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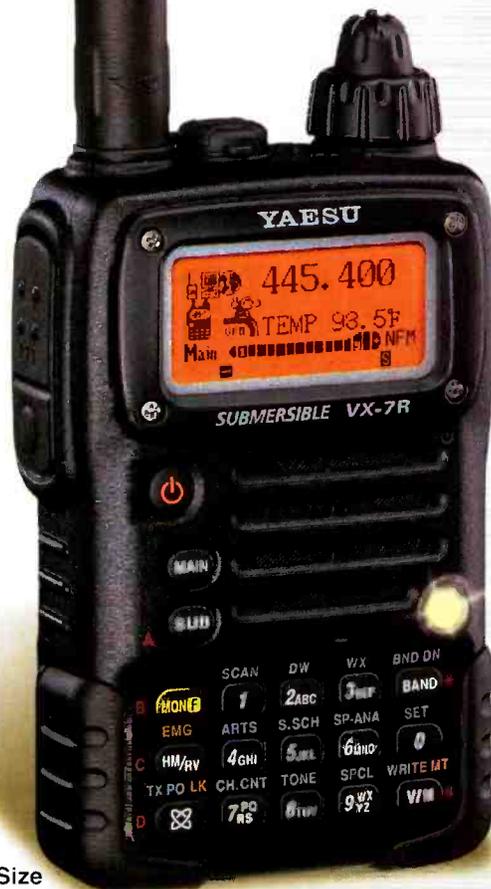
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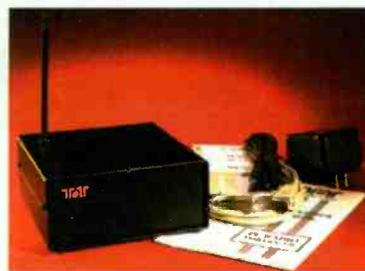


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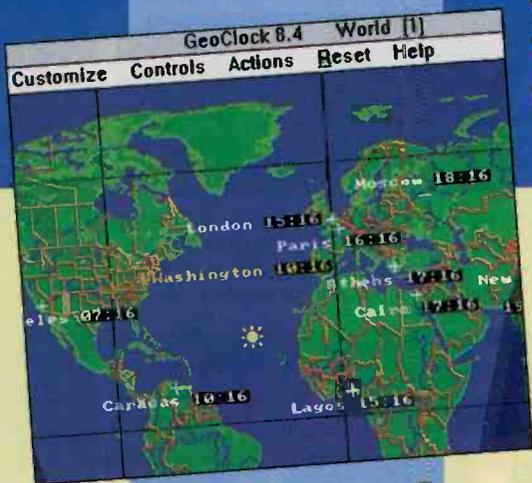
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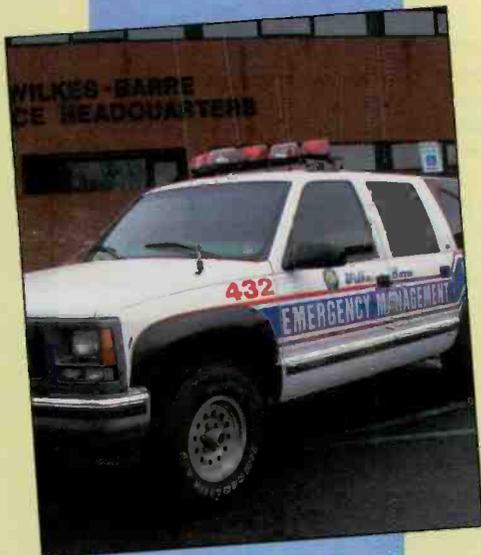
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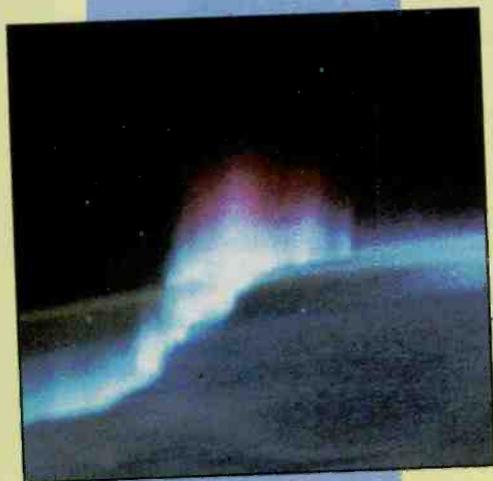
On The Cover

Chances are you won't have too much trouble hearing Radio Free Asia's super-power station on Saipan in the Marianas. But, imagine reducing that power to a mere 1 kW and you're listening in Massachusetts. An easy target for West Coasters turns into a near-nightmare for listeners in many other parts of the country. If you're wondering what you can do, there are answers beginning on page 6 with Gerry Dexter's article, "How Come I Can't Hear That?" (Photo by Larry Mulvehill, WB2ZPI)

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tuning in

by Harold Ort, N2RLL, SSB-596

an editorial

Survey Results: A Few Surprises!

We've got a quite a few survey results to cover this month, so I'll get right down to business.

A while back we asked you your main reason for using a scanner. Of the 200 responses we received, the majority (35 percent) said it was to stay on top of local events by listening to the police, fire, and medical frequencies. That's not totally unexpected, but two other categories received an equal number of hits: listening to amateur transmissions and monitoring aircraft, civilian as well as and military. Both of those categories netted about 17 percent.

There are apparently quite a number of rail fans out there, too; 15 percent of you reported it was your favorite listening fare, while about the same number of respondents said the mere excitement of listening to police, fire, and medical communications was enough. While these comms are certainly exciting to most folks, there are many of you who are communications professionals. About 10 percent of you reported that you use a scanner because your job requires monitoring public safety frequencies.

Not to be left in the dust is military and government communications monitoring, along with maritime communications, which each received about five percent of your vote. Only a fraction of you said you were either new to the hobby and needed more information about scanning or didn't use a scanner because most of your radio monitoring is on shortwave. Relatively few of you (two percent) reported that listening to skip was a favorite pastime.

Got A New Scanner?

Well, apparently not in the last 18 months or so. Most of you (about 35 percent) reported that your current scanner is just fine, thank you. Interestingly, though, another 15 percent said new scanners are just too expensive. About 20 percent of you said you already have more than one scanner.

Then, on down the line: About eight percent of you said your monitoring interests aren't trunked, so the older scan-

ner is still okay; seven percent reported listening more to shortwave; five percent said the new scanners are too complicated to use; a scant two percent said there are far too many channels for your needs; and only four folks said they're too broadband and don't perform as well as an older scanner.

Antenna Restrictions Got You Down?

Some days I'm surprised; other days I'm just confused! Today it's surprised. One of the questions we asked was if you live in an antenna-restricted area. I don't know about you, but one of the first things on a radio enthusiast's mind when buying a home or condo, or renting (if he or she intends to erect an outside antenna, of course) is about antenna restrictions. Are there any? Will I have to hang a wire behind the curtains or put up a flagpole—with a built-in antenna—on my front lawn to skirt local covenants?

Interestingly, about 45 percent of you said you *weren't sure* if you lived in an antenna-restricted area. If you're buying a home, your attorney can tell you if there are any restrictive covenants. They can be obscure, so be sure to ask. It never hurts to do your own homework at city hall. Forget the rumor mill—we all know what that can be like—ask questions at the records section and be sure to get it in writing. Just because some clerk *says* there aren't any covenants at your location doesn't mean it's true.

Quite a number of you (about 12 percent) said you do live in an antenna-restricted area, while about 15 percent said you don't have to contend with such restrictions. We'll be talking more about restrictive covenants in coming issues of *Pop Comm*. I get the feeling it's more than a hot-button topic—it's also something we *need* to discuss more frequently.

Base And Mobile Antennas

Most died-in-the-wool scannists will tell you they use either a discone anten-

(Continued on page 77)

POPULAR COMMUNICATIONS

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Teams REACT To Amber Alert

When Ontario Provincial Police issued their first-ever “Amber Alert” recently, REACT Teams across Ontario, Canada, and the United States quickly went into action. REACT members operate CB and other two-way radios to provide emergency communications. Usually, those emergencies involve automobile collisions or boating incidents. REACTers normally monitor CB Emergency Channel 9 to receive those calls and relay them to police. The situation changes radically in an Amber Alert.

