Radio Tirana, **7270** in unid language at 0030. (Paradis, ME) **9540** heard at 2130 with IS, ID, schedule, and news. (Burrow, WA)

ANGUILLA—World University Network, **6090** heard at 0448 with Gene Scott. (Becker, ID)

ANTIGUA—BBC Relay, **5975** at 0457. (Becker, ID) **6195** with news at 1104. (DeGennaro, NY) **15190** with live tennis at 1313. (Brossell, WI)

ARGENTINA—RAE, **11710** at 0158 in Italian. Time pips at 0200, ID in Italian and into EE. (Burrow, WA) **15345** at 2318 with SS talks and music. (Jeffery, NY) 0235 with talks and features. (unid reporter) Radio Nacional, **6060** with 0900 sign on and news in SS. (DeGennaro, NY) **15345** in SS at 0028 with ID, music, possible ads. (MacKenzie, CA) La 101, **5400 LSB** relay with U.S. pops and oldies at 0121, then Latin tunes. One time pip at bottom of the hour and possible ID and promos and news/weather. ID "Exclusivo Radio Continental" around 0135 and back to U.S. oldies. (Montgomery, PA)

ASCENSION ISLAND—BBC Relay, **6005** to Africa at 0452 and **6155** also to Africa at 0442. (Becker, ID) **15400** at 1800 with Report from Africa. (Paradis, ME)

AUSTRALIA—Radio Australia, **9580** with South Pacific news at 1115. (DeGennaro, NY) **9580/11650** at 1304. (Brossell, WI) **9710** at 1033 and **15240** at 0412. (Jeffery, NY) 15240 with news, weather, interviews at 0025. (MacKenzie, CA) **12080** in Pidgin at 0905 and **17580** with music at 0445. (Barton, AZ) **21740** at 2230 with news and "Fine Music Australia" (Paradis, ME) ABC Northern Territory Service, Alice Springs, at 1115 with a soccer match. (Strawman, IA)



Radio Japan

A beautiful QSL from Japan.



Radio New Zealand International

Radio New Zealand International can now be heard on shortwave around the clock.

Voice International, **13685** with anmts, music, and ID at 1138. (DeGennaro, NY)

AUSTRIA—Adventist World Radio relay, **15470** at 0529 with AA music, IS at 0530, then ID for "This is Adventist World Radio—the Voice of Hope." Website URL and religious music. (Brossell, WI)

BELGIUM—Radio Vlaanderen Intl. **9865** via Petropavlovsk at 1145. (Barton, AZ)

BOLIVIA—La Cruz del Sur, **4876.8** in SS at 0058 with vocals and guitar. (Strawman, IA) 0952 with music, female with long talk in PP, tentative ID at 0956. (Montgomery, PA) Radio Pio XII (t) **5952.5** at 1012 with religious talk in Aymara. In the clear until WYFR destroyed it at 1114 sign on. (D'Angelo, PA) Radio Yu ra, **4717** in SS with local Quechua vocals at 0057. (Strawman, IA)

BOTSWANA—VOA Relay, **12080** heard at 0515 with news. (Brossell, WI)

BRAZIL—Radiobras, **11780** in PP at 0300. (Barton, AZ) Radio Capixaba (t), **4935** with jingle ID at 0003, excited talks to 0010 with what sounded like a preacher in PP. (Montgomery, PA) Radio Clube Paranaense, **11935** at 1310 with talks in PP. (Brossell, WI) Radio Difusora, Londrina (p), **4815** at 0958 with man in long PP talk, music after the top of the hour. (Montgomery, PA) Radio Brazil Central, Goiania, **4985** in PP at 0853. (DeGennaro, NY) 0204 with music. (Miller, PA) Radio Anhanguera, Goiania, **4915** at 0920 with PP news and anmts. Heavy QRM from co-channel RN Macapa. (DeGennaro, NY) Radio Nacional Macapa, **4915** with news in PP at 0200. (Miller, WA) Radio Novas de Paz, **9515** at 0908 with religious talks in PP. (DeGennaro, NY) Radio Bandeirantes, **6090** at 0202 with long PP talk, ID 0300, then an ad string and into music. No sign of Caribbean Beacon. (D'Angelo, PA) 0203 with long talk, 4 time pips at top of the hour, ads, more talk. (Montgomery, PA) Radio Progresso, **4945** at 2331 with ID jingle, music. (Montgomery, PA) Radio Clube do Para, Belem, **4885** at 0347 with news in PP. (Miller, WA) Tentative at 0947. Rooster crows in background, man with PP talks, and very nice music. (Montgomery, PA) Radio Aparecida, **6135.1** at 0210 with long religious talk in PP, choir vocals, ID, and sign off anmts at 0217. Parallel 9630 very poor.

(D'Angelo, PA) Radio Universo/Radio Tupi, Curitiba, **6060** at 0857 with PP music and anmts. (DeGennaro, NY) 0756 with PP talk, ID, and frequency at 0801 "Aqui Radio Tupi..." Mixing with BBC Ascension until 0800. (D'Angelo, PA) Radio Nacional do Amazonia, **11780** in PP at 0841. (DeGennaro, NY) 2314. (Miller, WA) Radio Senado, Brasilia, **5990** at 0933 with PP vocals, ID at 0935, listener call-ins. (DeGennaro, NY) Radio Clube Varginha (p) **3235** at 0047 with futebol. //4985 and others. (Strawman, IA) 0058 with mentions of Marilla and station promos at top of the hour, then music. (Montgomery, PA)

BULGARIA—Radio Bulgaria, **9400//11900** heard at 0207. (Burrow, WA)

CANADA—Radio Canada Intl, **9515** in FF at 1110. (DeGennaro, NY) CFRX, **6070** at 2105 relaying "News Talk CFRB." (Wood, TN)

CHILE—Voz Cristiana, **11935** with SS religious talks and music at 1110. (DeGennaro, NY) **15375** in SS at 0400 and **17680** with news in SS at 2205. (Barton, AZ) **15475** at 2120 with PP vocals, talk to a transmission break at 2132. (D'Angelo, PA)

CHINA—China Radio Intl, **9570** via Cuba in CC at 1226. (DeGennaro, NY) **11760** at 2004 in FF. (Brossell, WI) **11900** at 1300 and **11980** with news heard at 1215. (Barton, AZ)

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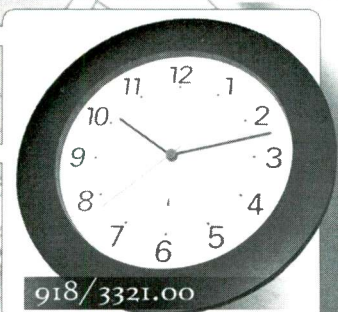


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Feba Radio closed its Seychelles transmitter site March 29 2003, and now uses transmitter space leased on other broadcasters' facilities. Where possible, we state the location of the transmitter site you heard below.
This is a 'legacy' Seychelles QSL card, sent with the compliments of Feba's 'Spotlight' programme production dept. With the closure of Seychelles, we no longer have a 'QSL Secretary'. Thanks again for your report

wishes to thank you for your recent Reception Report, and has pleasure in confirming it with this Acknowledgement Card.

We hope that you will continue to enjoy listening to FEBA Radio.

QSL Secretary

This card posted from Feba's Cyprus office.
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www.specialised.english.net/bxplans www.feba.org.uk/schedule

DATE July 1 2003
TIME 0030-0045 UTC
FREQUENCY 9465 kHz
METRE-BAND 31 mb
TRANSMITTER SITE: Moosbrunn, Austria.

Richard D'Angelo of Pennsylvania talked a QSL out of FEBA Radio, formerly transmitting from the Seychelles Islands. This confirmation was for reception via Austria's Moosbrunn site.

China Music Jammer, 15680 against Radio Free Europe at 1850. (Brossell, WI)

CONGO (REP)—Radio Congo, 5985 in FF at 2200. (Paradis, ME) 2243 in FF with several mentions of Congo, possible news commentary. Two male anners back and forth. Off in mid-tune at 2300. (Montgomery, PA)

COSTA RICA—REE Relay, Cariari, 3350 with MOR type SS music. ID at 0055 followed by flamenco. (Wood, TN) 3359 (nominal 3350) at 0240 with LA vocals. 4 pips on the hour, woman with ID and news. (D'Angelo, PA) 6125 in SS heard at 0445. (Becker, ID)

CUBA—Radio Havana Cuba, 6000 with great Latino jazz at 0454. (Becker, ID) 11760 at 1235 in SS. (Jeffery, NY) 2010 in FF. (DeGennaro, NY) Radio Rebelde, 6120 in SS at 0446. (Becker, ID) 9600 at 1117 with Cuban music. (DeGennaro, NY) 1200 in SS with ID. anmts, music. (D'Angelo, PA)

CYPRUS—Cyprus Broadcasting Corp., 9760 in Greek at 2230 with musical program and drama. (Ziegner, MA) BBC Relay, 17640 at 0520 with news features. (Brossell, WI)

CZECH REPUBLIC—Radio Prague, 11615 at 1056. (DeGennaro, NY) 11990 heard at 0512 with ID and into presumed Czech. (Brossell, WI) 17485 at 1714 with feature on train travel along the Danube. (Wood, TN)

DOMINICAN REPUBLIC—Radio Cima, 4960 with man in SS at 1020 giving program info. (Montgomery, PA) Radio Bahahona, 4930 at 0955 with SS ID at 1001, promos, back to music. Woman with ID again at 1004. (Montgomery, PA)

DENMARK—Radio Denmark, 9475 via Norway with news in DD heard at 0418. (Miller, WA)

ECUADOR—HCJB, 15115 at 1158 with ID in EE on the hour. Apparently some EE programs are still running, this listed for South America. Into record religious program at 1200. (Montgomery, PA) 1143 with interview of author of a book on child training. Also 15140 at 1147 in SS. (DeGennaro, NY)

EGYPT—Radio Cairo, 9990 at 2212 with music and news at 2215. (Burrow, WA) 2234 with EE broadcast with good modulation, no hum. (Montgomery, PA)

ENGLAND—BBC, 15485 heard at 1157 with book and music reviews. (DeGennaro, NY) 15565 at 1116 with program on squatters. (Jeffery, NY)

ERITREA—Voice of the Broad Masses, 7175 in AA heard at 0400. (Paradis, ME)

ETHIOPIA—Radio Fana, 6209.9 at 0300 with IS from 0257. Man anner with ID, short intro to another anner who was much harder to hear. (Montgomery, PA) 0302 with news in Amharic, Horn of Africa instl music with woman anner, another ID at 0330. (D'Angelo, PA) Radio Ethiopia, 7110 at 0257 sign on and man with brief ID, instru-

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
anner	—	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 Republik 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

mental music and opening anmts, then news in Amharic. Mostly talk features with brief music segments in between. //9704.2 with QRM from Mexico—9705. (D'Angelo, PA) 0328 with vernacular vocals. (Strawman, IA)

FINLAND—YLE/Radio Finland, 9655 with news in Finnish at 0512. (Miller, WA)

FRANCE—RFI, 15160 with interview and "You are tuned to Radio France International" at 1645. (Brossell, WI) 17605 with music program at 1641. (Jeffery, NY)

FRENCH GUIANA—Swiss Radio Intl relay, 11905 heard at 2330. (Paradis, ME) Radio Japan relay, 9530 in JJ at 0911. (DeGennaro, NY)

GABON—Africa No. One, 15475 with impassioned talks in FF at 1707. (Brossell, WI) Radio France Int'l, 11955 with FF ID and talks in FF at 2030. (Brossell, WI)

GERMANY—Radio Africa Intl (t), 15715 with talk about AIDS in Southern Africa at 1720. (Wood, TN) (Now said to have discontinued its SW broadcasts.—gld) Voice of Hope, 15680 with religious music, man anner at 1636. (Wood, TN)

GREECE—Voice of Greece, 15630 with music and features at 1830. (Ziegner, MA) 15650 with Greek music and talks at 1320. (Brossell, WI) 17705 via Delano at 1633. (Wood, TN)

GUAM—Trans World Radio/KTWR, 15330 at 1452 with sermon and music, ID "This is TWR, Guam." (Burrow, WA)

GUATEMALA—Radio Cultural, 3300 at 0126 with listener call-ins, polka, and Marachi-inspired music. No ID at top or bottom of the hour. (Wood, TN) EE religious broadcast at 0340. (Miller, WA) Radio Verdad, 4052.5 at 0317 with soft instrumentals, woman anner with SS ID and station info at 0330, more music. (D'Angelo, PA)

HAWAII—KWHR, 17780 at 0520 with sermon. (Brossell, WI)

INDIA—All India Radio, Chennai, 5010 at 0105 with nice local music and more talk. Only there for a short time. (Montgomery, PA) AIR, 11585 with apparent news at 1300. (Brossell, WI) 10330 from 0020 sign on with open carrier, music from 0023 to ID and anmts at 0025, music to 5 + 1 time pips at 0030 and news in Hindi. (D'Angelo, PA) 11620 via Bangalore in Hindi at 2000. Also 13695 with vocals heard at 1122. (DeGennaro, NY)



INDONESIA—Radio Republik Indonesia, **9680** at 1245 with country-pop. (Barton, AZ) RRI Wamena, **4870** with pops at 1122. (Strawman, IA) Voice of Indonesia, **9525** at 1016 with continuous vocals and anner in Thai, ID in Mandarin, and into that language at 1030. Also **15150** at 2028 with "From Jakarta, you are listening to the Voice of Indonesia." Then e-mail address, program preview, vocals, and travelogue feature, news at 2055, ID, schedule, and close down anmts at 2103. (D'Angelo, PA) 2000 with news and "Getting to Know Indonesia." (Miller, WA)

IRAN—VOIRI, **9635** at 1528 with IS to 1530, ID, anthem and schedule. (Burrow, WA) **15084** with variety program in Farsi. (Ziegner, MA) 1330 with nice music, ID in AA or Farsi and back to more music, ID again at 1331 and into Koran readings. (Montgomery, PA) **15510** in unid language and stringed instrument in the background.

ISRAEL—Kol Israel, **11585** with Farsi news at 1652. Also **17535** in HH at 2229. (Miller, WA) **11585** in HH at 1952 and **11605** in SS at 1956. (DeGennaro, NY) **15640** at 0413 ending EE with news headlines and weather, "Shalom from Jerusalem." ID and into FF. (Burrow, WA) **15760** with EE news at 1920 and **17535** with talks, songs and even rap in Hebrew. (Brossell, WI) **17545** at 1643 with sign on in EE, time pips, ID "KOL Israel, Shalom" and into unid language. (Wood, TN)

ITALY—RAI, **11800** in SS at 0320. (Brossell, WI)

JORDAN—Radio Jordan, **11690** heard at 1614 mentioning "96.3 FM, rock standards. Lost to QRM by 1628. (Burrow, WA)

JAPAN—Radio Japan/NHK, **9750** after time pips at 1500 and into news. (Barton, AZ) **13650** with news items at 0002. (MacKenzie, CA) **15220** via Ascension in JJ at 2200. (Jeffery, NY)

KUWAIT—Radio Kuwait, **15495// 15505** in AA at 1839. (Brossell, WI)

LITHUANIA—Radio Vilnius, **9875** at 2343 with schedule, address, ID and news. (Burrow, WA)

MALAYSIA—Radio Malaysia, **7295** at 1456 with music. "Radio Four" ID at 1458. (Burrow, WA)

MEXICO—XEQ, Radio Universidad, San Luis Potosi, **6045** at 1200 with choral anthem, ID. Faded by 1208. On subsequent days they fade up from seemingly nowhere around 1215 with brief selections of classical music and quick fade out. (Wilkner, FL) Radio Mexico Intl, **11770** with Mexican music at 1630. (Barton, AZ) Radio Educacion, **6185** at 0436 with SS talks and Mexican folk music. (Becker, ID) 1100 with Latin music. (DeGennaro, NY)

MONGOLIA—Voice of Mongolia, **12015** at 1500 in unid language, too weak to copy, closing IS at 1525. (Burrow, WA)

MOROCCO—RT Marocaine, **15345** with AA talk at 1655. (Brossell, WI) 1845. (Ziegner, MA)

NEW ZEALAND—RNZI, **9885** with an interview with vegetable farmers at 0921. (DeGennaro, NY) **11820** at 0503 with news of the Pacific, sports news at 0505. (Brossell, WI; Wood, TN) **17675** with pops at 0336. (Miller, WA) 0421 with talk on Asian culture. (Jeffery, NY)

NETHERLANDS—Radio Netherlands, **5965** via Canada at 1049 with interview. Also **11655** with news at 2005. (DeGennaro, NY)

NETHERLANDS ANTILLES—Radio Netherlands Bonaire Relay, **6165** with news at 0440. (Becker, ID) **9750** with Caribbean news in SS at 1211. Also **9785** with news and features at 1047. (DeGennaro, NY) **21590** at 1930. (Paradis, ME)

NIGERIA—Voice of Nigeria, **15120** at 1630 with ID, high-life music. (Brossell, WI) 2030. (Paradis, ME) 2226 with discussion in EE. (Miller, WA) Radio Nigeria, Kaduna (I), **4770** at 0523 with news items. (Wood, TN)

NORTH KOREA—Voice of Korea, **11710** at 1300 with feature on "the respected supreme commander." (Barton, AZ) 1307 with report on the great deeds of great leader Kim Song Il. (Brossell, WI) 1443 with "peppy" revolutionary tunes, ID, narrative at 1454, and into EE at 1500 with anthem and ID. (Burrow, WA) KCBS, **11680** with martial music at 1245 to 1300, time pips, and into KK female literally yelling into the microphone. Presumably this was some type of exhortation for the troops to 1308 and back to martial music. This broadcast, with its war-like overtones, brought chills to my spine! (Brossell, WI)

NORTHERN MARIANAS—KFBS, **11580** in CC at 1230. (Barton, AZ)

NORWAY—Norwegian Radio, **17505** in NN with music at 1914. (Miller, WA) **15735** in NN at 1322 and **17705** with presumed NN news at 1900 (Brossell, WI) **15735** in NN at 1300. (Paradis, ME)

PAKISTAN—Radio Pakistan, **11570** with Koran in AA at 1714. (Miller, WA) **11570//**

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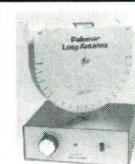
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15065 at 1559 with IS, pips, ID, news in EE. (Burrow, WA)

PERU—Radio Libertad, Junin, 5039 SS ID at 1030. (Wilkner, FL) Radio Quillabamba, Quillabamba, 5025 at 1030 with Radio Rebelde off. (Wilkner, FL) Radio Municipal, Panao, 3172.8 seemingly the one with Andean music at 0000, 0020 to 0033. (Wilkner, PA) Radio Bambamarca, Bambamarca, 4426.8 with man and "Radio Bambamarca, dia de la..." (Wilkner, FL) Radio Andina, Huancayo, 4995.6 at 0936 with SS anncr and program of typical Peruvian Ranchero music, clear ID at 0940. (Montgomery, PA) Voz de la Selva, Iquitos, (t) 4824.4 at 1001 with man in SS. Het from Radio Sicuani making this difficult to copy. (Montgomery, PA) Radio Sicuani, Sicuani, (p) 4826.3 with man in SS at 1007, music program promo at 1008. (Montgomery, PA) Radio Illucan, Cutervo, 5678 at 0150 with SS talk and ID at 0200. (D'Angelo, PA) Radio Victoria, Lima, 6020.4 at 0203 with long SS religious talks and occasional choir vocals. Listener phone calls from around 0250, ID during a call at 0258. (D'Angelo, PA) Radio Union, Lima, 6115 at 0746 with lively Latin vocals, fast SS talks with various annts and IDs. (D'Angelo, PA) Radio Macedonia, 4890 at 0941 co-channel with NBC, Port Moresby. Long SS talk. (Montgomery, PA) La Reina de la Selva, Chachapoyas, 5486.8 at 1030 with choral national anthem, time check, and mention of "la Reina de la Selva." Quick ID and into non-stop music. (Wilkner, FL)

PHILIPPINES—Radio Pilipinas, 11720//15190//17720 in Tagalog at 1807 with address. ID at 1809. (Burrow, WA) VOA Relay, 12040 in CC at 1311. (Brossell, WI) 15160 at 1257 with ID and news format. Weaker on //9760. (Montgomery, PA) 15160 at 1146, 15425 at 1044, 17820 at 2205. (Jeffery, NY)

PORTUGAL—RDP Portugal, 17615 with PP talks at 1924. (Brossell, WI)

PUERTO RICO —AFN, 5446.5 USB with heavy metal, tentative ID at 1220. (Montgomery, PA)

ROMANIA—Radio Romania Intl, 9550 with EE and music at 0428. (Miller, WA) 11940 heard at 0410 with news. ID at 0411. (Burrow, WA)

RUSSIA—Voice of Russia, 11640 via Novosibirsk at 1240 in RR. Mixing with Taipei in Mandarin. Also 12055 with World Service at 1422. (Strawman, IA) 11825, listed via Vatican at 0122. (Barton, AZ) 15535 at 1858 with "Ici Moscou," IS, ID repeated at 1900 and into FF. (Brossell, WI) Radio Rossii (t) 13705 at 1435 with two RR anncrs, interludes of circus music, then what sounded like a comedy presentation. (Wood, TN) Deutsche Welle via Irkutsk, 9900 at 1219 in German. Also on 9460 at 1302. (Strawman, IA)

RWANDA—Deutsche Welle Relay, 11810 in Amharic at 1414, mixing with Jordan. (Strawman, IA) 15205 at 2100 to Africa. (Paradis, ME) 15390 in unid African language at 1834. (Brossell, WI)

SAO TOME—VOA Relay, 7290 with

news comment at 0307. (Jeffery, NY) 11655 in FF at 0526. (Brossell, WI)

SAUDI ARABIA—BSKSA, 11820 with AA prayers at 2013. (DeGennaro, NY) 15230 in AA at 1830 and 15435 in AA at 1700. (Brossell, WI)

SERBIA/MONTENEGRO—International Radio Serbia and Montenegro, 9580 heard at 0000. (Paradis, ME) (*Ex-Radio Yugoslavia—gld*)

SEYCHELLES—BBC Relay, 9750 with bells IS, World Service ID, pips, and news at 0200. Also 17830 at 2206 with ID, "The World Today." (D'Angelo, PA)

SIERRA LEONE—Radio UNAMSIL, 6137.8 at 0100 with ID, news, into unid language. (Paradis, ME)

SINGAPORE—Radio Singapore, 6150 at 1446 with "Letter of the Day," music countdown, "Perfect 10—97 FM" ID at 1454. (Burrow, WA) BBC Relay, 11920 in Hindi at 1417. (Strawman, IA) 15360 at 0633 with "Talking Points." (Barton, AZ)

SOLOMON ISLANDS—SIBC, 5019.9 at 0936 with pops, man anncr with short comment, ad, website, ID by woman at 0940. (Montgomery, PA)

SOUTH AFRICA—BBC Relay, 3255 at 0335 with news report. Poor. (D'Angelo, PA) 7120 with news at 0300. (Jeffery, NY) 11765 at 0500 with ID, time check, news. (Brossell, WI) Radio Sondergrense, 3320 with pop/rock at 0015. Man anncr in Afrikaans. (Montgomery, PA) 0245 with EE vocals, ID at 0300, news in Afrikaans. (D'Angelo, PA) 0320 with instrumental music. RTTY QRM. (Brossell, WI) Channel Africa, 15265 at 1810 with news, ID at 1814. (Burrow, WA)

SOUTH KOREA—Radio Korea Intl; 9515//9870 heard at 1634 with report on old-age issues. (Burrow, WA) 9560 via Canada with Korean music at 0217. (Miller, WA) 9650 via Canada with Korean news in EE. (DeGennaro, NY)

SPAIN—REE, 6055 in SS heard at 0450. (Becker, WA) 13720 in SS with news at 1218. (DeGennaro, NY) 15290 in EE at 2015. (Burrow, WA) 17850 via Costa Rica opening in SS at 2300. (Barton, AZ)

SRI LANKA—SLBC (p) 7190 at 1205 with vocals and QRM from hams. (Strawman, IA) Deutsche Welle Relay, 7130 at 0038. (Montgomery, PA)

SWAZILAND—Trans World Radio, 3240 at 0257 sign on with IS, man with ID and into religious program in unid language. (D'Angelo, PA)

SWEDEN—Radio Sweden, 17505 heard at 1347, EE ending and into Swedish. (DeGennaro, NY) 17840 with ID at 1330 in EE to North America. (Brossell, WI)

SYRIA—Radio Damascus, 13610 at 2004 in FF, EE ID, schedule, program preview over vocal music, ID again at 2011 with anthem. (Burrow, WA)

TAIWAN—Radio Taiwan Intl, 11550 at 1632 with "Instant Noodles" feature and ID. (Burrow, WA) 11605 at 1300 with time pips, anthem, ID in CC, and mentions of Taiwan. (Brossell, WI) 1140 in JJ. Also 1320 with tech-

no-dance. (Barton, AZ) CBS, Taiwan, 15265 in CC at 1650 and suffering from the Music Jammer. (Brossell, WI)

TADZHIKISTAN—Voice of Russia via Dushambe, 11500 in listed Urdu at 1222. (Strawman, IA) 1254 with instrumental music, Voice of Russia IS, ID in presumed Hindi. (Brossell, WI)

THAILAND—Radio Thailand, 15395 at 0030 with news, financial news, sports. (Paradis, ME) 0035 with music, comment, ID. (MacKenzie, CA) VOA Relay, 9645 with jazz to end of hour at 1358 and off at 1359 plus. (Strawman, IA) 11785 in CC at 1306. (Brossell, WI) 15150 at 0015 in CC and EE. (MacKenzie, CA)

TOGO—Radio Togo, 5046.7 at 2331 in FF with US pop tune. National anthem at 0006. (Montgomery, PA)

TURKEY—Voice of Turkey, 9830//12000 with program on Turkish sports history at 2215. (Burrow, WA) 12000 at 2200 with news and features. (Ziegner, MA, Paradis, ME) 15150 in SS at 1630 and 2000 in FF. (Brossell, WI)

UNITED ARAB EMIRATES—UAE Radio, 15395 in AA and EE at 1600. (Ziegner, MA) 21605 at 1339 with items on Islam and Mohammed. (Wood, TN)

UZBEKISTAN—Radio Tashkent, 11905 at 2029 with IS, ID, schedule, distinctive music bridge, ID again at 2031. Very weak. (Burrow, WA)

VATICAN CITY—Vatican Radio, 11625 in FF at 0445. (Brossell, WI) 15595 in Italian at 1203. (DeGennaro, NY)

VENEZUELA—Radio Amazonas (p), 4939.7 at 1017 with woman in SS. (Montgomery, PA)

VIETNAM—Voice of Vietnam, 6175 via Canada at 0404 with news in VV. (Miller, WA) 0439 in VV. (Becker, WA) 11630//13740 at 1620 with various feature reports. ID and off at 1627. (Burrow, WA) 9839.4 at 1215 and 12019.9 in JJ at 1419. (Strawman, IA)

YEMEN—Yemen Radio & TV, 9780.4 heard at 0305, opening in midst of ME vocal, man in AA talk at 0318, ID 0328 and beginning of a drama. (D'Angelo, PA)

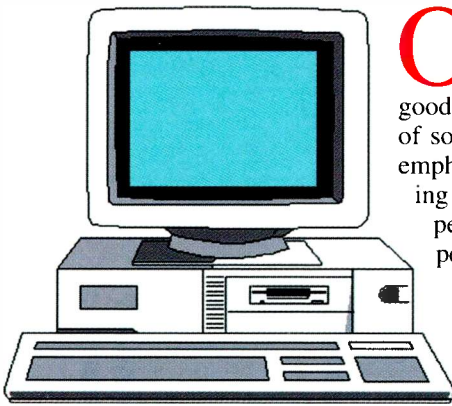
ZAMBIA—Radio Zambia/ZNBC, 4910 at 0323 with music and ID by man. (Jeffery, NY)

And that empties the "In" basket. Let forth with a mighty roar of approval for the good work done by the following folks: Bruce R. Burrow, Snoqualmie, WA; Stewart MacKenzie, Huntington Beach, CA; Mike Miller, Issaquah, WA; Robert Montgomery, Levittown, PA; Joe Wood, Gray, TN; Rick Barton, Phoenix, AZ; Jerry Strawman, Des Moines, IA; Pete Becker, Firth, ID; Ray Paradis, Pittsfield, ME; Tricia Ziegner, Westford, MA; Ciro DeGennaro, Feura Bush, NY; Rich D'Angelo, Wyomissing, PA; Robert Brossell, Pewaukee, WI; Robert Wilkner, Pompano Beach, FL and David Jeffery, Niagara Falls, NY. A great big thanks to each one of you! ■

computer-assisted radio monitoring

by Joe Cooper, joe@provcomm.net

Digital Audio Recording—Part III



Over the last two columns I have tried to provide you with a good overview of the theory of sound recording with an emphasis on digital recording techniques that you can perform using a basic personal computer.

This month I'm going to show you how to put that theory into practice by using the digital recording software

called "Sound Recorder," which is provided as an accessory with most versions of Microsoft Windows.

While at first glance the Sound Recorder software may appear to be simple, it actually has several well-designed features that make it a very useful digital sound recording tool. The software also contains a number of features to help beginners learn how to use digital recording for radio monitoring.

After you've learned the basics of actually recording the audio output from your monitoring radio, you can then go on to splice and edit those recordings using the same software. You can also add in audio tracks, so you could, for example, add in your own recorded comments about time, date, frequency, and the content of the recording.

In future columns I'll introduce you to commercial digital recording software packages that have more features, but are surprisingly inexpensive to buy. However, there is no point in moving up to a more complicated application until you first master the basics.

So let's put a little time in now and lay a solid foundation that will serve you very well in the future.

A Quick Review

For those who may be just picking up on this series of columns, or who need a bit of a refresher, I just want to touch upon a few key points about digital recording.

What you should understand by now after having read the two earlier columns is that sound and sound recording can be a complex topic if you go into it in detail. However, when you get right down to it there are only a few simple points you must know in order to understand exactly what you're doing when making any kind of recording.

The first rule about making an audio recording is that no matter what type of recording it is, there will always be some compromises when you play it back. This is because nothing can fully match the dynamic range of your own ear hearing natural sounds.

As I pointed out, there are two primary types of audio recordings: analog and digital.

Analog recordings make a record of practically everything that is "heard" at the recording source. Unfortunately, this also includes background noise from the recording process itself. While such recordings are said to be very high fidelity (that is how much of the original sound is accurately captured), this is only achieved through the use of top quality recording technology and material (vinyl disks or recording tape).

On the other hand, digital recordings do not record everything that is "heard," but rather only make small samples. These samples are made at a very high rate (several thousand times per second) so that when they are played back they give the illusion of a continuous recording.

What you gain by using digital recording is a very large dynamic range of sound, so that there appears to be virtually no noise created by the recording technique itself. This can be very important if you are recording off the air, where you can be fighting with fading (QSB), static (QRN), and man-made noise (QRM).

So the promise of digital recording is that you should be able to capture fainter signals with greater accuracy than with an analog recording. This is because you're not adding any extra noise when you make the recording.

Likewise, no matter how many times you play back a digital recording, you will not hear a degeneration in the quality of the sound, so that what you record today will still sound exactly the same many years from now, no matter how many times you have listened to it.

So now that we've established what digital recording is and why it's superior to analog, let's look at how it is done.

Audio Hookup Basics

Before getting into digital recording using the Sound Recorder software, you must first get the radio's audio signal into your computer's sound card. (See **Photo A**.)

First off, just to clear up any confusion, you do not have to have a computer-controlled radio or special radio in order to make digital sound recordings (some readers have expressed some confusion about that). You can actually make digital recordings from any make or model of radio.

The "hard" way of making a digital recording is to place a computer-compatible microphone that is hooked up to your computer's sound card close to the radio's speaker. While you can do it this way the problem is that the type of microphones that are used with computers are not designed to produce "hi-fi" sounds, as they were originally intended for voice recording only. Microphones can also pick up extraneous sounds that can take place in the room where the recording is being made (people talking, chairs pulled across floors, children or pets, traffic sound, etc.).