Amber Alerts are a recent development. They originated in Houston, Texas, where a little girl just like Toronto’s Cecilia Zhang (the victim in this Amber Alert) was abducted several years ago. Police tried using overhead traffic signs on area free-ways as a means of alerting drivers to the kidnap vehicle description. The idea caught on and was named in honor of that little girl, Amber. It is now being used across the United States and by several provinces in Canada.

For REACT Teams, Amber Alerts require an entirely different approach. While most REACT stations continue listening for calls on CB Channel 9, other REACTers begin making calls on CB Channel 19, the truckers’ channel. They provide professional drivers and other travelers with full, accurate details from police concerning the wanted kidnap vehicle, the suspect/s, and the victim. They air the information at regular intervals to reach as many passing trucks as possible. Truckers can then keep watch for either the vehicle or the victim on the highway and at truck stops. Their high perch gives truckers an ideal vantage point and they can also use their own CB radios to pass the Amber Alert to other drivers as they travel.

“Initially, REACT Teams across southern Ontario and the rest of Canada were contacted by e-mail, soon after OPP issued the Amber Alert,” Ron McCracken, Past President of REACT International, Inc., explained. “They were given the details in writing and asked to broadcast them on CB-19 to truckers at regular intervals. In the case of my own Team, we began those broadcasts at about 5:30 p.m. and continued every 30 minutes until midnight.”

Soon after Canadian REACT Teams had the information, McCracken notified many U.S. REACT Teams, especially those in states bordering Ontario, of the Amber Alert and asked their assistance. “We had a message back from a Team in California, so the help came, and it came from far and wide,” he said. “Combining computers with CB radio enables REACT Teams to get word of Amber Alerts to truckers clear across the continent, far from the abduction site. That allows those drivers to watch for vehicle or victim at truck stops and along their routes as they travel toward the abduction center,” McCracken added. “In Cecilia’s case, the abductor had about eight hours’ head start before she was discovered missing from her bed. Another eight hours elapsed before the Amber Alert was issued. A vehicle can travel a long, long way in 16 hours. “That makes the CB radio advisories to distant truckers all the more valuable, as this incident illustrates,” McCracken emphasized. This was REACT’s first response there to an Amber Alert. The program was initiated by OPP last spring. McCracken’s estimation is that this first

REACT response went very well. He believes it was the largest mutual aid effort in REACT’s 40-year history.

“We have learned from it, too,” he commented. “We will add more e-mail contacts to better ensure that each Canadian REACT Team can act on the Amber Alert quickly. We know each Team received it successfully. We plan to determine how fast they picked it up, so we can do better in future. That is the goal, always.”

Community Radio Falls Silent In India

A radio revolution that the Indian government expected to unleash has come to naught. FM radio expansion to 70 more cities could hit community radio further. The government had claimed that up to 1,000 community radio services would begin by the end of 2003 following a new policy approved by the Indian cabinet in December 2002. But not one institution has been granted a license. Not even one is half way into getting a license.

The airwaves so far have not been opened to the public. Non-profit and development organizations have been lobbying for more than five years to get permission to broadcast information that could help the “information poor” to gain an understanding of issues critical to their lives. Recently, neighboring countries like Nepal and Sri Lanka edged past India by allowing non-profit community radios to be set up. Asian countries like the Philippines have already shown the beneficial impact of such locally managed, non-profit initiatives taken up by citizens themselves.

Some universities and non-government organizations have applied for licenses to run low-powered radio stations with a range of a few kilometers for educational or development purposes. These include Shantiniketan Deccan Development Society, VOICES, National Law School of India, etc. Only government-owned universities like IGNOU have been granted the license so far.

Applicants are so caught in the bureaucratic tangle that few expect licenses to be issued unless the procedure is streamlined. Prasar Bharati officials now say that with FM radio to be expanded further to about 70 cities, community radio could be still-born. All India Radio is selling time to NGOs, such as in Palamu in Jharkhand and in the quake-affected Kutch in Gujarat, to buy time on its local bands and air development programs. The recent democratization of the airwaves still hasn’t reached the grass-roots level.

Radio Thailand’s New Broadcast Schedule

UTC	Language	Frequency (kHz)
0000–0030	English	9680
0030–0100	English	13695
0100–0200	Thai	13695
0300–0330	English	15460
0330–0430	Thai	15460

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How Come I Can't Hear That?

There Are Good Reasons Why You Might Not Hear Everything!

By Gerry L. Dexter

If you've been a serious DXer for any time at all (and hopefully also a regular reader of the "Global Information Guide" here in *Pop'Comm*), it's a pretty safe bet that you suffer from frequent attacks of the "OPEL" syndrome. OPEL is an acronym we just invented. We think it's a good name for a condition that has been around almost since Marconi himself. OPEL is the envy of Other People's Logs, including the resulting frustration you experience when you're unable to hear a juicy DX target someone else has logged, even after you've tried for it again and again.

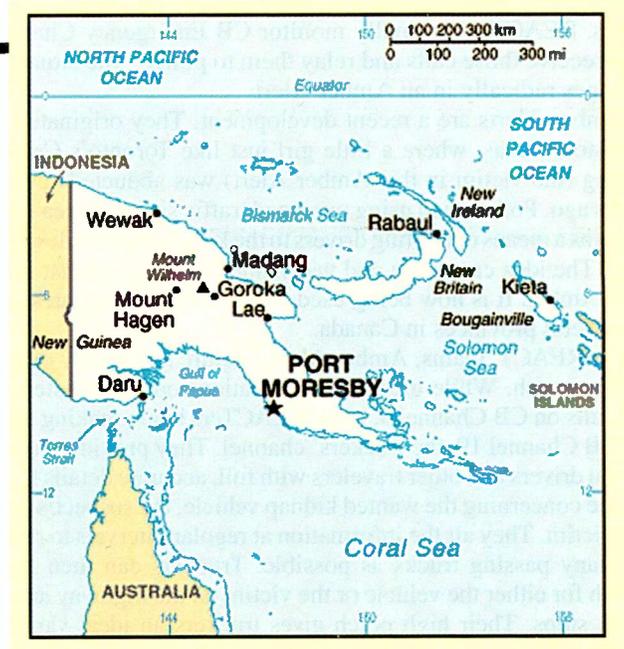
For instance, maybe you spot a report from "Global Information Guide" contributor Bruce Barrow in Washington State indicating that he's heard that the Radio Malaysia outlet on 7295 at 1600 UTC. But it's never there when *you* try it at your shack in Ohio. Or say you see a Robert Montgomery log of some regional All India Radio transmitter site he's heard on 60 meters in Pennsylvania at the ridiculous hour of 0030, and that really splits the seam of your dream! *You've* tried it a hundred times at your shack in Nebraska and gotten exactly zilch.

So you start to think that maybe there's something wrong with your antenna, or you wonder if you should go out and buy a better radio. Or even worse, you start to doubt whether you really know what you're doing! Maybe you should just forget all this shortwave stuff and take up woodworking or curling or antique dolls instead!

Well, hold on a minute. First of all, the truth is that there is no complete and permanent cure for OPEL. If you're a serious DXer, the disease is in your system and, like malaria, from time to time you're going to have a relapse. But there are some tonics you can take that will at least keep the flare-ups down to a minimum, not to mention help you retain your sanity!

There *are* good reasons why you're not hearing some of those signals you crave so badly. And there are some steps you can take that should give you a better shot at picking off some of those goodies. Attitude adjustment is one factor. You have to come to grips with the fact that there will always be some targets you have little or no chance of hearing from your current location. That's a fact of DX life you just have to learn to accept. It becomes a little less painful when you realize that even those guys who seem to be raking in all the good logs can't hear everything.

Know that even the top guns come down with a case of OPEL now and then. In fact, there are no circumstances under which anyone, anywhere can hear every signal on the air. Even the crème de la crème at BBC Monitoring, with their state-of-the-



Stations in Papua New Guinea are pretty easy for West Coasters, but they're a much greater challenge for listeners in the East and Midwest.

art receivers and massive antenna farms has to have listening posts in various parts of the world. And even with *all that* they still have a sharing arrangement with the U.S. government's BBCM equivalent, the Foreign Broadcast Information Service. So, the frustration you feel is anything but unique.

Okay. So why is it that you can't hear that elusive station? Why does it seem permanently out of reach? Let's look at some possible excuses, er, reasons.