What you really need to do is set up a direct hookup between the radio's audio output and the "Line Input" of the computer's sound card (sometimes called "Line In" for short. The Line Input

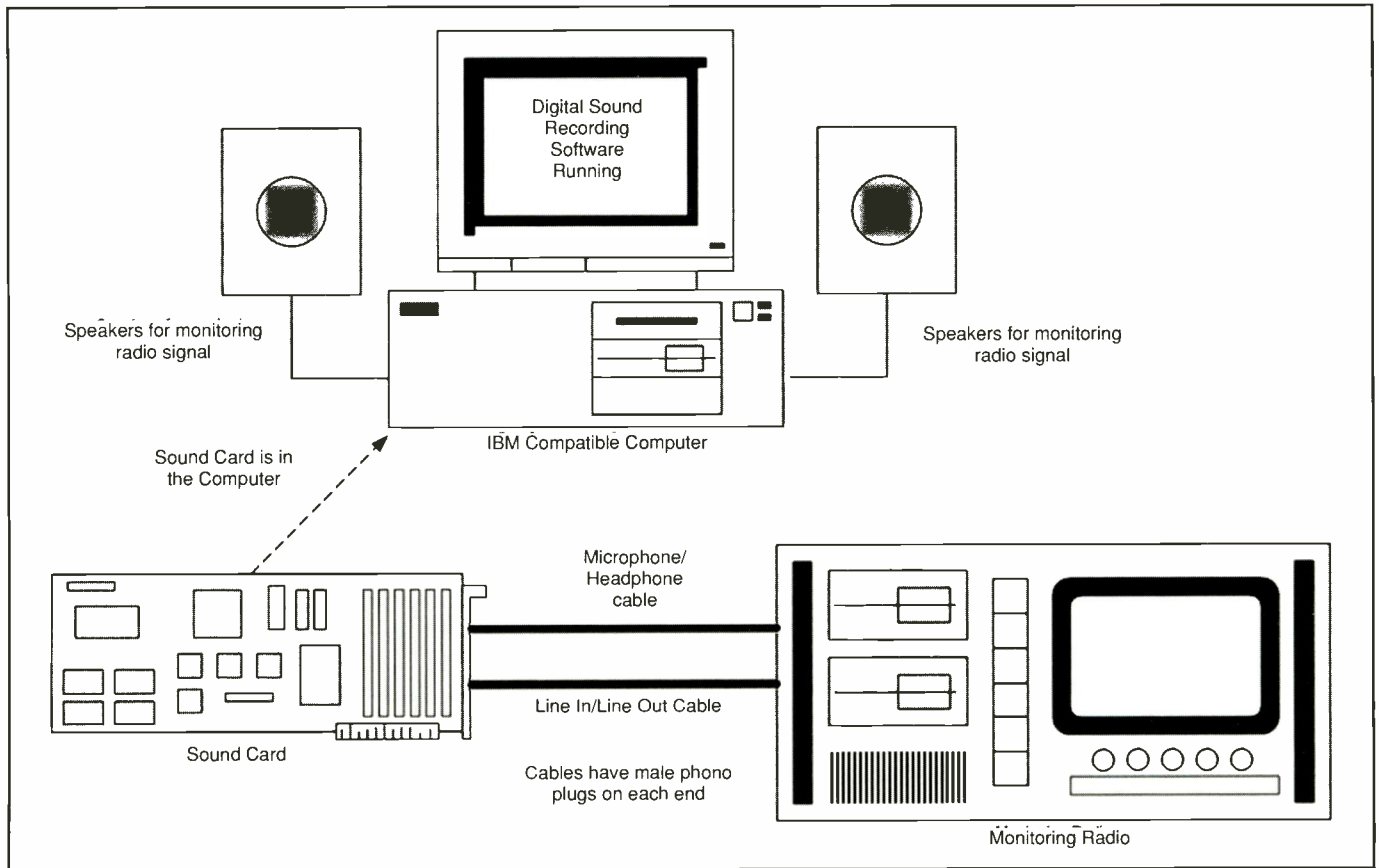


Photo A. The basic setup for digital recording from your monitoring radio. As the column explains, you don't need two cables, unless you want to listen to the radio's audio signal through your computer's sound card and speakers.

is generally clearly marked (either by name or with a color code) and you connect to it using a 1/8-inch male stereo plug. It is designed specifically for audio recording and nothing else.

You can hook the radio up to it in several ways. The absolute best way is to have a radio that has a "Line Output" jack (sometimes called "Line Out" for short). This ensures that the most compatible signal (about 200 millivolts) is delivered to the Line Input socket. What you will end up with is the best possible audio signal for making a digital recording.

If your radio does not have a Line Out jack, the next best thing is to take the signal off a headphone jack, if one is available. If your radio has a standard 1/8-inch headphone jack, you can generally buy a simple cable with two male phono plugs to connect between the radio and the Line In of your computer's sound card.

One thing you should keep in mind when buying this cable is that while your radio may be mono (a single sound channel), the socket you plug into may be stereo plug compatible. You will still only get mono sound if you plug in a stereo headphone, but radio manufacturers do this to

save a bit of money (mono components are harder to find now) and to make it simpler for you because it's easier for you to buy stereo cables and headphones.

The bottom line: read your radio's operator manual carefully to find out what type of cable or headphones you need. It should be clear, but if not, contact the manufacturer or your dealer.

Before you buy the audio cable, make certain it's long enough to reach the computer properly (voice of experience here), so take a moment to actually measure the distance between the radio and the computer. Likewise, if your radio's audio output is non-standard (an older style phono-plug for example) you may have to build a custom cable or have one made for you.

If your radio has both a headphone jack and a Line Output jack you can also use two cables to connect up to your computer's microphone and Line Input at that same time. This setup allows you to record the sound via the Line In/Out while monitoring the sound through your computer's speakers.

The absolutely worst case is when you're using a radio that has no speaker jack. In that case you may want to try

building a custom cable and solder the output leads to speaker. However, never connect such a cable directly to your computer's sound card. If you do, you may end up sending unexpected high voltages or currents into the computer, damaging or even ruining it.

To transfer an audio signal directly from your speaker via a cable you *must* use a proper audio isolation transformer. This electrically isolates the computer from the radio, while safely passing the audio signal.

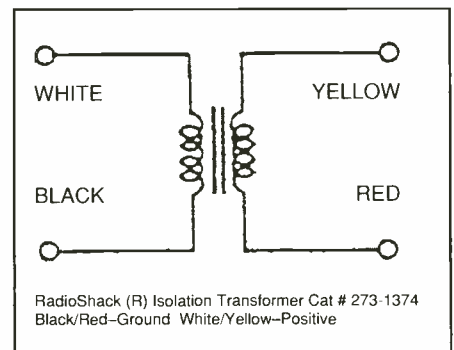


Photo B. This is the schematic for the isolation transformer you use to keep unwanted voltages and currents out of your computer.

Photo B shows a diagram of such a device, along with the RadioShack part number of the item (it's inexpensive). If you have basic soldering skills you can put together your own cable.

Once you have your radio's audio output connected to your sound card and everything is turned on, it's time to start making some digital recordings.

Before You Make A Digital Recording

If you have been following my column for a while you know that I'm an advocate of pre-planning, keeping a notebook, and working with checklists when undertaking any computer/electrics project, no matter how small. Undertaking a computer project by any other method is just hacking around and is a good formula for frustration and failure.

So let's start with the most basic question, "Why are you making a digital recording of your radio monitoring session"? As with anything else, the answer to that question will determine how you are going to set up your digital recording hardware and software.

Consider the following digital recording scenarios. Let's say you're...

...a ham radio operator who participates in contests. You want to have an audio record of all of the contacts you make as a backup to your official log.

...a shortwave broadcast listener who wants to record a favorite program.

...a UTE radio monitor who wants keep a record of a session where multiple frequencies are scanned for activity so you can go back over the recording and capture details for logging.

...a Broadcast Band DXer or listener who wants to record radio call sign jingles for posterity, as well as local programming and commercials.

...a person who wants to record VHF/UHF public service communications during a local emergency or disaster so you have an historic record of that event.

These are only a few of many possible examples, and I'm certain you can come up with many more (how about writing in with some of your own?). The key point here is to plan out how you are going to be successful.

First, let's just look at the task at hand—actually making the digital recording.

Making A Digital Recording

As I mentioned at the beginning of the column, I'm going to introduce you to a simple but useful digital recorder. If you take time to get to know it well and make it work properly, you will have the foundation knowledge and skill to master more complicated audio recording software programs that I'll introduce in future columns.

If you're using just about any version of Microsoft Windows designed for a desktop or laptop computer, a digital audio recorder called "Sound Recorder" is included with the software utilities.

If you click on the "Start" button in the lower left corner of your desktop, then go to Programs->Accessories->Entertainment, you will see the program called "Sound Recorder" (it's identified by a little yellow audio speaker). Click on it once to open it. It should appear as shown in **Photo C**.

The Sound Recorder program is very simple to use, but there are a few things you should keep in mind. The majority of prob-



Photo C. The user interface for the Sound Recorder software utility that is provided in most versions of Microsoft Windows. It's deceptively simple when

you first look at it, but actually has many important features. The circle control begins recording, the square stops it and the triangle is the playback. The green line is the "Oscilloscope" when there is no signal.

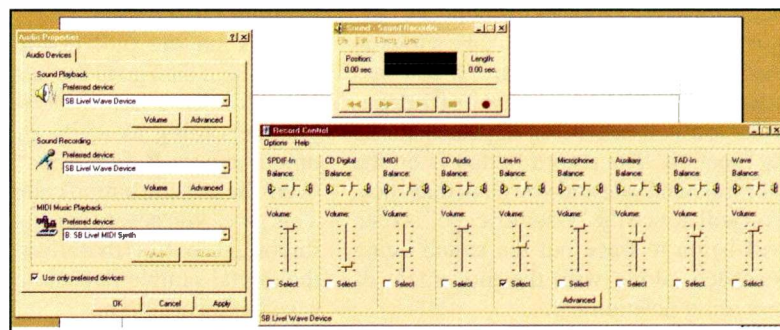


Photo D. Here you see the audio device controls and the volume control. You can use the pull down menus to select from various sound cards (if you have them installed in your computer) or devices. You select the volume control you wish to use by clicking on the select box and moving the slider to the desired position.

lems that can occur in audio recording, that are not related to hardware, can generally be traced to an improperly set up software volume control.

To see this volume control go to the pull-down menu item called "Edit" and click on it once. When the menu opens up, go to the item called "Audio Properties" and click on that once. You will then see a new window open as shown in **Photo D**. This new window is very important as it allows you to select the sound card you're going to be using and control the input and output volume of that device.

You can also use the controls in this window to troubleshoot problems. As mentioned, it's been my experience that most audio recording problems can be traced back to an improperly set up output volume control, where it has been accidentally set to "Mute" or too low of a volume. Another common problem is the input volume control, where the proper input has not been selected.



Photo E. A glimpse of the Sound Recorder software in operation recording sound off the air. Note that the "Oscilloscope" is showing the volume level of the sound being recorded. The length of time that the recording has been made is shown, as well as the "position" of the slider. The slider can be used for editing the sound recording later on. You stop the recording by clicking on the square, and then saving the file by clicking on the "File" pull down menu and giving the sound recording a file name.

If you take a look at **Photo E** you will see that you have separate volume controls for the microphone input and Line In input. Make certain that the proper one has been selected and that the volume control is set to the correct level. Take some time to learn these controls in detail and experiment with the settings to see the affect changes have upon them. Jot down in your notebook which settings work best for you.

Once you're certain you've connected your radio to the computer it's time to try making a digital recording. Turn on the radio, tune in a station that produces a fairly constant signal, and then take a look at the Sound Recorder software. If you pass your mouse pointer above each of the controls you will see a flag appear labeling its function. The record button is on the far right hand side and you click that once. You will notice the "Oscilloscope" screen will begin to trace out the signal being recorded, along with the movement of recording position bar.

Let the sound record for about a minute and then click on the Stop button to the left of the Start button. Use your mouse pointer to move the recording position bar to the starting position and click on the Play button in the center of the controls.

You should clearly hear what you just recorded being played through your computer's speakers or headphones. You should also see the "Oscilloscope" screen display the peaks and valleys of the sound you recorded. If you don't hear anything, check and adjust the volume control settings. If that doesn't work, check your cables and other connections until the source of the problem is found.

Now that you have your recording, you must save it as a computer file if you want to hear it at a later time. If you close the Sound Recorder program at this point the recording will be lost.

Click on the pull down menu item "Save" and then go to the item "Save As." You will see a new window for saving your recording as a file by giving it a unique name. Before you "Save," however, click on the button called "Change." This gives you access to a number of very important controls that allow you to select the digital sample rate and file format to save the recording in.

Take a close look at the various settings you can select from the pull down menus. You can set sample rates that range all the way from very "Low-Fidelity" (8000 kHz, 8-bit mono) all the way up to Hi-Fidelity (48,000 kHz, 16-bit stereo). Likewise you can employ a variety of different compression techniques, including MPEG Layer 3.

The most important thing that you can do at this time is to experiment with various settings, making note of the affect each has on your sound source. For instance, what affect does the setting have on the sound quality, or file size?

You will find that simply setting the values to the highest ones does not guarantee the best sound. Try different types of audio signals to record in different modes. For example, what affect does a setting have on a strong signal verses a weak one? How does a setting record a digital (e.g. Morse code or Teletype) signal? Do you need to have a high sample rate with such a signal?

Likewise note how lower sample rates impact upon minimizing the size of a file when it is saved. Try using various compression techniques and see exactly now much of a reduction each has on the final file size. Finally, go through the Help file provided with the software and review special techniques, such as controlling the playback speed, splicing and editing, and even special effects. Speed control is particularly important because it allows you to hear things you may have missed at normal speed, such

as conversations, fast Morse code, or fading signals.

Again, make a record of each of your findings in your notebook. When you save a sound file, use a name that indicates the subject or the recording settings. Log them in your notebook for future reference.

The time you invest getting to know the audio software and what it can do will have a significant impact upon the success of future recording sessions. Remember that being in the middle of an important radio monitoring event is not the time to learn how to do something, particularly with computers.

Next Month

Having taken the time to ensure that your monitoring radio is properly connected up to your computer, and having mastered the basics of digital recording, next month it will be time to begin recording in earnest.

To help you, I'll introduce you to some advanced software products and recording techniques aimed at specific monitoring modes. One of the first things you'll discover is how inexpensive these software packages are. You will then find that if you have taken the time to master the Sound Recorder software outlined this month, these new software packages are very easy to operate, even with their advanced features.

That's really the main lesson here. If you take your time to plan and then build each part of your computer-assisted radio station based on your monitoring needs, you'll always be in control of the process.

By keeping that control, by understanding the theory behind what you do, by keeping a log and a checklist, and always having a clear goal in mind, you will generally be successful when working with radios and computers connected together.

Please e-mail or write to me with ideas, comments, and suggestions. The e-mail is carm_popcomm@hotmail.com. My mailing address is "Computer-Assisted Radio Monitoring," C/O Joe Cooper, PMB 121, 1623 Military Rd. Niagara Falls, NY 14304-1745.

Don't forget that I can't answer general questions about computers, software, or operating systems, but I'll do my best on questions about the content of the columns or computer-assisted radio in general.

Thanks again and I hope that the information provided here will help you get more out of your computer and monitoring radio than you ever thought possible.

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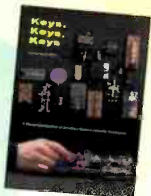
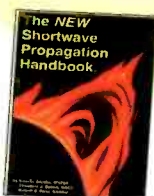
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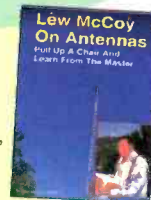


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calendar

15 month calendar January 2004 through March 2005

2004/05 calendar Amateur Radio Calendar

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HF Antenna Collection

RSGB, 1st Ed., 1992. 233 pages. A collection of outstanding articles and short pieces which were published in Radio Communication magazine during the period 1968-89. Includes ingenious designs for single element, beam and miniature antennas, as well providing comprehensive information about feeders, tuners, baluns, testing, modeling, and how to erect your antenna safely.

Order: RSHFAC **\$16.00**



IOTA Directory - 11th Edition

Edited by Roger Balister, G3KMA. RSGB, 2002 Ed., 128 pages. This book is an essential guide to participating in the IOTA (Islands on the Air) program. It contains everything a newcomer needs to know to enjoy collecting or operating from islands for this popular worldwide program.

Order: RSIOTA **\$15.00**

Antenna Toolkit 2

By Joe Carr, K4IPV

RSGB & Newnes. 2002 Ed. 256 pages. A definitive design guide for sending and receiving radio signals. Together with the powerful suite of CD software included with this book, the reader will have a complete solution for constructing or using an antenna; everything but the actual hardware!



Order: RSANTKIT2 **\$40.00**



Practical Projects

Edited by Dr. George Brown, M5ACN. RSGB 2002 Ed, 224 pages. Packed with around 50 "weekend projects," Practical Projects is a book of simple construction projects for the radio amateur and others interested in electronics. Features a wide variety of radio ideas plus other simple electronic designs and a handy "now that I've built it, what do I do with it?" section. Excellent for newcomers or anyone just looking for interesting projects to build.

Order: RSPP **\$19.00**

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RSGB. © 2001, 320 pages. Choose from dozens of simple transmitter and receiver projects for the HF bands and 6m, including the tiny Oner transmitter and the White Rose Receiver. Ideal for the experimenter or someone who likes the fun of building and operating their own radio equipment.



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The Antenna File

RSGB. ©2001. 288 pages. 50 HF antennas, 14 VHF/UHF/SHF antennas, 3 receiving antennas, 6 articles on masts and supports, 9 articles on tuning and measuring, 4 on antenna construction, 5 on

design and theory, and 9 Peter Hart antenna reviews. Every band from 73kHz to 2.3GHz!

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The Antenna Experimenter's Guide

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HF Amateur Radio

RSGB. 2002 Ed. The HF or short wave bands are one of the most interesting areas of amateur radio. This book takes the reader through setting up an efficient amateur radio station, which equipment to choose, installation, the best antenna for your location and MUCH more.

Order: RSHFAR **\$21.00**

Amateur Radio Mobile Handbook

RSGB. 2002 Ed., 128 pages. The Amateur Radio Mobile Handbook covers all aspects of this popular part of the hobby. It includes operating techniques, installing equipment in a vehicle and antennas, as well as maritime and even bicycle mobile. This is essential reading if you want to get the most out of your mobile station.



Order: RSARMH **\$21.00**

Backyard Antennas

RSGB, 1st Ed., 2000, 208 pages. Whether you have a house, bungalow or apartment, Backyard Antennas will help you find the solution to radiating a good signal on your favorite band.



Order: RSBYA **\$30.00**

Radio Communication Handbook



Edited by Dick Biddulph, G8DPS and Chris Lorek, G4HCL. RSGB, 7th Ed., 2000, 820 pages. This book is an invaluable reference for radio amateurs everywhere. It also provides a comprehensive guide to practical radio, from LF to the GHz bands, for professionals and students.

Order: RSRCH **\$50.00**

RSGB Prefix Guide

By Fred Handscombe, G4BWP. RSGB. 6th Ed., 2003. 48 pages. This book is an excellent tool for the beginner and the experienced alike. Designed with a "lay flat" wire binding for ease of use the new "Prefix Guide" is a must for every shack.



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Are you a DX'er? Have you longed to be on the other side of the pile-ups? Do you dream of taking a rig to exotic locations? Do thoughts of mountains, oceans, and deserts send shivers down your spine? If your answer to any of the above questions is yes, you are in for a rare treat. A new book, "Up Two - the Adventures of a DXpeditioner" by renowned DX'er Roger Western, G3SXW, is certain to bring you the vicarious thrills of operating from exotic places.



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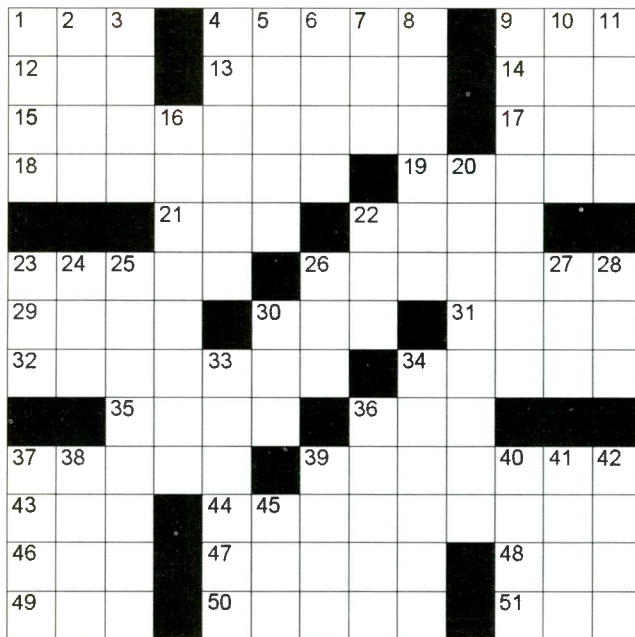
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(RevSp = Reverse Spelling – e.g. "SPELLING" = "GNILLEPS" in puzzle)



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- 1 Crystal Radio component namesake
- 4 Pop' Comm's _____ Bertini (RevSp)
- 9 World International Broadcasters, Inc.
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- 13 Positive electrode (RevSp)
- 14 Not
- 15 Forsaken
- 17 Thread cutting tool
- 18 Rhythmic flow of sounds
- 19 Fifth series in the spectrum of hydrogen (RevSp)
- 21 Phonetic "P" (British Army 1927)
- 22 AM 1510, Nashville
- 23 Basic unit of capacitance (RevSp)

- 26 Handles treble in speaker system
- 29 Figure skating jump
- 30 Two If By Sea Broadcasting Corporation
- 31 Roundish projection
- 32 Hates intensely
- 34 The "F" in AFSAT
- 35 Seaward
- 36 All India Radio
- 37 Lad
- 39 Callsign, Inter-Island Air, Inc.
- 43 Largest Internet service provider
- 44 Italian yeast bread
- 46 Fish eggs
- 47 Of first importance
- 48 Meadow
- 49 Radio Prague
- 50 Version of RTTY
- 51 Trans World Radio
- 8 Morse code key
- 9 Stores energy in a magnetic field.
- 10 Naive person
- 11 Short, high-pitched tone
- 16 Inhabitant of Nepal
- 20 Callsign, Tyrolean Airways (RevSp)
- 22 AM 950, Detroit
- 23 Directional Ant., Daytime
- 24 Chopping tool
- 25 Merchant
- 26 Heard in the US, mostly on 530 KHz (abvr)
- 27 Emirate Broadcasting Corporation
- 28 Radio Exterior de Espana
- 30 Now called Class D Airspace
- 33 Phonetic "A" (Royal Navy 1917) (RevSp)
- 34 Passes some frequencies, rejects others

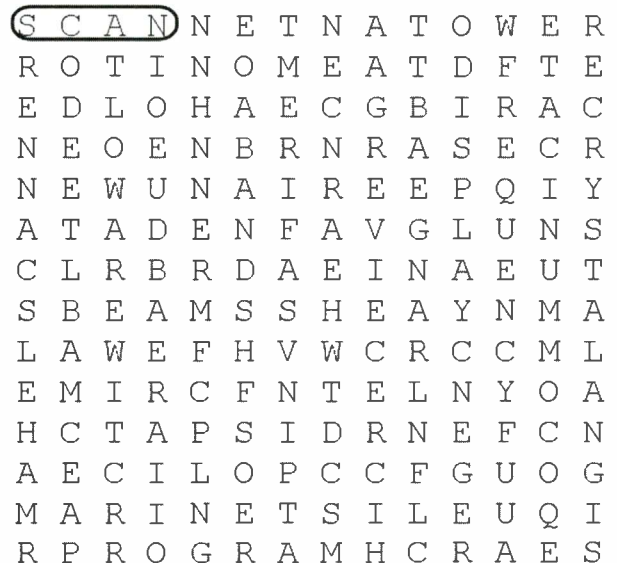
DOWN

- 1 AM 730, Montreal
- 2 Popular Swedish singing group of the 70's
- 3 Aviation anti-collision system
- 4 The "F" in RDF (RevSp)
- 5 Binary byphase modulations (RevSp)
- 6 Type of modulation
- 7 About 057-078 Deg
- 36 Symbol for Ohms (RevSp)
- 37 Antenna guru, Joe _____
- 38 Circular band
- 39 Phonetic "U" (U.S. Army 1916)
- 40 Unit of potential difference
- 41 Once more
- 42 Field immediately surrounding an antenna
- 45 Radio of Armenia

(Solution on page 80)

"SCAN" WORD FIND by Steve Rakczynski

Find and circle the scanner related words. They run up, down, across, back and diagonally in both directions. Many words share the same letter(s). Leftover letters spell a commonly heard radio phrase.



- | | | | |
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| AIR | COMMUNICATE | LISTEN | SCAN |
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Midland's WR-300 S.A.M.E. Desktop Weather Receiver

Much of the mid-Atlantic has just recovered from Hurricane Isabel, which devastated parts of North Carolina and Virginia. From the time the storm formed off the west coast of Africa weeks earlier, it was easy to see it was going to be a monster event, wherever it struck. Sustained winds of 165 mph while still out in the middle of the ocean and the general west/northwest direction of travel left little doubt the coast was in for a fight. You didn't need Al Roker or a NOAA weather radio for that bit of news.

But as the storm inched ever closer, and indeed once it made landfall, all hell broke loose—and having a simple NOAA weather radio can be a lifesaver. Sure, there was plenty of advance warning and thinking folks were smart enough to evacuate when told to do so, yet for the hundreds of thousands of people a few miles inland and countless thousands on up the coast toward New Jersey, instant warnings of flash floods, lightning, and severe thunderstorm activity came from those inexpensive NOAA weather radios.



What Are You Waiting For?

We've been talking about NOAA weather radios for years—how, for the price of a pair of shoes you can be forewarned about impending storms and disasters. Especially after 9/11, there's really no excuse for not having a flashlight, a battery-powered AM/FM radio, and a NOAA weather radio. You *do* have a smoke detector and fire extinguisher, don't you?

One of the best, and perhaps slickest-looking, desktop NOAA weather receivers I've used in a long time is the new Midland WR-300. Like everything else electronic, from computers to calculators, the price on these weather radios has come down considerably in the last few years. The WR-300 retails for only \$79.95 and includes a ton of features.

"The WR-300 can be programmed to receive only those NOAA warnings for your immediate area. The technology is called SAME, for Specific Area Message Encoding."

Measuring only 2 1/2 x 7 1/8 x 5 1/2 inches (HWD), it's small enough to fit practically anywhere in your home or office (that's right *office*; if your boss doesn't have one, it makes a great holiday gift!). Few people sit there and listen to NOAA weather all day long, but most people have a radio on during the day, even at work, so the thoughtful folks at Midland included an AM/FM broadcast receiver for your enjoyment. Best of all you can set the Midland WR-300 to override the AM/FM radio when an emergency announcement is broadcast by NOAA.

The new Midland WR-300 NOAA weather radio with the SAME feature is a must-have in every home and office.

There's more good news. The WR-300 can be programmed (a very simple process, by the way, that doesn't require a degree in electrical engineering or a licensed amateur operator to perform!) to receive only those NOAA warnings for your immediate area. The technology is called SAME, for Specific Area Message Encoding, a fancy title meaning you keep your sanity and can leave the radio in the alert mode 24/7/365. If you hear the alarm and automated NOAA voice warning, you'd better pay attention!

Setting It Up

The Midland WR-300 is powered by a small wall adapter transformer; just plug it in and forget it. Remember I said this little radio has tons of features? Here's the list of those features besides the weather receiver and AM/FM radio: Clock with alarm and snooze function (so now you can ditch that old clock radio, replacing it with a radio that keeps better time and looks good); highly visible LCD display which shows time, date; long telescoping antenna that folds down for easy transporting; adjustable alert siren volume; rear jacks for using an earphone, external antenna, external alert (for using external warning devices) and power jack; a top-mounted speaker (and it's a loud one, too); user-selectable warning system with your choice of siren alarm, voice, or a visual flasher; one-touch bar (a large bar you don't have to fumble for to find) that turns radio from



The WR-300 retails for only \$79.95 and includes an AM/FM radio with great audio. Its large top-mounted pushbutton bar allows you to easily turn the weather hazard feature on or off with one touch.

The National Weather Service has set up a special phone number (see, you don't need a computer to do this) that you call and follow the simple automated instructions. Have a pen and paper handy and write down the FIPS codes unique to your area and requirements.

Or you can use the computer and Internet by connecting to www.nws.noaa.gov/nwr/indexnw.htm where you'll also get the codes and additional information. If you travel and take the WR-300 with you, you might want to get the codes for other counties and program them into the radio as well.

I programmed in four codes for our area and the entire "programming" process using the Internet to get the codes took about 12 minutes and it works perfectly. During Hurricane Isabel the radio went into the alert mode several times warning of flash floods and gale force winds; certainly warnings that were expected, but still it's reassuring to know the WR-300 is on duty when you're asleep, even when a hurricane isn't the major news story of the day.

My Favorite Things

alert mode to full-time monitoring; and a well-written instruction manual.

I'm not going to walk you through every A to Z item covered by the Midland instruction manual; it doesn't really serve any purpose other than to fill space. I'd rather explain the main points and setup of the WR-300 to help you make a buying decision.

First, let's dispel the myth that you need to install the radio near a window for best reception. Not true. Mine is sitting on a table in the bedroom 10 feet from the window and the antenna is only pulled up half way. The radio plugs into a 110-Vac wall socket for power. You should also install four "AA" alkaline (not rechargeable!) batteries (not included) in case your power goes out. My tests showed that you'll get a few hours' use from those batteries if you replace them once a year when you do the same with your smoke detector. The radio will monitor the battery's status and a visual display will warn you when they need to be replaced.

Let's face it, most of us want to avoid programming anything. We'd love it if we could speak our instructions to the radio and it would set the date, time, and NOAA weather channels for your area. Well, sorry folks, we're not quite there yet. So just know it'll take only about five minutes to program in that information. The Midland instruction manual is very well written and organized. Just take your time, relax, and it's done in no time.

That five minutes max is all it takes to plug in the date, time, and one of the seven NOAA weather channels. Suppose you want to receive emergency broadcast warnings on that NOAA channel intended only for your area (or nearby county)? It's easy. First, though, you'll need a FIPS code, which stands for Federal Information Processing System, a fancy name for a series of six digits you'll pop into the radio by following the manual and looking at the large LCD screen on the radio.

Step one is to get your FIPS code or codes (you can program up to 30 codes and you can change them at any time you wish).

I especially like the Midland WR-300 because the audio is loud and clear. This is no thumb-print-size speaker! I keep the siren level in the "Lo" position only because I don't want to hit the ceiling if it goes off at 3 a.m. and the volume at this level is adequate.

One feature I particularly like on the WR-300 is that the receiver stores up to 10 different alerts, displaying them on the LCD screen. You can then scroll backward or forward and review the last 10 active alerts. While we're talking about the visual alerts on the LCD screen, please know that the NOAA weather system doesn't just warn you about *weather* emergencies; also included in the warning system is "Law Enforcement Warning," "911 Telephone Outage Emergency," "Amber Alert," "Evacuation Immediate," and many more.

Wrapping It Up

The bottom line on the Midland WR-300 is that it's small, full-featured, and the audio is, in a word, exceptional. The receiver for both AM/FM and NOAA is also sensitive and selective, so NOAA stations don't sound raspy or off-frequency as I've experienced on other radios. If I were designing the radio I would have tilted the LCD display portion at a slightly higher angle for better viewing, but this is only a minor criticism of an otherwise superb receiver.

I'm sure you've already got enough shoes, ties, and designer shirts. Now, how about getting yourself or your family something they'll use for many years—and that could save their lives in the process!

For more information on the new Midland WR-300, contact Midland Radio Corporation at 1120 Clay Street, North Kansas City, MO 64116 or phone them 816-241-8500 and tell them you read about it in *Popular Communications*. You can also visit Midland on the Web at www.midlandradio.com. ■

utility communications

digest

news, information, and events in the
utility radio service between 30 kHz and 30 MHz

In The Black—Part I

This year we celebrate the 100th anniversary of flight. It's a foregone conclusion that in the next century military aviation will make quantum leaps in technology that Pentagon planners can now only dream of, but they can't make these leaps without standing on the shoulders of giants.

UTE monitors listening in on the GHFS and UHF MILCOM frequencies often log aircraft callsigns that they can't identify or attach to any type of aircraft. Some of these aircraft callsigns are only known to military insiders and may be connected to black aircraft programs. For example, during the mid-1980s, many monitors reported the callsign "GOATSUCKER" which was used by (then secret) F-117s on training missions.