The Real Estate Factor

Just as in real estate, DXing is largely about location, location, location. Not only from the standpoint of where you are, but also where you are in relation to the shortwave station you're trying to hear. Even a hundred miles difference between two listening locations can mean a very significant difference in what you can hear. Stations in Papua New Guinea, Indonesia, and those low-band, low-power Aussies aren't much of a problem if you live on the West Coast. But they can drive you nuts if you're trying to hear them from Ohio or Massachusetts. (It's not impossible, mind you—it's just that it happens a lot less

The **NEW** Shortwave Propagation Handbook

By George Jacobs, W3ASK
Theodore J. Cohen, N4XX
Robert B. Rose, K6GKU

There are a lot of propagation sources out there—on the web and in print—including CQ's Propagation Handbook available for \$19.95 by calling 1-800-853-9797.

often for those less well positioned. And when reception does occur, the signals aren't as good.)

By the same token, West Coast and Midwest DXers shake their heads in wonder at the idea of DXers in the Eastern Time zone enjoying African signals rolling in on 60 meters at 2000. That's 2 p.m. in Iowa and high noon in California for crying out loud! Sixty meters is sound asleep in both areas of the country at that hour. And ditto those Iraqi, Iranian, and Kurdish clandestines, which operate in the low end of 4 MHz during our evening hours. If you don't live on the Eastern seaboard you can pretty much forget those targets.

So, unless you decide to travel the country in a motor coach and do your DXing at campgrounds, you're stuck where you are and forced to deal with your location situation as best you can.

Propagation

Even in this super technological age when we think nothing of satellite TV feeding us 337 channels, or sharing music and pictures with friends with all the effort of a couple of mouse clicks, deep down in some subterranean part of our psyche we still look on shortwave as something of a magic radio box. There's still a little voice that whispers, "This is shortwave radio! Weird things can hap-

pen. Anything's possible!" Well, that little guy whispering in your ear is a troublemaker! Don't listen to him. If you continually dream impossible dreams you'll end up wasting all kinds of time and your frustration meter will be pinged permanently in the red. You need to know the difference between what is likely, what is possible, and what is purely wishful thinking.

So if you find yourself trying for stations on frequency bands where no stations are in evidence, I suggest you check out some of the books on propagation (CQ's *Propagation Handbook*, for one) and the tons of websites on the subject (try a Google search). But you really don't need to understand such things as recombination, or the distances above ground (in kilometers, please!) of the various ionospheric layers, or really exotic things like whispering galleries to know what is and isn't possible. There's a very neat summary of what bands are open, day versus night and spring versus summer on page 70 of the 2003 edition of *Passport to World Band Radio*.

But if you've been at the DX game for some time you probably already have an instinctive feel for what works and what doesn't. You know you aren't going to hear Radio Australia on 17750 MHz at 0600 in December during a sunspot minimum. You don't bother tuning, 3, 4, and 5 MHz at high noon local time. You know that these frequency ranges do their thing largely at night.

If you enjoy DXing these "Dracula" bands, you can make use of darkness paths and sunrise/sunset information to help you figure out what time a propagation path might exist between the station's location and yours. Check out a computer software program called Geoclock, located at <http://home.att.net/geoclock>. It shows you just where the darkness path is at any given time, and you'll be able to see which areas of the world are in sunlight and which are in darkness displayed on a world map right on your computer screen. It's pretty cool stuff and, properly used, it can make a big difference in your success level. There's also a something called the DX Edge, which is a slide rule-like device that does pretty much the same thing without the need of a computer. Both tools are quite inexpensive.

Tuning Techniques

Patience and persistence are two of the DXing virtues the shortwave gurus of old

used to preach in their how-to articles. In today's "I-want-it-now" culture, P & P needs to be stressed more than ever. Shortwave is like a kaleidoscope: look into the eyepiece, rotate the tube ever so slightly, and the pattern shifts. Shortwave is also changing constantly, and no two hours are ever completely alike. A station may be coming in one day but inaudible the next. Or it may be there for a few days and then not show up again for a month, or perhaps not even until this time next year! Outside of the real powerhouses you just can't count on being able to hear a particular station on this or that frequency any day you choose. But that's a positive thing. The fun, remember, is in the hunt!

Another aspect of the patience factor is to make a standard DXing procedure of spending a minute or two on your target's frequency before you move on. If you're trying for a particular station, get into the habit of sitting on the frequency for a bit, rather than cruising by or just slowing down for a couple of seconds and then moving on, like some careless driver who pays only token attention to a stop sign. For one thing your ears need a minute to adjust to the audio pattern on that frequency. There's also a chance that the station you're after is suffering from severe fading and you've tuned in when it's "down."

For instance, if you're trying for a Latin broadcaster at its sign on, get on the frequency a couple of minutes early and if necessary hold on for a few minutes after the scheduled sign on time. Specifically, if your information indicates the station comes on at 0958, get there about 0955 and stay until 1005. Smaller domestic broadcasters can be rather cavalier about schedules.

Another thing to keep in mind is the station's overall schedule. You may not be able to hear an African at its 2100 sign off on 60 meters, but you've got a pretty good chance at it if the station has a morning sign on at 0430 or 0500 because 60 will be open then. So just because you can't match someone else's log of that African on 4795 at 2030 doesn't mean all is lost.

The late Al Sizer, a superb DXer active in the 1960s and 70s, once pointed out that the brain—he called it the "cerebral filter"—is a pretty good listening tool. With practice you can train yourself to mentally "tune out" much of the extraneous noise and focus only on that weak signal.

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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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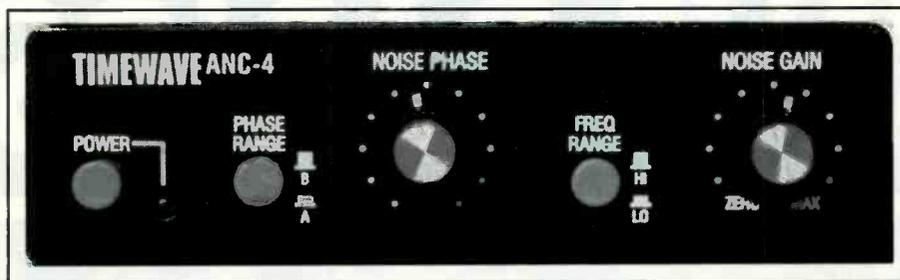
Key features include:

- AM/FM/Shortwave Tuning (SW1, 3.2-7.6MHz; SW2, 9.2-22MHz)
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- 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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One of the many gadgets designed to improve signals is Timewave's ANC noise canceller.

Some top DXers do all of their work with the receiver in ECSS (exalted carrier selectable sideband) mode, a feature offered on some of the higher-priced communications models. Using ECSS cuts out a lot of noise, reduces distortion, and improves clarity. If your receiver doesn't have an ECSS option, it probably *does* have a BFO and most likely gives you the choice of tuning the upper or lower sideband. This lets you achieve much the same result by choosing USB or LSB, engaging the BFO, and then tuning for the signal. This method can be tricky and it may take some practice and getting used to before you get the hang of it.

Your Equipment

Receiver: Unless you are trying to hear some 100-watt Peruvian on an \$89 portable inside a hotel room, the receiver you're using will rarely be the make or break element in your DXing success. Still, assuming you have been in the game long enough to know that it captivates you, and you expect to stay with the hobby for a long, long time, you should eventually get the best receiver your bank account and your good economic sense will permit. That means a table model, communications receiver, not a portable. Experience, though, is always the most important factor. An experienced DXer with a cheap portable can run rings around a neophyte trying to use a \$4,000 Ten-Tec 340!

Antenna: Many say that the antenna is the most important element of any listing post. Your antenna choice depends as much on what kind of space you have available as it does on your wallet power. Take a look at your residential situation and study the antenna choices in the catalogs offered by radio hobby supply stores or contact the antenna manufacturers themselves. Check out the ads in *Pop'Comm*. Then make the best fit you can. Some of the frustrating logs you read

were made on "DXpeditions" to places, which have room to run antenna wires out to several hundred feet. Unfortunately, in the real world most of us don't enjoy that kind of luxury.

You might want to try a loop antenna. Most loops are designed for and work best on mediumwave, but some progress is now being made in designing workable shortwave loops, at least for the lower frequencies.