Since we revealed the existence of a new secret stealth aircraft dubbed "BLACKSTAR" in this column a few month's ago, I have received many requests from readers for more information on the history of black-project aircraft programs and how they relate to military monitoring.

So, without further delay, here's Part I of "In The Black."

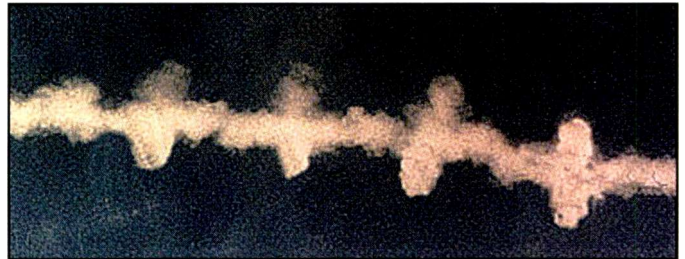
Secrets Revealed

Hidden deep inside the desert test ranges of Nevada, secret aircraft reside in closely guarded hangars. They only take to the skies on the darkest, moonless nights. Like the bats they resemble, these "black project" aircraft return to their lairs long before dawn, safe from the light of day and the prying eyes of spy satellites, aviation journalists, and American taxpayers.

But every once in awhile, the Pentagon lifts the cloak of secrecy and trots out one of its secret black-world aviation successes for the world to marvel at. The most recent of America's covert military aviation *wonder-planes* to be unveiled is Boeing's "Bird of Prey" (also known as BOP), a super-stealthy one-of-a-kind prototype that may have led to even stealthier (and even more secret) black project aircraft.

Stealth chasers (those aviation buffs and journalists who skulk around secret test bases trying to catch a glimpse of the latest, skunky bat-plane) have been chasing rumors for years that a secret aircraft project known as the Bird of Prey was flying through the desert night skies. They knew it was based at Nellis Air Force Base, just north of Las Vegas. They knew about the secret hangar on the northeast side of Nellis where it was stashed during the day. They knew it was being test flown over Area 51 ranges at night by a secret unit known as "DET 30." They were even able to obtain the squadron patch (featuring the head of a bald eagle intersected by a silver sword decorated with an oddly-stylized hilt) worn by the elite pilots who flew the BOP, but they were never able to obtain a photograph of the aircraft itself.

In a post 9/11 world, some may think that what the stealth chasers do is tantamount to treason, but in reality these military aviation addicts only uncover what the intelligence community wants uncovered. Speculation, rumors, gossip, and inten-



These now famous "donuts on a rope" contrails were captured on film while aircraft whizzed across the skies of Amarillo, Texas. Accompanying the contrails were loud, reverberating pulsing roars that rattle windows and shake houses. This columnist had the distinct privilege of witnessing (and hearing) one of these aircraft as it flew at break-neck speed over the Texas Panhandle on more than one occasion. (All photos and illustrations by Steve Douglass)

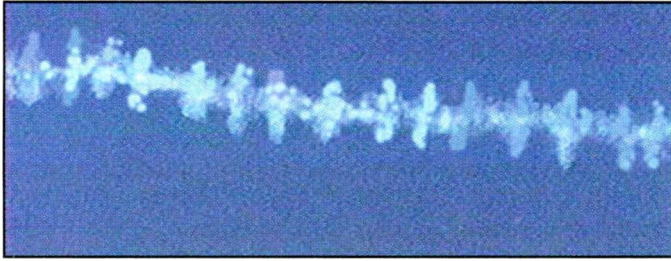
tional leaks about black projects serve to keep an enemy guessing and worried about U.S. technological prowess, with the goal being that an enemy will have to spend billions of dollars trying to counter what may only be, in reality, so much vaporware. Trying to counter U.S. military wonder weapons, the now defunct Soviet Union spent itself into the poor house, which eventually led to its demise.

Keeping that in mind, over the last few years there have been rumors and rumbles that some day soon the Pentagon was going to come clean about the BOP. Just when it seemed that an announcement was imminent, and interest was at a fever pitch, the aircraft and any information about it vanished back into the black world from which it sprang. This is just good strategy on the Pentagon's part. The first rule of advertising: wet the public's appetite and always leave them wanting more.

Then suddenly last October (with only a 24-hour warning), Boeing announced that the BOP was being revealed and unveiled in a ceremony at their St. Louis Plant. The Stealth chasers were ecstatic. Finally they would have the pleasure of saying, "I told you it existed."

Speculation ran wild about what the aircraft actually looked like. Was it one of those flying-black triangles that had been spotted over Groom Lake? Or was it the TR-3A "Black Manta," a super-silent battlefield recon aircraft sighted by Gulf War I veterans flying over Iraq? Or could it even be Aurora, the holy-grail of secret aircraft, an almost mythical Mach-8 methane belching spy plane that triggered seismic sensors (with its monster sonic booms) and scared sheep and shepherds on takeoffs (and approaches) to its secret forward deployment base at Machrihanish, Scotland?

Little did the stealthies know that the answer was staring them in the face. Only after the first officially released photos of the BOP were posted on the Internet did it become clear: The shape of the hilt on the BOP patch matched exactly the aircraft's planform, or wing shape! But as excited as the stealthies were about



I guess Amarillo must be on the regular route of the PDWE (Pulse Detonation Wave Engine) aircraft. I have a feeling that it's flying out of Northrup Strip (yes, that is the correct spelling), located in the White Sands Missile Range in south-central New Mexico. I captured this video still image while gassing up at the local 7-11. Hearing the classic pulser rumble, I looked up to see just a glint, a silver craft racing across the sky and leaving behind the classic donuts on a rope contrail. As before, I grabbed my trusty camera to document the encounter, but before I could snap a shot, the craft was gone—long gone—over the horizon. I estimate it took about four minutes for the pulser to cross the entire sky.



The strange contrails are thought to be the product of a new propulsion technology called PDWE, or Pulsed Detonation Wave Engine. The simplest way to describe the technology is to say that the aircraft is propelled to supersonic speeds by a series of explosions or pulses. Some say the XB-70-type aircraft uses this method of propulsion, others theorize that the Aurora/Senior Citizen aircraft is the culprit. My sources say the PDWE aircraft is in an unmanned recon drone.

the acknowledgment of the BOP, they knew it was only a “one-of” and couldn’t possibly account for all the sightings and the billions of dollars being poured into black projects.

BOP was, after all, just another technology demonstrator, much like the boxy but stealthy Tacit Blue, a battlefield reconnaissance “proof of concept” vehicle built to prove to the Pentagon weapons procurers that it could be done. Consider this: BOP is only an example of stealth technology that may have led to faster, stealthier, and more lethal warplanes guaranteed to win the next big war or persuade an enemy not to start one.

So just what is out there? What’s the buzz on black airplanes?

Aurora—Myth Versus Reality

The hubbub about Aurora began in 1985 when budget watchers noticed something interesting in a Department of Defense Budget document (under a line labeled Strategic Reconnaissance). The department was allocating \$80 million in FY 1981 and \$2.272 Billion (in FY 1987) for a project called “Aurora,” also listed under the sub-heading “Air Breathing Reconnaissance.”

Since the Air Force had also recently announced that they were retiring their supersonic spy plane, the SR-71 Blackbird, conclusions were that Aurora was the aircraft that would replace it. (The Aurora budget line item has since been explained away as a B-2 funding line.)

But it wasn’t just budget items that hinted at Aurora’s existence. Soon after, sighting reports of an incredibly fast triangular shaped aircraft began to appear in the aviation press, some from credible aircraft spotters, like North Sea oil platform worker, Chris Gibson.

In 1989, while working as an oil drilling engineer, Gibson spotted what may have been Aurora flying in formation with several F-111s behind a refueling tanker. Gibson’s report is all the more credible because he is a longtime member of the Royal Observer Corps and considered an expert on aircraft recognition. Gibson made a sketch of the unidentified aircraft and sent it to aviation researcher Bill Sweetman. Bill published the report in *Jane’s Defense Weekly*.

Soon after the North Sea sighting, Scottish civilian air traffic controllers began tracking incredibly high-speed blips on their scopes, which would disappear near a joint American/Scottish Air Force special operations base at Machrihanish. Citizens in the area also reported great thunderous rolling booms echoing across the Mull of Kintyre.

Other high-speed blips were tracked on radar screens near a rumored secret CIA base at Alice Springs, Australia.

Blasts From The Past

In 1991, a series of booms called “sky quakes” began rocking cities in southern California. Dr. Jim Mori of the California Institute of Technology analyzed the booms and said,

The booms came in twos, indicating a pair of aircraft on slightly different flight paths. The frequency and shape of each sonic wave differed from the Space Shuttle and indicated that a high-flying aircraft (about the size of an SR-71 flying at hypersonic speeds greater than MACH 3 and above 100,000 feet) flew across California and into Nevada. At the time the only SR-71s were on lease to NASA and on the nights the sky quakes were recorded none were flying.

More sightings of high-speed black triangular aircraft were made by desert residents in southern California near aircraft military contractor facilities in Palmdale and Antelope Valley. Near an RCS facility located in Helendale, California, a huge aircraft resembling the 1960s North American/Rockwell X-B70 supersonic bomber prototype was spotted by a seasoned black aircraft enthusiast. He described the aircraft as having a flat tail section perfect for carrying and launching a parasitic aircraft from.

Then the “Pulser” sightings began, first over Washington, then Colorado, and finally Texas. This author was able to capture the first photographs of the strange “donuts on a rope” contrail this aircraft left behind.

Alerted by a sound I can only describe as the sky being unzipped, I watched as the Pulser (as it was dubbed by the aviation press) sped across the sky faster than any aircraft I have seen to date. By the time I could grab my camera and take a few shots, the craft was long gone, leaving behind a unique contrail. When I described the ripping noise and showed the contrail photos to aviation engineers, they came to the conclusion that it was evidence of an experimental propulsion system known as a “pulse detonation wave engine,” which could be capable of propelling a small craft up to Mach 24. A propulsion engineer at (then)

General Dynamics remarked to me on the telephone, "Those bastards at the Skunkworks have done it. They've beat us to the punch."

At the not-so-secret black project test center known as Area 51, new, improved (and huge) hangar facilities were built. In just a few short years, the size of the secret base more than tripled, and satellite photos revealed a sprawling complex with a super-long runway, perfect for landing and launching high-speed aircraft. But, despite attempts of the stealthies to lift the veil of secrecy, the Pentagon issued nothing but denials.

Stealthies and aviation experts hypothesized that the Pulser most likely could be lifted up to high altitude and then launched from a larger aircraft such as the XB-70 look-alike "mothership" seen near Helendale, mirroring how the D-21 drone was launched from the back of the SR-71.

John Andrews, known to the stealthies as "Spy Emeritus" and a designer for the Testors model company which was responsible for the first U-2 and stealth fighter models, quizzed aerodynamic engineers and eyewitness on what this mother/daughter pair of secret aircraft would look like. Soon Testors released a pair of model kits dubbed the SR-75 Penetrator and XR-7 Thunderdart. Now considered collectors' items, these models thrilled black project buffs and amused Pentagon insiders.

Soon steps were taken from within the Defense Department to debunk the evidence, which only helped fuel the media's continued interest. The USAF went so far as to hire experts at the Massachusetts Institute of Technology (Lincoln Laboratories) to discredit the sky quake evidence.

In what many would call an exercise in disinformation, they analyzed one of the seismic tracings recorded from Catalina Island and stated in a report that the aircraft in question was a run-of-the-mill F-14 Tomcat on a flight test mission off the California Coast. This explanation didn't fly with the aviation press because, according to an earlier study released by the USAF Flight Test Center, sonic booms emitted by an aircraft flying at 50,000 feet only extend about 25 miles from the point of origin. Some of the seismic sensors recording the sonic booms were located 80 miles inland. Besides, the sonic signatures weren't classic sonic-boom "N" waves, but rather a series of rapid, rolling booms unlike those of any conventional fighter.

Then-Secretary of the Air Force, Donald Rice, went so far as to issue a blanket denial in a letter to the *Washington Post*. He said in the letter,

Let me reiterate what I have said publicly for months. The Air Force has no such program either known as "Aurora" or by any other name. And if such a program existed elsewhere, I'd know about it—and I don't. Furthermore the Air Force has never created or released cover stories to protect any program like "Aurora" I can't be more unambiguous than that. When the latest spate of "Aurora" stories appeared I once again had my staff look into each alleged sighting to see what could be fueling the fire. Some of the reported sightings will never be explained simply because there isn't enough information to investigate.

Note: I have contacted many of those who reported sightings of strange aircraft (their identities are well documented in the press and yet none were ever contacted by any Air Force investigator.

Rice went on to say, "Other accounts such as the sonic booms over California, the near collision with a commercial airliner and strange shapes loaded into Air Force aircraft are easily explained and we have done so numerous times on the record."

Note: Freedom of Information Act requests by this author can find no such records other than denials (in a letter in 1988) that an aircraft known as "F-117 Night Hawk" existed (notice how the official name of the F-117 was split into two words to substantiate the denial). No records of any sonic boom investigations (other than the bogus Lincoln Lab studies) or inquiries into the "donuts on a rope" sightings were found.

So were these denials the end of the Aurora story? Not at all. Just prior to Rice's letter to the *Washington Post*, sharp-eared military-radio monitoring hobbyists intercepted a radio phone-patch to the Air Force Special Projects office.

On October 12, 1992, at 2310 GMT, on the Mystic Star frequency of 6.812 MHz, a "General" was heard talking to an aide in the Air Force's Public Affairs Office. He said,

We need to develop a response to inquiries. The guts of this should be that we have looked at the technical aspects of the sightings and what the logical answers for them are. You can quote Dr. Mori and then cite the Lincoln Labs physics and the FAA's efforts to debunk the other incidents. Go through three or four of the sightings, take each one on and conclude with a paragraph that says the fantasy of Aurora doesn't exist.

They went on to discuss the Chris Gibson North Sea sighting, saying, "Someone saw something accompanied by three F-111s. The Secretary wants us to talk to McMann and say it was an F-117."

From 1995 until 2000 the sightings all but disappeared, indicating that Aurora was probably an experimental "proof of concept" vehicle that just didn't prove itself, or that it was a too-expensive "one-of" silver bullet system trotted out only when needed.

Then suddenly a good daylight sighting of an-Aurora type aircraft came in 2000, Stealthies Meinrad "Swiss-Mountain-Bat" Erberle and Steve "AF2" Hauser witnessed a huge triangular aircraft taking off from Area 51. Meinrad, who watched the aircraft depart through image-stabilized binoculars, described the aircraft as having a streamlined triangular platform, two massive, slightly canted tail fins, and very large twin engine exhausts. Meinrad was alerted to the imminent takeoff of a "Fastmover" by monitoring Groom Lake tower communications on his military band scanner.

Since then, Air Force military insiders say that the real designation for Aurora is "Brilliant Buzzard" and that it launched a hypersonic unmanned reconnaissance probe, known as "Quartz," from its back. Pilots who flew Brilliant Buzzard are known as "Q guys" who wear a Q button on their lapels at Society of Experimental Test Pilots conventions.

From time to time, donuts on a rope contrails are still being reported by the stealthies. Leaks indicate that the Brilliant Buzzard is kept inside the huge hangar at Area 51, in flyable storage, ready to do its duty in case of national emergency or if an enemy should threaten the United States and its interests. Coincidentally, in the weeks leading up to the invasion of Iraq, journalists in Baghdad reported hearing ear-splitting roars and sonic booms that rocked the city at night, no doubt heralding the storm to come.

Next month: Part II "The Flying Artichoke, Black Manta, and the Switchblade"! Stay tuned.

MILCOM Group

As any UTE monitor worth his salt knows, one of the major users of the HF spectrum is indeed the U.S. military. If you are new to HF monitoring and haven't yet discovered GHFS (Global High

Frequency System) communications all across the band, then I suggest you have your receiver and antenna checked for major problems. If you aren't monitoring GHFS, you're missing out big-time.

If you're already a military monitor, I'd suggest you subscribe to one of the many internet e-mail groups, such as MILCOM and MILAIR. You can do so by directing your browser to: <http://www.qth.net>. It will certainly help you get the most out of your listening time.

Not only can you sign up for MILCOM and MILAIR messaging, but almost every kind of radio hobbyist newsgroup, from shortwave broadcast to AM radio DXing, is listed there. Subscribing is very easy: just follow the posted instructions and soon you'll be receiving constant reports on what's taking place on the military airwaves.

Be advised that, just as on every other list, there are a few pontificating blowhard "know it alls" who live to "flame" newbies and what they consider stupid questions, so be sure you know of what you post before you post it. I've even seen some of these "Internet Nazis" pounce on a guy for grammatical errors! Just do as I do and ignore them. There is so much good information to be had on a list that they are worth putting up with.

If your interests are more utility-minded, I strongly suggest every UTE monitor sign up on the WUN (World Utility News) list as well. WUN is the place to be for die-hard HF UTE monitors to exchange the latest loggings, exchange monitoring and equipment tips, and meet other like minded radio-rabid fiends!

Breaking news events are almost always reported on lists first. For example, communications concerning the *Columbia* disaster and attack on America on 9/11 were reported at near real-time as seasoned and beginning monitors traded frequency information and first-hand accounts of what they were hearing.

Reader's Mail—And Logs

My e-mail box is not exactly overflowing with reports, but the list of those supplying first-rate logs is growing! Keep them coming in please!

Before we get to the logs here's an interesting note from Dave, K4SV, of Asheville, North Carolina. Dave writes,

I wanted to report some strange activity on 30 meters of late. I get up early here in Western NC to work the Pacific on 30 and 40 meters and have heard a numbers station at 10126.00

sending 5 letter groups at 17 wpm starting at 11 Z. It peaks south of me and today was 50 dB over S9 but it seemed to have some QSB. I looked at the *Pop'Comm* list and can't remember who deals with this on your staff. If you could pass this along to them and perhaps find out if this is a known station. Yesterday they had transmitter trouble, they were spurious all over the band (and at 50 over) [and were] all over the DX I was working 20 kHz below! The next day the signal sounded strong until the end when it went spurious again.

Can anyone out there help Dave identify this station?

A nice letter arrived from Charles E. Blanchard, KA9OPR, of Aurora, Illinois. He wrote,

Thank you for taking over for Mr. Joe Cooper, I think that you will do the column justice. Regarding Perry Crabill, W3HQX's suggestion pertaining to the addition of the listener's geographical location, I think it is a good idea as some signals are only heard in certain parts of the world, and not in other parts. It would help in making the proper selection of reports in order to prevent the futile attempts to hear a signal when it wouldn't be possible to hear it due to propagation conditions, or location versus weak transmitters.

My listening choices are as follows, A: Russian Maritime Fleet Operations; B: FAPSI, MFA; and C: UNID, RTTY and CW. Regarding the survival of the hobby, a statement you made at the end of your column in the October 2003 issue, where you stated that we should spend more time with our youth I totally agree with you on that. It is a real crying shame when our children get the country of India and the state of Indiana mixed up.

From the "Night Owl" (Rick Barton) comes this interesting letter, comments, and logs:

I listen from Cave Creek/N. Phoenix, Arizona, or Silver City, New Mexico. I still remember that wild article you wrote years ago in another hobby publication about your adventures in New Mexico...One of my favorite columns ever! (*Thanks for remembering, I'd almost forgotten, or tried to!—sd*)

We won't expect you to top that or anything now. I liked your comment about folks outside "enjoying the weather" during the summer. Not the case here! My logs get thin due more to the local power lines getting old and rickety, more so now than when I first moved into the area.

Here are Rick's loggings:

8010: Cuban 5-digit YL Spanish number station at 0641, ending with 3 "final" thumps. Loud hum to audio. (Night Owl)

8097: Spanish YL 5-figure numbers sta in prog. at 0625. (Night Owl)

9063: Cuban-type, Spanish YL 5-digit number station in pgs. in AM at 0715. Ends with triple "Final." (Night Owl)

9323.5: Cuban YL numbers sta in CW at 1011. (Night Owl)

9908: Spanish YL 5-digit number station noted at 1140. (Night Owl)

13110: WLO Alabama, USA, in USB w/ marine WX bulletins re: numerous tropical-storms and hurricanes Fabian and Isabel. (Night Owl)

This Month's Featured UTE Loggings

0000 (Frequency kHz): STATION, Anytown, USA, summary of traffic heard in MODE at 0000 Z. (monitor)

2414.0: COINC (possibly Concord NH EOC): 0712 USB/ALE sounding. Station MIILF also noted on this freq. 04/09. (RP3)

5135.0: WPFJ625 (New Hampshire State EOC, Concord NH): 0807 USB/ALE sounding. Stations MIILF (possibly Milford NH EOC) and PEITE (possibly Peterborough NH EOC) also noted on this freq. 04/09. (RP3)

5696: CG Rescue 6126 departing Elizabeth City enroute SAR. Asking CAMSLANT Chesapeake to take their radio guard. (DS2)

5696: Air Guard 1452 radio check on primary and secondary systems w/ CAMSLANT Chesapeake. (DS2)

5696: CG Rescue 1718 originally calls CAMSPAC Pt. Reyes on 5696 w/ no joy. QSY to 8983 to make contact. Rescue 1718 returns to 05696 after CAMSPAC calls them. CAMSPAC accepts rdo guard for 1718 from CAMSLANT. 1718 on SAR off: Oregon coast. (DS2)

6806.0: 022NHQCAP (CAP National Operations Center, Maxwell AFB AL): 0738 USB/ALE sounding. 05/09. (RP3)

7621.6: CGD9 (CG District 9, Cleveland OH): 1250 USB/ALE TO NRUU (USCGC Neah Bay, WTGB-105-Cleveland OH). 05/09. (RP3)

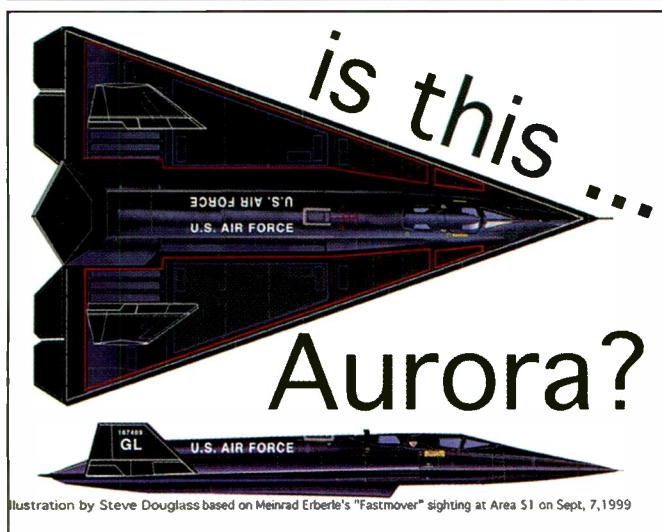
7648.5: MFDNGB (Milford National Guard Bureau, Milford MA): 1232 USB/ALE TO GUSNGB (probably Gloucester National Guard Bureau, Gloucester MA). 06/09. (RP3)

7648.5: CRINGB (Cranston National Guard Bureau, Cranston RI): 1216 USB/ALE TO MFDNGB (Milford National Guard Bureau, Milford MA). 06/09. (RP3)

8983: CG Rescue 1718 calls CAMSPAC Pt. Reyes w/ no joy. Then tries COMSTA Kodiak w/ no joy. 1718 contacts CAMSLANT Chesapeake and asks them to take radio guard. 1718 leaving Air Station Sacramento for SAR off Oregon coast. Also asks CAMSLANT to contact D13 for search plan. At this point, CAMSPAC contacts 1718 on 5696, guard is shifted to CAMSPAC. (DS2)

9025.0: F33 (CG HU-25 # 2133, CGAS Miami): 2308 USB/ALE TO ADW (Andrews AFB)—[AMD] CCCCD9,9918666854486 NNNN. 06/09. (RP3)

9145.0: 814370 (helo, 160th SOAR, Ft Campbell KY): 1910 USB/ALE TO HTR (Hooter Ops, Ft Campbell KY). 05/09. (RP3)



This illustration is based on details from Meinrad Erberle's "Fastmover" sighting near Area 51 in September, 1999. Meinrad was alerted to the imminent take-off of this black project aircraft by listening in on Groom Lake tower UHF aviation frequencies.

9145.0: 823414 (helo, probably 160th SOAR, FT Campbell KY): 2000 USB/ALE sounding. 05/09. (RP3)

9145.0: CLS (Ft Campbell KY): 2039 USB/ALE sounding. 05/09. (RP3)

10489.0: SITIO27E (Colombian Army): 2357 USB/ALE TO SITIO20E (Colombian Army)—[AMD] AXP...0E@IO20E @. 04/09. (RP3)

10489.0: SITIO27E (Colombian Army): 0001 USB/ALE TO SITIO20E (Colombian Army). 05/09. (RP3)

11018.0: FACAIE (Facatativa, Colombian Army): 0052 USB/ALE TO SITIO18E (Colombian Army). 04/09. (RP3)

13242.0: ADWNPR (Non-Secure Information Protocol gateway, Andrews AFB): 0839 USB/ALE sounding. 05/09. (RP3)

14665.0: AAA (Israeli Air Force): 1755 USB/ALE sounding. 05/09. (RP3)

17487.0: KSZ78 (unidentified SHARES station): 1527 USB/ALE TO KGD34NCC (SHARES National Coordinating Center, VA). 04/09. (RP3)

18032.0 208: RSNS Resolution L-208 (Endurance class LPD) 0528 USB with TF3: Singapore Navy Third Flotilla/191 Squadron in both Mil-Std 188-141A and English voice. Then, into Singapore Navy 75bd/200 Hz encrypted RTTY on 18034.0. 09/12. (JUM)

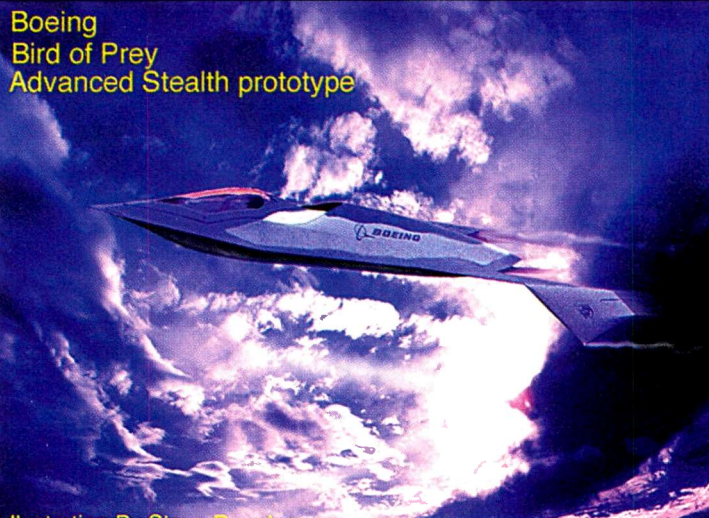
This month's UTE log contributors are Rick Barton (Night Owl), Ron Perron (RP3), Dwight Simpson (DS2), and Japan UTE Monitor (JUM).

Thanks to all for your submissions. Each and every one of your contributions is appreciated. If by chance your logging didn't get in this issue, make sure you follow the above format and try and get them to me before the 10th of each month.

Last Words

Now that we've taken a look at some Black Projects, I want to hear your stories. If you've had a unique aircraft sighting or intercepted communications that might relate to covert military projects, I want to hear about it. All communications will be kept strictly confidential.

To reiterate: I know that there are those out there who think that even thinking about such things is close to treason, but as someone who has spent many years reporting on covert mili-



Boeing's recently revealed BOP has recently been declassified much to the stealth chaser's delight.

tary matters, I've come to realize that they let you uncover what they want you to uncover. If you saw a black aircraft zooming over your house in broad daylight it is because they wanted you to see it. Why else fly it over a populated area?

Important Disclaimer: *Do not send me classified information. Do not trespass on government property to take any photographs of anything remotely secret. I am only asking for incidental material, not documents or photos or any information not readily available to the public. I want sighting and listening reports, not Top Secret documents stolen from the Pentagon or anywhere else. Don't even consider sending me anything remotely secret. I don't want federal agents in my home and neither do you. I know this may sound silly but you would be surprised how many people in secret jobs, doing secret stuff, can't resist the urge to crow about something they aren't cleared to crow about. If by chance I do receive anything that might be considered classified materials, I will have no choice but to turn it over to the proper investigating authorities.*

That said, what's my interest? As a self-professed aviation historian, I believe there are few subjects as interesting as military technology development. Although the following statement may seem self-serving, the unsung engineers and technologists, test pilots, aviation mechanics, and others who work on these classified programs have no voice and, therefore, their history isn't being written, even though what they are achieving is by any standard amazing!

Admittedly in piece-meal fashion, aviation journalists, stealth chasers, military monitors, and aviation buffs are helping bring to the forefront small glimpses of what these people have achieved. These small peeks behind the black curtain pique public interest, which, in turn, induces the Pentagon to reveal more information. The story of America's huge part in the history of military aviation is still being written, and someday the amazing breakthroughs brought about by black contractors, such as Boeing's Phantom Works, will be made known, and we will all be proud. Until that day, it will remain a story filled with many blank pages. ■

Emergency Beacon Registration Now Available Online

Emergency beacon owners across the country now have a faster way to register and update their 406-MHz distress beacons—over the Internet. The National Oceanic and Atmospheric Administration (NOAA) recently unveiled the next generation National 406 Megahertz Beacon Registration Database as a convenient, secure way for beacon owners to provide their names, phone numbers, and other critical information directly over the Internet, instead of having to mail or fax it. NOAA is an agency of the U.S. Department of Commerce.

“We expect the online registration to save beacon owners a great deal of time, and allow them to play a more active role in a system that’s set up to rescue them if the situation arises,” said Ajay Mehta, manager of the NOAA Search and Rescue Satellite Aided Tracking (SARSAT) Program. “The online capability enables beacon owners to update and manage their registration. As this information changes over time, the new database will remain up-to-date for alert signals sent by the U.S. Mission Control Center to SAR agencies here in the U.S. and around the world.”

The NOAA SARSAT Program operates the U.S. Mission Control Center from the NOAA Satellite and Information Center in Suitland, Maryland. SARSAT is part of the international COSPAS-SARSAT satellite search and rescue system, which uses NOAA and Russian satellites to detect and locate distress signals sent from emergency beacons carried aboard ships, aircraft, and by individuals carrying Personal Locator Beacons.

Mehta added that the new, Web-based registration system will meet the goals of the Government Paperwork Elimination Act, by significantly cutting the volume of paper registrations NOAA handles on a daily basis. By law, all owners of PLBs and other types of 406-MHz beacons, called Emergency Position Indicating Radio Beacons (EPIRBs), used in the maritime industry and Emergency Locating Transmitters (ELTs), used in the aviation industry, must register the potential life-saving devices with NOAA.

Emergency beacon owners who have already registered with NOAA in the past can access their previously provided information and view it online. NOAA encourages beacon owners to update any information that may be outdated, such as new phone numbers and new emergency points of contact. Some owners, particularly companies or organizations who have a large number of beacons, also have the flexibility to update and manage their registration information via the Beacon Block User capability.

NOAA’s Satellite and Information Service is the nation’s primary source of space-based meteorological and climate data. It operates the nation’s environmental satellites, which are used for weather and ocean observation and forecasting, climate monitoring, and other environmental applications, including sea-surface temperature, fire detection, and ozone monitoring. NOAA’s commercial licensing program draws on NOAA’s heritage in satellite operations and remote sensing applications.

The Satellite and Information Service also operates three data centers which house global databases in climatology, oceanography, solid Earth geophysics, marine geology and geophysics, solar-terrestrial physics, and paleoclimatology. NOAA is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and to

providing environmental stewardship of America’s coastal and marine resources.

You can visit them on the Web at <http://www.noaa.gov> and you can now register that 406-MHz beacon at www.beaconregistration.noaa.gov.

This Is Only A Test...Or Goof?

Radio Jordan has done a flip-flop—at least once. Scheduled for English on 11690, we caught ‘em on 11960 at 1430 (earlier as well) with a superb signal and great audio. A couple of *Pop ‘Comm* readers checked in from Europe saying they, too, were hearing the powerhouse on 11960. Check it out and let us know what you’re hearing—and remember, no two days are the same on shortwave!

CQ Readers Favor HF Privileges For Techs; Split On Code Tests

A survey of *CQ* magazine readers shows respondents are strongly in favor of granting at least some high-frequency (HF) operating privileges to already-licensed hams who have not taken a Morse code test, but are evenly split over the question of continued Morse code exams for amateur licenses. *CQ* Editor Rich Moseson, W2VU, said over 400 *CQ* readers responded to the survey, which is not scientific but does provide a “snapshot” of reader views on various topics. The survey was included in the September, 2003 issue of the magazine.