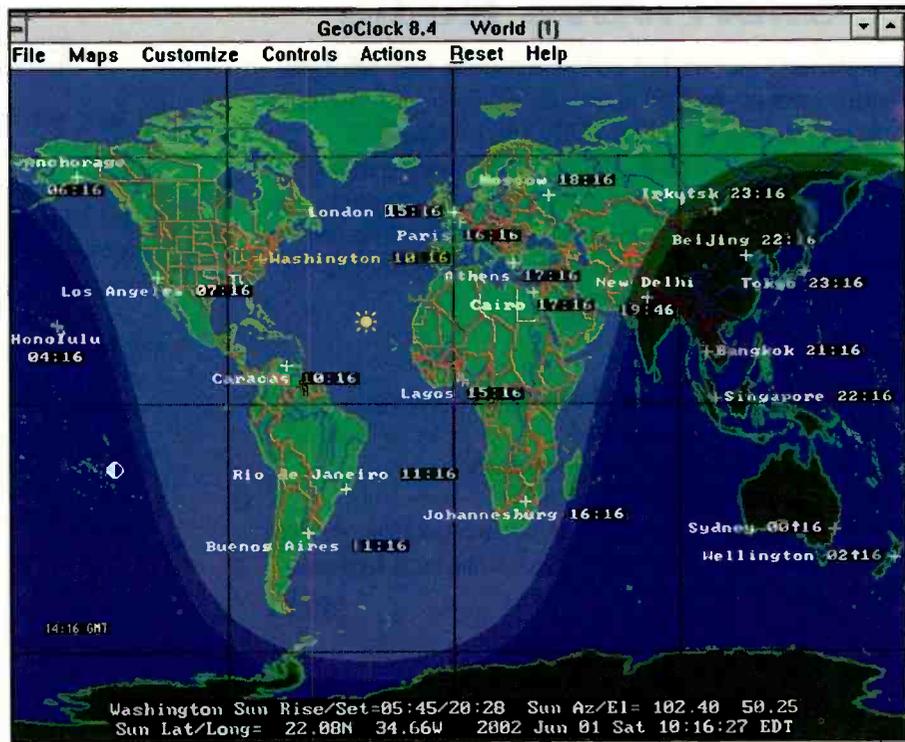
If you are limited to using an indoor antenna, check out the many varieties of indoor active (amplified) antennas. These require very little space. They're not as effective as outdoor antennas but many of them perform quite well, considering.

Headphones: Some DXers use headphones all the time, some put them on only when they encounter a hard-to-read



AOR makes this active shortwave loop antenna, which covers 3 to 30 MHz.

signal, and some listeners never use them. But headphones do improve audibility, so I'd recommend you acquire a set if you aren't equipped already. Comfort is important if you plan to use them over long listening sessions. Over time you may find yourself having collected three



Geoclock software shows you daylight and darkness areas across the world at any given moment.

or four pair before you find one that feels right. There are also noise-reducing headphones that are supposed to work audio miracles. Naturally, these are much more expensive.

Accessories: There are dozens of gadgets designed to help you hear more and better things. For instance, antenna tuners match the impedance characteristics of your wire antenna with that of your radio, thus putting a stronger signal into the receiver. You might also consider preamplifiers and preselectors to boost the received signal (and often the noise, too!). There are also audio filters, including some newer models, which use digital signal processing. One company has a filter that will reject strong mediumwave signals, which tend to cause spurious emissions and mess up reception in the lower shortwave bands. There are even noise reducing speakers. Check out such firms as AOR, MFJ, Kiwa, Timewave, Sherwood and Palstar for information on their products.

One or more of these accessories might be the key to solving some of your reception problems and putting at least a few of those elusive OPELs into your log at long last.

The Bottom Line

In the end, hearing the good stuff boils down to three ultimate DXing truths: Listen, listen, listen!

Listen as often and as much as the spirit moves you. And when you're at the receiver, really listen! Sitting back with your feet on the desk daydreaming about the latest rock chick doesn't make it. You have to dig in and concentrate. That translates into experience, which is your prime weapon—and the real ticket to your DXing success. Trouble is, DX'ing and instant gratification don't mix. No matter how many DXing years you have under your belt, you'll never learn it all, but that shouldn't stop you from making the effort.

Sooner or later get the best equipment you can afford and learn to use it to its maximum capability. If your interest extends into years, and then into decades, you'll find that upgrading your equipment is almost preordained.

Practice, patience, and persistence. They may be quaint, old-fashioned concepts in today's confused world but, like a good, solid Hallicrafters, they still work!

Good luck and go get 'em! ■

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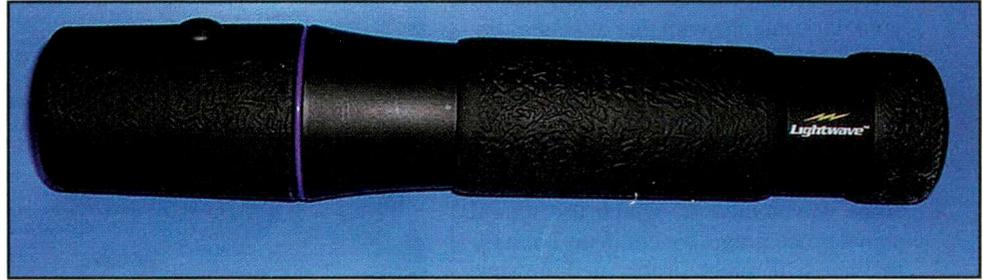
Lightwave LED Flashlights—Building The Better Mousetrap

Let's face it. Flashlight technology has changed little since these handy devices first appeared in the late 1890s. Take a few carbon cells, add a container and incandescent lamp, and you have the basic technology that has served us faithfully for over 100 years.

That's been true...until now! When I first spied the Lightwave family of LED flashlights at my local NTE Electronics distributor, I realized the proverbial "better mousetrap" has arrived for a time-proven product. The times were fresh in my mind that I've reached for a flashlight during an emergency only to find the flashlight had weak or dead batteries—or worse, a burnt out bulb—so I picked up two each of the Lightwave 4000 and 2000 models. I also picked up the key-chain style Lightwave Pocket-Bright on a lark.

The Lightwave 4000, the flagship of the line, uses three D size alkaline cells to power an incredible array of 10 LED super-bright white lights. The smaller Lightwave 2000 uses three AA alkaline cells to power seven LED lights. But here's the best part: The folks at Lightwave claim the 4000 can run continuously for a month on one set of batteries! In comparison, your typical run-of-the-mill D cell flashlight needs fresh batteries every 10 to 13 hours, and you can bet that expensive Krypton bulb will probably burn out within 25 hours of use. Even after 37 days of continuous use, a Lightwave 4000 still delivers enough light to read a newspaper.

Wow! And figure the hidden costs of running a conventional D cell flashlight for those 900 hours! That's efficiency, and the sort of reliability you need in your home or vehicle when an emergency arises. The LED lights will last for 11 years of



The Lightwave 4000 flashlight boasts long battery life and low cost operation.

continuous use. These may well be the last flashlights you will ever need or buy.

Lightwave flashlights owe their excellent battery life to a special high-tech electronic circuit. While the batteries are fresh, the LEDs are throttled back, and as the batteries age and weaken this space-age circuit compensates by increasing the LED power. Does it work? You bet. I've been using the Lightwave 2000 for several weeks on nightly walks, averaging 30 to 40 minutes each evening, and the light output hasn't even begun to fade. In fact, all of my Lightwave flashlights are still running on the original sets of batteries installed months ago.

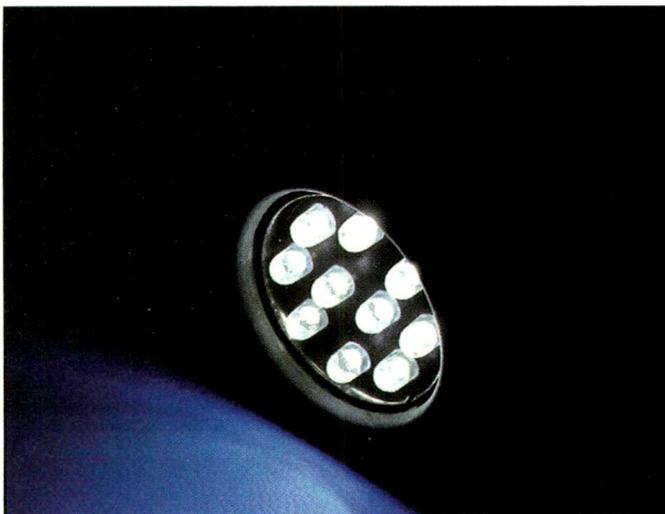
The Lightwave 4000s have also been getting a good physical workout at home and at work. They've survived drops on concrete floors and driveways, plus exposure to heat, heavy rains, snow, and bone-chilling cold. No failures yet. And Lightwave asserts they are shockproof and fully water resistant, and they're covered by a three-year manufacturer's warranty. The housings are made of comfortable-to-hold, high-impact ABS resins, and the LED arrays are fully protected against damage by a unique bumper-head construction. Can you say rugged? I'm impressed.

Nitpicking

Negatives? Well, for a balanced review there are few picky items I could mention. The light has a slight bluish tinge, and the flashlight head lacks the ability to focus the beam width at various distances. Thus, the beam intensity is often not quite as good as that of a top-quality conventional flashlight, such as the Maglite brands I've used in the past. The Lightwaves are also initially a bit expensive (the 4000 lists for \$59.95), but you should take in account the long-term cost savings that will be accrued with usage.

Find Out More

There are several models in the Lightwave line, even a hands-free headband unit is offered! You can view and purchase the Lightwave at any NTE Electronics or other Lightwave distributor, or visit the Lightwave website at <http://www.longlight.com> for more information. ■

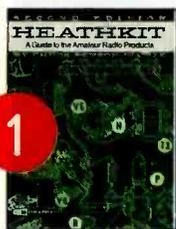


The Lightwave 4000 uses an array of 10 super-bright LEDs instead of fragile incandescent lamps.

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God Bless The Blokes!

Happy New Year! I know it's spring, but this column is being written right after the New Year, and thankfully, the elevated security alert—orange—yielded no terrorist activity during the holiday season.

However, today, while watching the world news, I saw a sight I never thought I'd see: *armed* British Constabulary officers patrolling the concourses at London's Heathrow airport. While we Americans would think very little of this event, I feel that this is a major milestone for the British. Having lived in Britain for over five years, and as a card-carrying member of the National Rifle Association, having endured their tirades against gun ownership of any kind, I was totally amazed. I never thought that the British Parliament and the citizens of the country would stand for a public display of firearms, especially in an international airport like Heathrow. Times sure have changed!

A good friend and fellow ham radio operator, whom I'll call Reggie, once told me that there were between 50 and 60 fully armed British Constabulary in Heathrow at any given time. How did Reggie know this? Reggie was a Chief Inspector in the West Sussex Constabulary and had inside information regarding such matters. Now the real kicker: this was in 1984! The point is that even though there was armed security staff at Heathrow, you *never* saw them. Now they are very prominent throughout the airport. Obviously, we're not the only people taking this terrorist threat seriously. Now if we could just get the French to get on the bandwagon.

The "hard intelligence" over the holidays that resulted in grounding certain British Airways and Air France flights into the United States is starting to prove that we're making a dent in the terrorist's plans to inflict carnage upon us. This is a good thing. Unfortunately, many people still look upon the various security status color codes as infantile. These same people will be screaming the loudest when something happens involving another terrorist act against the United States. As fragmented and disjointed as it is, the



The 1999 GMC Suburban Mobile Command Post in front of the Wilkes-Barre Police Department HQ. (Photo by Patricia Arland)

Department of Homeland Security (DHS) is having some effect on terrorism. I seriously doubt, however, that the turf wars between three-letter agencies will ever be resolved, but one thing is for sure: once cranked up, the intelligence apparatus of the United States is a very formidable weapon against terrorism.

As long as we're talking about the Department of Homeland Security, I'd like to mention a newsletter subscription service I've recently started using. *Homeland Security Week*, a weekly e-mail newsletter from GovExec.com, is available for free to anyone interested in keeping up with the federal government's



Here's a look inside the mobile command post vehicle. (Photo by Patricia Arland)



From left to right, Leigh Thompson, Bill Harding, KA3QPQ, David Anthony, Mayor Thomas McGroraty, Rich Arland, K7SZ, and Greg Berholt.

efforts to ensure the safety and security of the United States. To subscribe to *Homeland Security Week*, point your Internet browser to <http://www.govexec.com/email> and follow the subscription instructions at the site. The average size per issue is five pages that offer highlights of various stories regarding homeland security. Each article has a link to the full story for in-depth information. Granted, *Homeland Security Week* will parrot the “official party line” of the federal government, but it is useful as a tool to fill in the gaps, so to speak. If you’re interested, I urge you to stop by the site and check it out.

Cell Phone Woes...Again!

Picture this: It’s 0001 EST, January 1, 2004. The strains of “Auld Lang Syne” are heard and everyone is yelling “Happy New Year!” Some of us are lucky enough to be the recipient of a kiss from a blonde who’s not our wife (but that’s another story!). I amble out into the lobby of the Golden Palace and attempt to make the first of several phone calls to my children (it’s a tradition, okay?) using my newly acquired Verizon cell phone.

At first I can’t even pick up a cell site. No signal inside the building. Okay, so I go outside and freeze my butt off for tradition. Once outside, I was able to see the S-meter on the cell phone increase to an acceptable level, so I tried speed dialing my daughter in Florida and I waited, and waited, and waited. The call automatically terminated after a few minutes of trying, but not before I heard a “fast busy,” indicating that the network was jammed. So much for wireless technology.

I waited a few minutes and tried a local mobile-to-mobile cell call to my son. It wouldn’t go through either. After several more attempts I gave up in disgust. At this point I should mention that I was not alone outside the Golden Palace. No, sir, there were about 30 of us standing out in the cold, slowly freezing to death, caught up in a “cellular moment.”

What’s my point? Only this: We are talking about a non-emergency saturation of the cell site infrastructure. Imagine what it would be like during a large-scale disaster or ongoing emer-

gency. Once again it points out that cell phones cannot be relied upon for anything but casual communications. If you think your precious little cell phone will provide some form of reliable communications during an emergency or disaster, you are riding down that river in Africa: denial.

I cannot over-emphasize the utter fallacy and false sense of security that cell phones create. This is the result of an extremely effective marketing campaign on the part of the cellular industry. Over the last 18 years, the cellular industry has lied to the American people, and to Congress, about how secure and reliable cell phones are—all in the name of making a buck. The constant bombardment via the mass media by the cellular providers has convinced most Americans that they cannot possibly live without a cell phone on their hip or glued to their ears. Sultry, sexy movie stars are seen hawking cellular calling plans on prime time TV. It’s a very effective marketing strategy. And, it’s working very, very well.

The bottom line is this: do not rely upon cellular telephones during an emergency or disaster. The cellular infrastructure simply will not support the massive influx of cell phone calls. If you can’t get past the cell site, you aren’t going to talk to anyone: Period.

And On The Positive Side

On December 26, I received an e-mail from David Kleber, KB3FXI. David is the owner and founder of PA-SitRep (www.PA-SitRep.com), an online Internet emergency-alerting subscription list, designed to help alert folks and disseminate information regarding emergencies happening statewide in Pennsylvania. David works for the cellular industry and he is all too aware of the limitations of cellular phones during an emergency or disaster. I contacted David in hopes that he would allow me to share with you his use of cellular phones as an alerting medium for emergency situations. He graciously gave his permission, so below is the text of his e-mail, in its entirety.

Hello All,

As you may or may not know, I work for Verizon Wireless in the cellular phone industry. I’ve become quite proficient with SMS (short message service—text messaging) especially with the utilization of AOL Instant Messaging (IM) on my cell phone.

In the **early stages** [*emphasis mine—RA*] of an emergency situation, this could be a very useful contact method. It’s important to remember that SMS is much more reliable than voice calls on cellular systems. SMS is relatively unaffected by over capacity issues, as voice calls are, and SMS will get through to your phone in even the weakest service areas.

Here are just a few examples of how I utilize IM on my phone:

I can set my cell phone to alert me when one of my AOL IM buddies is on line. The two alerts that I keep active are the screen names for the National Weather Service in Pittsburgh and the screen name for my local Emergency Management Coordinator, with whom I work closely.

When I see the text alert telling me that the NWS is on line, I know that they are most likely activated for a weather event. I can then send them a text message from my phone asking what they’re activated for.