Nearly two-thirds of the readers who responded to the survey favor giving limited HF privileges to currently licensed Technician class hams who have not taken a code test, while 36 percent of respondents said there should be no changes in operating privileges. Among those who favor changes, 43 percent support merging the current Novice and Technician licenses and combining the privileges of both, while another 26 percent favor expanded privileges for both classes, including HF subbands offering voice, CW, and data at limited power levels. In addition, 14 percent supported giving Novice HF privileges to Technicians, but not giving full VHF privileges to Novices. The remaining 17 percent were split between giving current Technicians only current Novice voice privileges (9 percent) and only current Novice code privileges (8 percent).

A significant aspect of these survey results, according to W2VU, is that 84 percent of the readers responding already have HF operating privileges, 75 percent report being active on HF, and over half (58 percent) hold Extra class licenses. “This is important because it’s people who already have HF privileges saying others should have them, too,” explained Moseson, adding, “it’s clearly not a bunch of people *without* HF privileges trying, as some would see it, to get something for nothing.”

The readers were split, 50-50, on the question of whether the FCC should change its current code test requirements. Of those who favored change, Moseson said, 50 percent called for the elimination of code tests for both General and Extra class licenses, while 42 percent favored eliminating the General class code exam but keeping it for the Extra class license. The remaining 8 percent supported replacing the current code test with a code recognition test similar to the exam used for the Foundation license in the United Kingdom.

While only half the readers want the FCC to change the current code test requirements, three quarters of the *CQ* readers who responded to the survey said they agreed with the decision at the 2003 World Radiocommunication Conference (WRC-03) to leave the question of code tests up to each country to decide. An interesting note, said Moseson, is that not all of the remaining 25 percent preferred to keep the international rule in place. "Answers to other questions made it clear that at least some of those who *disagreed* with the decision of the world body felt it did not go far enough

in eliminating code requirements," W2VU explained.

The *CQ* survey also asked about other changes to international radio regulations made at WRC-03. Also left to each government to decide is whether to permit its hams to exchange international third-party traffic with hams in any other country that also permits it. Among the *CQ* readers responding to the survey, 42 percent felt the FCC should lift current restrictions, 30 percent felt the rules should remain as they are, and 18 percent had no opinion.

Liberalized reciprocal licensing rules for

foreign amateurs operating in the United States would require Congress to change the Communications Act. Three out of five (59 percent) *CQ* readers felt the rules should be left as they are currently, 16 percent said that the ARRL should pursue such a bill as a low priority, 5 percent said it should be a high priority, and 10 percent had no opinion.

Finally, the ARRL and IARU (International Amateur Radio Union) got a strong vote of support for the time and money they invested in securing the compromise agreement on 40 meters that will eventually double the size of the band for amateurs in Europe, Asia, Africa, and Oceania, while removing broadcasters from the 7100- to 7200-kHz segment by 2009. Seventy-eight percent of *CQ* readers responding to this question said the effort was a worthwhile investment of member dues and staff time, while 13 percent had no opinion and only 9 percent said the benefit was not worth the cost.

CQ Amateur Radio magazine is the world's largest independent amateur radio magazine, read monthly by tens of thousands of amateur radio operators in over 100 countries across the globe. *CQ* regularly surveys its readers on issues facing amateur radio.

AIR To Sell Airtime On Phased Out Mediumwave And FM Transmitters

All India Radio has decided to sell airtime on its old mediumwave and FM transmitters, which are on the verge of being phased out. About 20 such transmitters are to be phased out by AIR in two years' time. Under the new policy, AIR is giving airtime to non-commercial institutes, government departments, and Universities on 1-kW capacity MW transmitters and 5-kW capacity FM transmitters, managed and operated by it. According to the policy guidelines, sale of airtime is to be done for one year on a first come, first served basis. AIR will be giving time slots for non-commercial programs for eight to 10 hours a day, depending on the capacity of the old transmitters.

Those who book time slots on the phased out transmitters will have to follow AIR's programming code. AIR has already booked time slots from MANAGE Institute on the MW transmitter in Hyderabad. According to H.O. Srivastava, Chief Engineer and Head, AIR Resources, currently program slots are available on two MW transmitters in Chandigarh and one each at Baroda and Calicut. The slots on FM transmitters will be available in about a year's time.

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RADIO EMERGENCY ASSOCIATED COMMUNICATIONS TEAMS

Enjoying The Winter DX Season

The fall and winter DX season is in full swing! Listeners throughout the Northern Hemisphere are enjoying great mediumwave DX. Shortwave DX has been hot, especially on the mid- to low-HF bands from early evening until late at night, and then again from early morning through high noon.

The geomagnetic field is settling down after quite an active summer. It has been observed over past solar cycles that the geomagnetic field becomes highly active and stormy more often during the few years after the solar cycle maximum than during the actual solar cycle peak. However, with the arrival of the winter season comes a reprieve from geomagnetic disturbances caused by solar events. While the overall planetary A index (Ap) average has been rather high, we're seeing a sharp decline now. I expect to see a continuation of this quieting of the geomagnetic activity as we enter 2004 since we are moving well away from the peak years of Solar Cycle 23.

December is well enough past the autumnal equinox and the associated peak auroral activity to support transpolar propagation. With this overall reduction of geomagnetic activity and the decrease of radio signal absorption comes more stable high-latitude propagation. Mediumwave DXers enjoy catching broadcast station transmissions from over the North Pole. Shortwave DXing over high-latitude paths becomes exciting, even if the higher frequency bands might be dead.

The change in weather in the Northern Hemisphere during the winter season also makes for quieter band conditions. With thunderstorms few and far between atmospheric noise is greatly reduced.

What does this mean? For this next year, conditions on the lower bands will slightly improve, while high-frequency DX will become rarer. For this winter, DX on mediumwave frequencies (below 90 meters) and the lower shortwave bands (say, 19 meters through 90 meters) will be better than this last summer and the past few years of high solar activity because the weaker DX signals are easier to hear.

Current Solar Cycle 23 Progress

Solar Cycle 23 compares most closely with the past Cycles 17 and 20. Those two cycles had much the same rise at their beginnings as Cycle 23, and we're seeing the same rate of decline as 17 and 20 in 23's decline. Cycle 23 has a more apparent double peak, however: A monthly smoothed sunspot number first peaked at 120.8 during April 2000, with a second yet lower peak at 115.6 for November 2001. Each cycle averages about 11 years from minimum to minimum. After subtracting the four years from the May 1996 beginning to the peak during May 2000, we are expecting this cycle to end sometime around 2007. This slow decline promises continual moderate to excellent conditions for signal propagation on the various HF bands. Of course, lower frequencies become less noisy during the years of a solar cycle minimum, providing better listening conditions for exotic tropical and lower-band signals.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 122 for August 2003, down from 128 for July. The 12-month smoothed 10.7-centimeter flux centered on February 2003 is 145, down from January's 149.

The world's official keeper of sunspot records, The Royal Observatory of Belgium, reports an observed monthly mean sunspot number of 73 for August 2003, down from 85 for July. The 12-month running smoothed sunspot number centered on February 2003 is 78.5, down from 81 for January 2003. The sunspot low for the August 2003 was 49 on August 1, while the peak was 95 on August 28. This range was moderate, compared with the wider range during July.

The observed monthly mean Ap index for August 2003 is 23, up three points from July. The 12-month smoothed Ap index centered on February 2003 is 19, up about a point from January.

A smoothed sunspot level of 49 and a 10.7-centimeter solar flux of about 100 are predicted for December 2003. The geomagnetic planetary A Index (Ap) will continue to quiet down just a bit through the winter months.

Mediumwave Propagation

The duration of a solar cycle is approximately 11 years and the amount of auroral activity and polar cap absorption is directly tied to the magnitude of solar radiation and plasma that strikes the magnetosphere and the geomagnetic field of the Earth. As this solar activity decreases, the overall improvement in long-path and high-latitude propagation makes the chances of hearing transpolar mediumwave signals greater.

There are positive DX aspects to increased auroral activity, though. Eastern Canadian and East Coast United States signals can propagate to New Zealand when solar flares of very high intensity disrupt the Earth's magnetic field causing anomalies. Such receptions are notable by two occurrences: first, the audio of the signal sounds rather hollow, like it's coming down a tube; and, second, the direction of the signals is abnormal. Many DXers report hearing these phenomena.

Another auroral advantage occurs when local (regional) signals are heavily depressed. Listeners report that strong local signals from major stations either disappeared or have been heavily subdued during major solar events (solar flares or major geomagnetic storms) allowing for reception of east/west mid-latitude signals. This has been noted both around sunset through to early evening and around sunrise.

So, when is the best time to look for mediumwave DX? The general rule is to start in the early evening, and to continue through the night and into the early daylight hours. As sunset approaches, the ionosphere starts to change. The D layer recombines and signals begin to punch through to the E and F layers, and distant propagation is more likely.

Most broadcast stations in the United States change from high power to low power after their local sunset. If you listen just prior to their local sunset time, their higher power will propagate well because of the characteristics of nighttime ionization. Thus, the idea is to maximize the degree of darkness at the station (and, consequently, along the signal path from them to you) while they're on day power and pattern. The exception to this would be those cases where the power difference between night and day is small or nonexistent, but the nighttime pattern actually is more favorable to you.

Optimum Working Frequencies (MHz) - For December 2003 - Flux = 100, SSN = 48 - Created by NW7US

UTC TO/FROM US WEST 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	19	15	12	12	11	11	10	10	10	10	10	9	9	9	14	18	20	21	22	22	23	22	22	21
NORTHERN SOUTH AMERICA	27	25	19	16	15	15	14	14	13	13	13	13	12	12	16	24	27	29	30	30	31	30	30	29
CENTRAL SOUTH AMERICA	27	24	17	16	15	15	14	14	13	13	13	13	13	13	19	24	27	29	30	30	31	30	30	28
SOUTHERN SOUTH AMERICA	29	27	23	17	16	15	15	14	14	13	13	13	13	13	23	27	28	29	30	31	31	31	31	30
WESTERN EUROPE	9	9	9	9	9	9	9	9	9	8	9	9	9	9	11	12	11	11	10	9	9	9	9	9
EASTERN EUROPE	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	10	11	10	10	10	9	9	9	9
EASTERN NORTH AMERICA	21	17	13	13	12	12	12	11	11	11	11	11	11	11	15	20	22	23	24	24	24	24	23	22
CENTRAL NORTH AMERICA	12	11	9	7	7	7	7	6	6	6	6	6	6	6	6	9	11	12	13	13	13	13	13	13
WESTERN NORTH AMERICA	7	6	6	4	4	3	3	3	3	3	3	3	3	3	3	5	6	6	7	7	7	7	7	7
SOUTHERN NORTH AMERICA	21	19	16	12	12	11	11	11	10	10	10	10	10	10	10	17	20	21	22	23	23	23	23	22
NORTHERN AFRICA	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	13	14	15	16	12	11	10	10	10
CENTRAL AFRICA	11	10	10	10	9	9	9	9	9	9	9	9	9	9	9	12	14	15	15	14	13	13	12	12
SOUTH AFRICA	18	14	13	12	12	11	11	11	11	10	10	10	10	10	15	19	20	21	22	22	22	22	21	20
MIDDLE EAST	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	11	11	11	10	10	10	9	9	9
JAPAN	18	18	17	16	13	11	10	10	10	10	9	9	9	9	9	9	9	9	9	9	9	12	16	18
CENTRAL ASIA	18	17	17	15	13	11	10	10	10	9	9	9	9	9	9	9	9	9	11	11	11	11	12	18
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
THAILAND	17	16	16	14	12	10	10	10	9	9	9	9	9	9	9	9	9	9	11	11	11	11	11	11
AUSTRALIA	27	28	28	26	22	17	16	15	14	14	13	13	13	13	13	13	13	17	16	16	18	21	23	25
CHINA	15	16	15	14	11	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	11
SOUTH PACIFIC	29	30	28	26	21	16	16	15	14	14	14	13	13	13	13	13	15	17	19	21	23	25	27	28

UTC TO/FROM US MIDWEST	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	21	14	14	13	12	12	12	11	11	11	11	11	11	18	22	24	25	26	26	27	26	26	25	23
NORTHERN SOUTH AMERICA	24	19	15	14	14	13	13	12	12	12	12	12	11	18	23	26	27	28	29	29	29	28	27	26
CENTRAL SOUTH AMERICA	24	17	16	15	15	14	14	13	13	13	13	13	13	22	26	28	29	31	31	32	31	31	29	28
SOUTHERN SOUTH AMERICA	27	23	17	16	16	15	14	14	14	13	13	13	13	16	24	25	27	28	29	30	31	31	31	29
WESTERN EUROPE	9	9	9	9	9	9	8	8	8	8	9	8	8	11	14	15	15	15	14	13	10	10	9	9
EASTERN EUROPE	9	9	9	9	9	9	9	9	9	8	9	9	9	9	12	14	15	13	10	10	10	9	9	9
EASTERN NORTH AMERICA	14	10	10	9	9	9	8	8	8	8	8	8	8	9	14	16	17	18	18	18	18	18	17	16
CENTRAL NORTH AMERICA	7	6	4	4	4	4	4	4	3	3	3	3	3	3	5	7	7	8	8	8	8	8	8	7
WESTERN NORTH AMERICA	12	11	9	7	7	7	7	6	6	6	6	6	6	6	9	11	12	13	13	14	14	13	13	13
SOUTHERN NORTH AMERICA	14	12	9	9	8	8	8	7	7	7	7	7	7	7	11	14	15	16	16	17	17	16	15	15
NORTHERN AFRICA	11	10	10	10	9	9	9	9	9	9	9	9	9	9	14	16	17	18	19	18	14	13	12	12
CENTRAL AFRICA	11	10	10	10	9	9	9	9	9	9	9	9	9	13	16	17	18	18	18	14	13	13	12	12
SOUTH AFRICA	18	16	15	15	14	14	13	13	13	13	13	13	12	23	26	28	29	30	30	30	29	28	26	24
MIDDLE EAST	9	9	9	9	9	9	9	9	9	9	9	9	9	10	14	16	16	14	11	10	10	10	9	9
JAPAN	17	16	14	11	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	10	15	17
CENTRAL ASIA	16	15	13	10	10	10	9	9	9	9	9	9	9	9	9	11	11	11	11	11	11	11	11	17
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
THAILAND	15	14	10	10	10	9	9	9	9	9	9	9	9	9	9	12	12	11	11	11	11	11	11	11
AUSTRALIA	27	27	25	20	16	15	15	14	14	13	13	13	13	13	13	12	18	17	16	16	19	21	24	25
CHINA	14	14	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
SOUTH PACIFIC	29	28	25	18	16	15	15	14	14	14	13	13	13	13	13	18	17	17	20	22	24	26	27	29

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	15	11	11	10	10	10	9	9	9	9	9	9	13	17	19	20	21	22	22	22	21	21	20	18
NORTHERN SOUTH AMERICA	20	17	15	14	14	13	12	12	11	11	11	11	15	20	22	24	25	26	26	26	26	25	24	23
CENTRAL SOUTH AMERICA	20	19	17	16	16	15	14	14	13	13	13	13	22	25	27	28	30	31	31	32	31	30	29	26
SOUTHERN SOUTH AMERICA	25	21	19	18	17	16	15	15	14	14	13	13	20	22	24	26	27	29	29	30	31	31	30	28
WESTERN EUROPE	9	9	9	8	8	8	8	8	8	8	8	8	14	16	17	17	16	15	14	11	10	9	9	9
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	9	8	10	10	10	10	10	10	9	9	9	9	9	8
EASTERN NORTH AMERICA	6	5	4	4	4	4	4	4	4	3	3	3	3	7	8	8	9	9	9	9	9	8	8	7
CENTRAL NORTH AMERICA	15	11	10	10	9	9	9	9	8	8	8	8	8	10	15	17	18	19	19	19	19	18	18	17
WESTERN NORTH AMERICA	21	17	14	13	12	12	11	11	11	11	11	11	11	11	16	20	22	23	24	25	24	24	23	23
SOUTHERN NORTH AMERICA	16	12	11	10	10	10	9	9	9	9	9	9	8	13	17	19	20	20	21	21	21	20	20	18
NORTHERN AFRICA	12	12	11	11	11	11	11	11	11	11	11	11	16	20	22	24	24	25	24	22	19	14	13	12
CENTRAL AFRICA	12	11	11	11	11	11	11	11	11	11	11	11	16	20	22	24	25	25	23	20	14	14	13	12
SOUTH AFRICA	16	16	15	14	14	14	13	13	13	13	13	21	26	28	30	31	31	31	31	31	30	28	25	18
MIDDLE EAST	10	10	10	9	9	9	9	9	9	9	9	11	16	17	18	19	19	19	14	13	12	12	11	11
JAPAN	14	11	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	16
CENTRAL ASIA	12	10	10	10	9	9	9	9	9	9	9	9	9	9	12	12	11	11	11	11	11	11	11	15
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
THAILAND	10	10	10	9	9	9	9	9	9	9	9	9	9	12	13	13	12	12	12	11	11	11	11	11
AUSTRALIA	26	23	17	16	15	15	14	14	13	13	13	13	13	13	21	19	18	17	16	16	19	22	24	26
CHINA	11	10	10	10	9	9	9	9	9	9	9	9	9	10	10	9	9	9	9	9	9	9	9	9
SOUTH PACIFIC	27	23	17	16	15	15	14	14	13	13	13	13	13	15	20	18	18	19	22	24	26	27	28	29

At the same time, any station to the west that has a favorable nighttime signal in your direction (in other words, they have significant night power and no deep null antenna pattern aimed at you) is a potential sunrise target. *D* layer absorption increases rapidly when in direct sunlight, and areas to the east of you begin to ionize, while west of you is still dark and free of *D* layer ionization.