In the case of my Emergency Management Coordinator, when he jumps on AOL IM he is in his computer room where his ham radio is located. When I get the alert to my cell phone that he is on AOL IM, I know I can reach him by radio.

AOL Instant Messaging, as utilized on a cell phone, is also a great way to coordinate QSOs (ham radio contacts). I’ve utilized this a few times with WB3EQW, our PA-SitRep contact for Clearfield County. I send a QSO request to his AOL screen name from my cell phone

while I'm in my mobile and request that we meet on a specific frequency.

If anyone is interested in the utilization of this mode of communications, please feel free to contact me off the list at owner@pasitrep.com. I'll be glad to take some time to explain to you how it works and how to get up and running.

I'm also interested to know if you use AOL IM extensively and I would like to know your screen name so I may contact you via IM, especially in the event I need to gather a situation report from your area. Feel free to contact me via AOL IM. My screen names for my home computer and cell phone are listed below.

Have a happy, safe, and vigilante holiday season.

Tnx es 73,
David Kleber, KB3FXI

AOL IM PC screen name: davelke38sp
AOL IM cell phone screen name: kb3fxi

My thanks to David for allowing me to reproduce his comments regarding the use of cellular telephones as an alerting tool using AOL Instant Messaging. As you can plainly see, cell phones can be used during the initial stages of an emergency or disaster, but there is a limit to their usefulness and reliability once things are fully underway.

And From The Pacific Northwest...

In an article that appeared in the *Spokesman-Review* (Spokane, Washington) back in May of 2003, we learned that the Spokane County emergency radio network is falling apart. According to the article, there are locations within Spokane County where the sheriff's deputies cannot talk to their dispatchers at headquarters with their radio gear due to inadequate antennas! One of the emergency radio towers had collapsed under severe ice loading the previous winter, while other radio sites are in poor condition. (I'm thinking that the author of this article is referring to repeater sites rather than just a "radio tower.") Also, some fire-fighting agencies cannot talk to certain law enforcement agencies within the county and vice versa.

A study of Spokane County's emergency radio network by the Seattle-based consulting firm of Adcomm Engineering has revealed some severe deficiencies in the network and has recommended a significant expenditure of funds, in the amount of \$25 million, to rectify this dismal situation.

As usual, there ain't no free ride. County residents are facing a tax increase to fund the upgrades to the antiquated emergency radio network. Ongoing maintenance and replacement of some of the 20-year-old radio equipment is going to require a considerable investment in not only money but time and effort as well.

In this day and age an emergency radio network capable of linking fire, EMS, and law enforcement agencies is a vital for combating terrorism. I am sure that Spokane County is not alone in this debacle. As a matter of fact, the Commonwealth of Pennsylvania's Open Sky (a non-APCO Project 25 digital radio standard) trunked radio architecture is a classic example of "the other side of the coin." This 800-MHz trunked radio system is costing the taxpayers a huge bundle of money (around \$243 million to date) and it is still not on line after almost three years of delays. Initially the state legislature approved \$173 million for this state-of-the-art system. Three years overdue and \$70 million over budget, the "Open Sky" system is still not fully functional.

It seems that some PA State Patrol (PSP) troopers are questioning the reliability of their mobile data terminals (MDTs)

and digitized voice transmissions to work reliably using this new 800 MHz trunked network. Once the PSP has been cut to the new system they will lose their ability to instantly communicate with local law enforcement and EMS/fire personnel, as they now do using their proven and reliable VHF radio network. Local law enforcement will also lose the capability of monitoring PSP activities. Additionally, there are many RF dead spots across the state with this new system. A partial solution to the problem of RF dead spots is being floated in the form of an Internet dial-up connection. (VoIP possibly?) Ah, progress —ain't it wonderful?

Now before you jump to the conclusion that I'm anti-technology when it comes to communications, let me emphatically state that I am *NOT!* My problem with 800-MHz trunked systems like "Open Sky" centers on the sales pitch offered by the manufacturer to the municipalities and state departments. In effect, the vendor is assuring the end user that he will have an extremely reliable, redundant, and (in some instances) a secure digital radio system when this is not always going to be the case. Of course, once committed to this proprietary project, there's little for the unsuspecting client to do but continue shelling out tons of money (mostly taxpayer) to patch with band-aids the inherent flaws in the system.

My sources have stated publicly that it would have cost only \$100 million to upgrade the PSP's current high-band VHF network to meet the needs of the citizens of Pennsylvania for the foreseeable future. Instead, the Commonwealth opted to go with an unproven proprietary trunked system that is full of holes and, as of this writing, cannot possibly be relied upon by the PSP as a backbone communications system. In short, the Commonwealth of Pennsylvania was sold a bill of goods. Who's footing the bill? Why, the taxpayers of the Commonwealth, of course!

Don't get me wrong, I have no problem with 800-MHz trunked systems. Given the proper topography and support infrastructure (repeater sites) they work very well. However, with the tremendous variations in topography within Pennsylvania, it's just not feasible to employ an 800-MHz trunked system as a primary communications network.

Under The Heading Of "Old Business"

Speaking of interoperability and advancing the art and science of emergency communications, the Wilkes-Barre (Pennsylvania) Mobile Emergency Command Post (see "Homeland Security," September 2003) has been deployed several times in support of flooding of the Susquehanna River in neighboring countries. Also, it was deployed in the recent jail-break (see "Homeland Security," February 2004) to help manage the communications necessary to coordinate a large-scale search for the escapee. All in all, the new mobile emergency command post has proven to be a valuable asset for the citizens of northeastern Pennsylvania.

As a quick review, Wilkes-Barre Mayor, Tom McGoraty, secured a \$300,000 grant from the Centers for Disease Control (CDC) in Atlanta and wanted to use part of this grant money to build a mobile command post for the city. The project manager, Bill Harding, KA3QPQ, of the city engineer's office, assembled a team of four volunteers. This group transformed the aging GMC Suburban into a state-of-the-art mobile communications, command, and control (C³) asset capable of rapid deployment anywhere within northeastern Pennsylvania in support of emer-



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gency/disaster relief communications.

The Suburban is equipped with off-the-shelf comm gear. The radio suite consists of mainly Kenwood equipment, which was on the city purchasing contract. The HF radio system is a Yaesu FT-857, chosen for its rugged construction and small physical footprint. The mobile command post sports 15 antennas, mostly the VHF/UHF variety. The HF antenna is a Model 200 Tarheel "screwdriver" tunable from 80 through 10 meters.

Since the original article appeared in *Popular Communications*, an 800-MHz repeater system has been installed to further increase the mobile command post's communications flexibility. All this gives the on-scene commander of an incident access to a broad range of frequencies and modes. In addition, all the public service radios can be programmed on-the-fly using an on board laptop computer with cloning software. This means that, should the mobile command post be sent outside the immediate area of the six counties in northeastern Pennsylvania, the radios can be reprogrammed enroute to the deployment site.

On December 29, 2003, the efforts of

these five people were recognized by the Mayor's office for their service to the city of Wilkes-Barre. In a ceremony at Council Chambers, Mayor Tom McGoraty presented the key to the city to David Anthony, Leigh Thompson, Bill Harding, KA3QPQ, Richard Arland, K7SZ, and Greg Berholt in appreciation of their volunteer service to the community. The accompanying photograph shows the key recipients and the Mayor standing beside the mobile command post.

On a personal note, for 20 years I was on active duty with the U.S. Air Force, serving in the Air Force Communications Service (later Communications Command). Our official motto was "Providing the reigns of command." I find it very gratifying and personally fulfilling to know that 17 years after retiring from the Air Force, I still have a hand in "Providing the reigns of command," this time in the form of emergency communications.

A Parting Thought

This issue of *Popular Communications* will arrive just prior to the annual SWL

Winterfest at Kulpville, Pennsylvania (March 13 and 14, 2004). This yearly event brings together a wide range of radio enthusiasts with all levels of expertise. Past Winterfests have featured guest speakers like Jonathan Marks, from Radio Netherlands. The very first Winterfest (in 1988) featured the infamous "pink and purple Poncho Villa Room," complete with shooting in the bar, but that's another story! Each Winterfest includes a host of technical forums presented by some of the biggest names in the radio hobby. There is literally something for everyone at the Winterfest, including SW broadcast listening, SW utility monitoring, pirate radio, scanning, propagation, and equipment modifications and collecting.

If you've never attended, you need to go. You'll have fun, meet some great people in the radio hobby, and learn something in the process, I guarantee. Check out their website at www.swlfest.com for full details. I hope to see all of you in Kulpville this year.

Until next month remember: Preparedness is *NOT* an option. ■

Collector's Letters And Insight

Occasionally it's nice to share some of the human side of radio restoration and collecting and to take a break from the technical aspects of restoration and collecting. So here are a few vignettes from fellow readers and collectors.

An Old Friend Returns

Reader W. Berry, of Des Moines, Iowa, writes,

Just after the end of World War II, I was visiting the home of a classmate. While in his living room, I happened to notice a Westinghouse table radio. This radio had shortwave coverage, but at that time I had no experience with such features. After considerable fooling with the controls, I was astonished to hear all manner of foreign languages emanating from the little set. For a young boy in a small town, this was a complete revelation, and I immediately became hooked on shortwave listening.

In subsequent years I purchased my own SW receiver, obtained amateur and commercial licenses, and new radios. I later joined the Bell Telephone system. Now after some 50 years, I am what's known as an *old geezer*! Fate took a strange turn last year when the friend from my old hometown requested I repair one of his radios. You may imagine my great surprise to find the radio was the very set that started my electronics career.

Enclosed is a photo of the Westinghouse model M-202. Its reappearance opened a door to my past, which I treasure greatly. I must say however, that unlike me, the old



Photo A. Berry's recently rediscovered Westinghouse M-202 table radio.

Westinghouse—with a bit of work—seems to function as good as new!

Berry's classic Westinghouse radio is shown in **Photo A**. Thank you for writing in, Berry!

Canadian Blogs

A blog is a newly coined term referring to Internet-published diaries or story telling. Here are some blogs, or tales if you prefer, from our Canadian neighbors. I thought it would be fun to show what collectors north of the border are up to, and to show some of the fine Canadian radios that aren't so commonly found in the States.

Sylvain Vanier writes,

I am fairly new to radio collecting; I've been doing so for almost four years now. My collecting interests are wood radios and nice Bakelite sets. My preferred brand—no coincidence it's Canadian—is Northern Electric. They're excellent all-around performers; even their AA5 types using only a few caps and resistors. (Someone asked me once where I had put the rest of the parts after peeking "under the hood".) I prefer the wooden sets for their styling and warmth and have a weakness for the BRD (Big Round Dials) styling!

My collection of Northern radios includes a large 10-tube model 921 console model



Photo B. Sylvain Vanier's Northern 921 console radio. (Photo by S. Vanier)

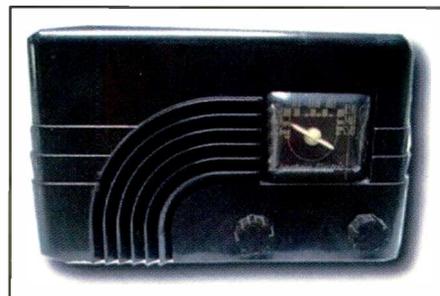


Photo C. Syl's model 5002 Northern radio.



Photo D. Another of Northern radio, a model 520, from Syl's collection. (Photo by S. Vanier)



Photo E. A Northern 5116 table set. (Photo by S. Vanier)

(**Photo B**), a rainbow (note the arched grille work model 5002 table radio (**Photo C**), a 1936 model 520 table radio (**Photo D**), and a model 5116 table radio (**Photo E**). These are all excellent performers covering at least two bands; the console has five bands! Bakelite sets seem to be becoming more popular and gaining in value. The wooden sets are still to be discovered and are more modestly priced. I also collect sets made by Marconi, CGE, Canadian RCA, Sparton, Canadian Philco,



Photo F. This early cathedral radio was made by Rogers in Canada. (Photo by S. Vanier)



Photo H. This early family photo shows John's great aunt Cornelié Courtemanche and the Rogers 6R531 table radio. (Photo courtesy John Bartley)



Photo J. This cute Rogers BatteryLess receiver features real veneer inlays. (Photo courtesy J. Bartley)



Photo G. John's CR-91A military boat anchor receiver.



Photo K. John was finally able to track down an example of the blue Midge model 800-watt table radio he remembers from the family farm. (Photo courtesy J. Bartley)



Photo I. The Rogers 6R531 table set is a proud part of John's collection. Much of its value is from the family and Canadian history surrounding it. (Photo by J. Bartley)

Stromberg-Carlson, Arcadia, and Rogers (Photo F). Only Northern Electric, Marconi, Rogers, and maybe Aracadia offered radios unique to Canada. Folks often ask me what makes the Canadian radios so special. Why, they speak French without an accent of course!

And *Pop'Comm* contributor John Bartley offers the following.

Radios have always been a part of my life. From the first crystal set that my Dad put together in a plywood box to the CR-91A RCA boatanchor (Photo G) that majestically graces the top of the filing cabinet beside my study desk, there has always been a radio either playing near me or about to be playing. My favorites are the ones with stories behind them.

In our living room there's a radio sitting on a piano—both came from the same home. Picture a sitting room in a typical Canadian home in December, 1936 (Photo H). The Monarchy in England is on edge, with the King in love with a divorced American woman and deciding whether to choose her or the throne. At the same time, in North Bay Ontario, Eugene Courtemanche is busy buying a radio from Bannon Bros. Hardware. The 6R531 (Photo I) is a good solid set. With only five tubes, it's transformer-operated with three bands. It covers the AM broadcast band and shortwave in two bands up to 18 mc.

The Rogers Majestic radios were manufactured in Toronto, Ontario. The Rogers Company, founded by Edward Rogers, made a major breakthrough in tube technology when they invented the world's first radio tube capable of being powered by AC voltage. This enabled the radios to be operated on household power instead of batteries. The first of these radios were known as "Rogers BatteryLess" receivers.

Getting back to my story, the radio was bought because the King was going to abdicate the throne, and his abdication speech was to be broadcast throughout the Empire. I can picture in my mind the radio sitting on a side table while everyone waited for the start of the broadcast. My mother, then just barely two years old, was part of that group. The Rogers went to her after my great-aunt and uncle passed away, and she gave it to me. It had been

through a couple of "not-so-great" repairs; I had to replace the filter capacitors and transformer in the power supply. It now sits in my living room.

Other Rogers Majestic sets are as attractively built, such as the smaller tabletop model 4511 unit which I bought from a local antiques dealer. This five-tube set dates from the early 1930s and was also built in Toronto. The trim strips in this little radio are real inlaid veneers, not *photo finished* as is done in some cheaper sets (Photo J). There are several models of Rogers similar to this one, with different trims and different orientations of speaker, knobs, and tuning.

In the early 1950s my mother left North Bay to stay in a boarding house in Ottawa while attending teachers college. She bought a couple of things to dress up her room a bit and make it more home-like. One of the things she bought was a little radio, a blue hammertone Northern Electric "Midge" table Bakelite set, of which many thousands were built and very few remain. The Midge radio was a stylish and very small radio with curved ends, a round dial, and the usual five-tube chassis, using the "All-American" AA5 tubes, 12bA6, 12BE6,

12AV6, 35W4, and 50C5 (Photo K). Some of my earliest memories include this radio.

We kept that radio through many moves, and the last time I saw it, it was sitting on the kitchen counter in the house on our farm, which is the last time I lived at home. I left home in 1977, and when my parents sold the farm a few years later, they threw the radio out, never thinking that anyone would want "that old thing." I never forgot about that radio, however, and although I did forget the make and model, the picture of it stayed in my mind. A couple of years ago I found one for sale on eBay! I rebuilt it electronically with all new capacitors and an alignment and then

showed it to mom. Her first words went something like "where did you find...is that our radio??? That can't be ours...we threw ours out..." I told her how I found it and repaired it to play like her old one did.

Other radios are real keepers, not because they came from family, but because of the circumstances of their acquisition. At 18, I had a summer job working in the radio room of a local air transport company. On one of my exploration adventures I found a crate with the name RCA on it; inside I found an almost mint CR-91A receiver (Photo L)! This was the newer version of the famous AR-88LF, of which many went to Europe and Russia as



Photo L. This WWI-era military aircraft receiver is a daily player near John's workbench. (Photo courtesy J. Bartley)



Photo M. This small table set was made by combining the best parts from two junkers found at a flea market and from a close radio-TV shop. (Photo courtesy J. Bartley)

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lend-lease equipment. I asked if it was for sale, and for the price of \$50 (deducted from my pay) it was mine.