For a period of time around your local sunrise the relative strength of stations to the west of you increases, while eastern stations will start to fade, allowing the western stations to emerge from underneath. On rare and exciting occasions, this period will last long enough for some western stations to go to their higher power and daytime pattern. Here, as with sunset, the time of month can also be critical, as the more darkness on the path, the better. As sunrise times get later in the fall, the end of the month is preferable. In the spring, the beginning of the month is better. The longest hours of darkness fall toward the end of December, usually on the 21st.

However, the shortest day of the year is not the day when the sunrise is latest and the sunset earliest. The latest sunrise times at mid-latitudes are right around December 30, while the earliest sunset times are usually between December 5 and 10. This means that December can be viewed as a "autumn" month in terms of sunrise DX, but should be considered more like January for sunset DX.

HF Propagation

Because the Earth is closer to the Sun during winter, the density of ionization in the Northern Hemisphere is expected to increase more rapidly after sunrise than during other seasons. Static and atmospheric noise levels will be at seasonally low values during the month, and exceptionally strong signal levels are expected.

Fairly good DX openings are expected on 19 and 16 meters, remaining open towards the west during the early evening. Nineteen meters will be the hottest daytime band, while 22 and 25 meters will become a close second. These start with early morning openings in all directions until about an hour or two after sunrise, and then remain open into one place or another through the day until early evening. When conditions are good (days with low geomagnetic activity and higher solar sunspot activity), 22 through 16 meters are likely to remain open towards the south and west from early evening until about midnight.

The best bands for around-the-clock DX will be 31 and 25 meters. Twenty-five meters continues to be an excellent band for medium distance (500 to 1,500 miles) reception during the daylight hours, with longer distance reception (up to 2,000 to 3,000 miles) should be possible for an hour or two after local sunrise, and again during the late afternoon and early evening.

From midnight to sunrise, 41 and 31 meters promise some of the hottest nighttime DX during December. The first DX openings should be toward Europe and the east during the late afternoon, then move across the south through the hours of darkness, while remaining open into most parts of the world. Just after sunrise, openings will be more in a westerly direction. Low seasonal noise will make DXing a pleasure.

For short-skip openings during December, try 90 through 41 meters during the day for paths less than 250 miles, and 90 down to 120 meters at night for these distances. For openings between 250 and 750 miles, try 41 meters during the day, and both 90 and 120 at night. For distances between 750 and 1,300 miles, 22 through 31 should provide daytime openings, while 41 down to 90 will be open for these distances from sunset to midnight. After midnight, 90 meters will remain open out to 1,300 miles until sunrise. Try 31 and 41 meters again for about an hour or so after sunrise. Between 1,300 and 2,300 miles, openings will occur on 22 through 16

meters, with fewer on higher bands, during the daylight hours. From sundown to midnight, check 22 through 41 meters for these long-distance openings, and then check 41 down to 90 meters after midnight until sunrise. Try 41 and 31 meters again for an hour or so after sunrise.

DX openings on 120 and 90 meters during the hours of darkness and into the sunrise period, with considerably decreased static levels, are a sure bet during the longer hours of darkness in the Northern Latitudes. Look for openings toward Europe and the south from the eastern half of the United States, and towards the south, the Far East, Australasia, and the South Pacific from the western half of the country. Ninety meters should peak towards Europe and in a generally easterly direction around midnight, and then open in a generally western direction with a peak just after sunrise. The band should remain open towards the south throughout most of the night.

VHF Ionospheric Openings

Quite a bit of meteor shower activity is expected this month, which should result in improved conditions for meteor-scatter openings on the VHF bands for distances up to about 1,000 miles. When a meteor burns up in the atmosphere, its intense heat creates an ionized trail, making it possible for radio signals to propagate off the ionized trail, much like they would off of the ionosphere. The annual Geminid meteor shower, which will appear from December 7 to December 17, will peak around December 14. This is one of the better showers, with as many as 120 meteors per hour may pass.

Geminids is also a great shower for those trying the meteor-scatter mode of propagation, since one doesn't have to wait until after midnight to catch this shower. The radiant rises early, but the best operating time will be after midnight local time. This shower also boasts a broad maximum, lasting nearly one whole day, so no matter where you live, you stand a decent chance of working some VHF/UHF signals off of a meteor trail.

Rare worldwide low-VHF/TV band openings are expected during days when the solar flux peaks, with openings into Europe during the morning, and moving west into Asia by afternoon. Openings will be short but possible due to the combination of moderate solar activity and seasonally high ionization in the F_2 layer. A secondary seasonal peak in sporadic-*E* ionization should also result in some short-skip openings on low VHF between distances of about 800 and 1,300 miles. A rare occurrence of aurora during days of stormy geomagnetic activity is possible, providing some unusual short-skip openings on low VHF.

There is considerably less likelihood for transequatorial VHF openings during December, but look for a possible opening between the southern states and locations deep in South America. The best time to look for these is between about 8 and 11 p.m. local time.

Delve Deeper

Be sure to check out the latest conditions, as well as the educational resources about propagation, which I have put together for you at <http://prop.hfradio.org/>. I also provide a WAP/WML resource for wireless devices. If you want the latest propagation information like the solar flux. Ap reading, and so forth, check out <http://wap.hfradio.org/>, the wireless version of my propagation site.

Write me at P.O. Box 213, Brinnon, WA 98320-0213 with your comments and suggestions! I'm looking forward to hearing your stories on your mediumwave DX, and how this column is helping you. Is there something you would like to learn more about? Let me know. Until next month, 73! ■

Tuning In (from page 4)

portable radio. If we learned anything two years ago, it should be that. My daughter now has a small FRS/GMRS radio in her purse (I'd give one to my wife, but in *that* purse—uh, luggage—you get the idea) for emergencies. That's not to say all our portable or mobile radio use is strictly for emergencies. When we travel, I bring along a mobile 2-meter rig and 40-channel CB mobile; each has a purpose and is used accordingly.

Apparently you do about the same. We asked which mobile radios you use when traveling. A ham VHF/UHF mobile ranked at the top with about 45 percent; CB was next with about 42 percent; followed by ham HF and GMRS, each receiving about 13 percent of your vote.

I've always maintained that few are the folks who can look at a new car in the driveway and begin drilling holes in the body or interior just to mount a radio. Now, I know that might not sound like a true red-blooded radio nut, but trust me, I am—and am also relatively sane (except on weekends!). So let's see what you told us about your mobile installations. First, about 31 percent of you said yours is a semi-permanent installation where the radio is bracketed to the vehicle and the antenna is a magnet- or trunk-lip mount. Twenty-four percent of you go for it—yours is a permanent installation! Interestingly, the same number of you report having a completely portable mobile installation in the form of a handheld radio and small mag-mount antenna. The smallest number of you (about four percent) said you use a semi-permanent installation, where the antenna is bracketed to the vehicle and the radio is on a slide mount.

Many of you (47 percent) said you connect your mobile radio directly to the battery. Congratulations for doing the right thing! Of course, for low-power consumption radios—basic CBs and handheld ham gear you—you can connect to the cigarette lighter socket, as many of you (about 30 percent) do. Still others (about 12 percent) use a self-contained DC power pack for your mobile radios.

We also asked hams what type of mobile rig they used. The answer: about 22 percent of you go mobile with a multi-band high-power transceiver; the same number of you report using a single-band rig. We've all heard how popular handhelds are because of their versatility and,

yes, portability. Six percent of you said a handheld 2-meter radio was your favorite mobile, while about 9 percent reported using a dualband handheld. I was a bit surprised to learn that 10 percent of you are using a converted 11-meter radio as your mobile ham rig.

Every once in a while we'll hear about an amateur operator using CW while on the road. This has always amazed me. Frankly, I'm a little jealous because, well, if you're able to do that while zipping down the road you're darned good. (On the other hand, so to speak, I also think you *might* have a screw loose, but that's another story). Thankfully none of you reported using CW while mobile (yes, I imagine it works quite well sitting in your driveway). Turns out your favorite mobile operating mode is FM, followed by AM on CB, sideband on the ham bands, sideband on CB, and lastly, AM ham.

One reader wrote, "I use my old GE HELP CB for emergencies." Remember those radios? They were great when folks were within earshot of your call on CB Channel 9, but today it's another story altogether. Cell phones and instant communications with an emergency provider hundreds of miles away using a fee-based satellite service have taken front stage, yet—as we've all either read about or personally experienced recently—when the chips are down, CB is still there, unaffected by power outages and overloaded equipment.

Twenty-six percent of you reported using your mobile CB mainly for exchanging travel information, and another 25 percent said you use CB only for listening to Channel 9 or 19. For what it's worth, it's my personal mobile favorite, but as we've discussed before, each service has its place in the radio world. Quite a few of you (about 15 percent) also reported DXing on CB while you travel. I suppose if you're going to go for it, the road is the place to be—but be careful, especially if you're a ham.

Powering Your Equipment

Of the 95 responses to our questions about powering your radios, 40 percent of you report using alkaline batteries, and a great majority (about three-fourths) report having extra batteries or packs for your portable gear. A total of 23 percent use NiCd packs, 19 percent use NiMh packs, 13 percent single-cell NiMh batteries, 10 percent use single-cell NiCds, and a very small number (5 percent) of you

use separate lead-acid or gel-cell batteries.

We asked you what you considered the most useful accessory for your portable gear. One reader said, "the most important accessory is the antenna!" His comment coincides with 41 percent of you who said the same. But most folks (84 percent) said extra batteries/packs are the most useful accessory. Extra chargers and cases each netted 35 percent, while vehicle mounting adapters for your portable gear received 21 percent.

How you carry your portable equipment is probably more important than you might realize, especially for keeping it looking and working like new. Wrapping it in a sock or a t-shirt inside a suitcase works for about 51 percent of you, while only about 16 percent of you reported using a specially-made radio case (the same number of you use a camera case). Seven percent of you said you've outfitted a utility box with foam and special compartments for your radios.

Keeping a low radio profile is more important today than ever. The fact is, most of us don't appreciate it when someone blasts a car radio or personal entertainment device (are boom boxes still "in" or are the hip only using MP3 players with headphones?). Similarly, others don't appreciate hearing a hundred or so various radio comms while they're trying to read the paper at the airport. What to do? Most of you report using a simple earphone with your portable radios—they're discreet and provide reasonable volume and clarity. Still, about one-third of you said you use the radio's internal speaker in public. Seventeen percent of you said a lapel mic/speaker is your favorite, while 11 percent use a headset in public.

Contributions And Loggings

For years we've been doing our best to get more reader contributions to our columnists in the form of letters, photos, QSLs, loggings, and even short articles. There's nothing we can definitively point to as a hard-and-fast reason why folks don't communicate with us by sending in material. Unlike other magazines in your house, *PopComm* really depends on your input.

Next month we'll look at your answers to our questions on this topic. You'll be surprised at the responses. Don't forget to send us your survey card.

For now, we extend our sincere wishes to you, your family, and friends for a Happy Holiday season! ■

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Archeologists Discover Fossil In Cowfield County

Hello Friends. I wish I could begin each column with "It's been a quiet week in..." but I'm afraid it's been taken by that other guy in Minnesota. It must have been a busy few months in Pumpkin Center, Louisiana, though, because it's been a while since I've heard from regular correspondent Joe Maurus (who, like me, also has a HPJIE* thanks to many years of study).

I know that there's a time lag between when I write and when you read, but here in Cowfield County, Virginia, we have just picked up the last of the branches blown onto our lawn by Hurricane Isabel. Because we're substantially inland, Miss Izzy was not as much of a threat here as she was to our coastal neighbors to the east-southeast. I'm glad that, for the most part, the damage was just messy and inconvenient, rather than deadly and life-threatening, but I wish there was a way we could just use these storms to generate electricity and not have to clean up after them each fall.

But we are a magazine and a readership who deals with *communication*, and since Operation Desert Storm, I have had some rude awakenings about communications in the 1990s, and now in the new century. I remember what the idea of communication meant to me when I was a child: watching movies of war and disaster communications with helmets and headphones, brass code-keys and microphones, wire antennas, and wind. I've experienced some of that, but I believe it's mainly all behind us now.

In the 1990s, during Operation Desert Storm, I took my trusty Sangean receiver to work. I spent hours twiddling the shortwave dial looking for the elusive *absolute best* coverage that one might expect to find on the shortwave bands, perhaps programs originating from the front and broadcast into a low-budget, high-frequency station that only the privileged few (such as myself) could find by carefully tuning the megahertz bands.

'Tweren't none. 'Twasn't there. I am embarrassed to say that I missed most of the action by spending all that time twiddling the dial when I could have been watching one of the cable news channels, which had people on the ground with satellite uplinks all over the place. It was our first "television war," and I was looking for it on the radio. Pity. The guys in the sales department had a small portable TV and kept walking past my desk asking why I was wasting my time with the radio.

I still miss radio "shows." I'm old enough to have caught the tail end of them in the '50s. I don't miss the horrid radio soap operas, which made their way to television, but I do remember them. What I do remember is *Amos 'n' Andy*, *The Great Gildersleeve*, *Gunsmoke*, and a dozen more that were as good on the radio as they ever were on TV (if they made it to TV) and left your eyes free to do other things. And you could enjoy them in a car.

So, during this hurricane, I listened to broadcast radio. I could listen in the car, in the truck, and while at work, and I had sufficient batteries for the radios at home (including the same trusty

Sangean and my GE SuperRadio). But we never lost power. We had only four flickers, which were not even sufficient to disrupt my Internet connection. I was *almost* disappointed. For a brief moment, during the approach of the storm, I had thought I might power up my CW transmitter using the 12 volts from the car and handle necessary communications from Cowfield County to the rest of the world, but it was not to be.

I was much like a kid hoping for a blizzard so that school would be closed for a week. Well, I did get a day and a half off from work, but because of our careful planning at work and at home, we suffered no wind or water damage to speak of and, at home, never once lost power. Anybody want to buy some D-cells?

In my earlier days in ham radio, I remember how important I thought it might be to set up a CW station to relay important emergency traffic during such difficult times. When I was at sea during the '60s with the Coast Guard, I never felt more useful than when "working" a distress or search and rescue call using CW, pounding out Morse code while the ship was being pounded by the sea.

During this storm, the best coverage, even according to the broadcast radio and television news people, was on the Internet, whose service was by-and-large uninterrupted if you had a laptop and a wireless modem or if you were not in the direct path of the hurricane. You can follow the path of the storm on any of dozens of websites.

I think, though, that I've found a use for my good old brass code key.

The key mounts nicely on top of my mouse, and I can connect the key so that when I click it, it clicks the mouse. I'm concerned that my family might think of me as they would a retired railroad engineer driving a model railroad, but I guess it's what I have left.

Even the Coast Guard no longer uses the code. Sometimes I feel like a dinosaur.

Gronk!

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**Solution to
Puzzle Corner
on page 65**

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