Northern Electric, one of the ancestors of the modern-day Nortel Networks, has produced many great radios and also did its part during World War II. The Northern Electric *Baby Champ*, (Photo M) was built by combining parts from two different junkers. They also made a less known receiver, the RA-10DB. This military boatanchor has the Bendix name on it, but it was built in a Northern Electric factory. The RA-10DB was a remote radio chassis, operated by a navigator from a remote control panel and used in the DeHavilland Mosquito bomber. Available surplus after the war, they were often modified. like this one was, to run from 120 VAC. These multi-band receivers cover four bands: 150 to 400 kc, 400 to 1,100 kc, 2.0 to 5.0 Mc, and 5.0 to 10.0 Mc. I bought this one for \$10 at our radio club auction about two years ago, and use it daily while working at my radio repair bench.

Thanks to our contributors for sharing these stories with us this month. I hope you found it as interesting as I did.

Until next month, 73 from the "Wireless Connection"! ■

The Latest Last Call? The Excellent Vertex-Standard FT-1500M 2-Meter Mobile Transceiver, And Setting The Record Straight

Is it time to add a 2-meter mobile radio to your “commo” arsenal? So many of our readers have finally gotten around to getting their Technician class Amateur Radio Service license in very recent times! Since the International Telecommunications Union (ITU) repealed the international requirement for Morse code proficiency in the amateur bands below 30 MHz (Article 25.5 §3 1, WRC-2003), one nation after another has removed their own respective national amateur Morse requirements. At the time of this writing, several various petitions are before the U.S. FCC asking for total removal of *all* Morse code requirements in every class of amateur radio license in the United States. By the time you read this, it could all be over—all but the crying, of course!

Regardless of whether the FCC chooses to do away with the amateur Morse code (CW) requirement entirely (or removes it only for Generals and Technicians, or perhaps only for Technicians) the fact *should* remain that Technician class licensees would be getting no-code access to the most popular portions of the very popular 10-meter HF band, in both the SSB and CW (oddly enough) subbands. For this presumed reason alone, many, many more folks are likely to take the fairly simple Technician ham license written-only exam. After all, amateur radio Technicians with code endorsement already enjoy this access to the 10-meter band. This means, among other things, that these Technicians have access to the 10-meter and the 2-meter bands, possibly the two most popular bands in amateur radio!

And if you're going to have 10-meter amateur radio for DX work, then you really ought to have a solid 2-meter mobile rig for local FM repeater operation and for auto phone patches through local repeaters. With terrestrial wireless phone service becoming less reliable in emergency conditions these days (due to unpredictable channel overloading and to pork-barrel government Priority Access Service seizing available channels), it's extremely wise to have alternate wireless telephone capabilities for emergencies and for urgent personal matters concerning family and friends. And aside from these commercial wireless phone services, there aren't a whole lot of alternatives! Ham radio remains the single most cost-effective emergency personal wireless telephone capability available. As long as we are at war, for your own personal homeland security, you need this thing—go out and get a 2-meter amateur radio!

From time-to-time here at “O-T-G Radio,” we take a look at an excellent, but perhaps underrated or largely unnoticed radio product on the market. We're not talking about new products here. Instead, the sort of item we'll examine is typically at or near the end of its production run or production life. This means that if you'd like to acquire the product in question for yourself, you may either find it new, or as a store demo item on clearance.

In case the product in question is no longer available as new, it can typically be readily found on the used equipment market. This scenario presents two significant opportunities. One is that those



The Yaesu FT-1500M amateur 2-meter FM radiotelephone by Vertex Standard. (Photos courtesy of N3HOE)

folks who must always have the latest-and-greatest stuff available may be dumping their lightly used gear in favor of whatever has come to market to replace it. The other opportunity is that product “scalpers” often buy up closeout products for resale as “like new in box, never used” merchandise (although often without original warranty). Scalped merchandise is readily and continuously available on eBay. Just search under the manufacturer's model number or stock number at the eBay website.

The Yaesu FT-1500M amateur 2-meter FM mobile radio by Vertex Standard is one of those venerable products apparently at or nearing its end of production. At the time of this writing, amateur radio mail-order houses across the country have been having “closeout” sales on this excellent amateur mobile radiotelephone. This unit just can't be beat for simplicity of operation without sacrificing a lot of features.

The FT-1500M is the mobile unit that's so often shown in print ads as being run over by some sort of off-road truck; the tiny transceiver placed squarely under one of the huge tires to be crushed against some rocks, with its display lit up and still functional. Okay, I don't know if this particular photo is just a photo or whether a functioning radio was actually placed under the full weight of even a small truck's wheel. It doesn't much matter to me. The fact is that this radio's die-cast aluminum case is visibly thick, solid to the touch, and *very* heavy in the hand for a unit so small.

This small unit's case measures approximately 1.4 x 4.9 x 5 inches (HWD), excluding its knobs. It has a full 50 watts transmit output power, which can be stepped down to 25, 10, or 5 watts, as desired. Its small front panel has only two knobs on either side of the display: the volume control and a VFO/memory channel-tuning dial. There are five buttons along the top of the face panel; one is a power on/off control, and the remaining are for dual-function controls for transceiver operation and programming.

The radio's squelch control is embedded in software, although the FT-1500M allows the user to access this control and set it as desired. I have owned and operated a number of radio trans-



The 50-watt FT-1500M transceiver just about fits into the palm of your hand.

ceivers with either set-it-and-forget-it, preset, or automatic carrier squelch technologies, and they have always performed flawlessly in FM operation. Fixed or preset carrier squelch probably wouldn't work so well for SSB operation, or for AM operation such as in CB radio. But for FM, it's one less control to fiddle with or goof up, so I don't miss that knob at all in state-of-the-art FM transceivers.

I really like the FT-1500M's microphone handset. It's Yaesu's standard MH-48 mobile mic, with all 16 backlit DTMF buttons, a TX indicator light, and four user-programmable function buttons. Additionally, the four alpha DTMF buttons, when pressed in RX mode, perform the exact same four functions as do the four function buttons on the transceiver's front panel. This puts nearly all of this radio's functional controls (except volume, it appears) right in the palm of your hand. Cool!

The mic has a local control-button lock switch, and its backlight can be turned on or off. This is good in nighttime operation for two reasons. First, you can leave the light on for control functions and "on-hook" DTMF dialing. Second, you can turn off the light while operating mobile at night. This ought to prevent overzealous police officers from seeing you lift the mic handset to your face to speak and mistaking it for a cell phone handset.

There are too many localities where holding a cell phone handset while driving is a violation. And don't expect a police officer to know or to care to distinguish a two-way radio whose handset looks like a cell phone! Even though many, if not all, phoning-while-driving laws do not apply to two-way and amateur radio operation, in an overworked and under-appreciated officer's eyes, you have already violated the *spirit* of the law, though perhaps not the *letter* of the law. The best way to prevent having the appearance of violating the law may per-

haps be to...well, uhhhh...to prevent having the appearance of violating the law. In other words, turn out the lights! On that microphone, that is.

I'm also impressed with the FT-1500M's highly functional memory auto-dialer. Once you have your favorite phone numbers programmed in, including your repeater system's dialing protocol to bring up a dial tone, you're set. There is no sequence of buttons to press just to get to stored telephone numbers and then to send the digit string. To place a call from memory, simply press the PTT button, give your callsign, and press a single digit for the stored number's location that you desire. The radio does the rest. Memory autodialing on my cell phones should be so simple!

You also get a dual-speed (1200 and 9600 bps) packet data port at the back of the set, which *ought* to make connecting a GPS unit and a modem really simple. Deviation can be reduced, in software, from 5 kHz to 2.5 kHz. And channel step size can be set to 12.5-kHz channel spacing (in addition to having 5-, 15-, 20-, 25-, 50-, and 100-kHz channel step sizes). CTCSS encoding and decoding (or encoding only) is built-in, and each channel in memory can be set to its own tone squelch code. European 1750-Hz access signaling is also built in. DCS (Digital Coded Squelch) is not included at all, however.

This great radio also scans, has a priority channel, can scan a received signal to determine CTCSS code, has a separate memory for the 10 NOAA and Canadian weather channels, and has too many other features and functions to mention here! Adjustment can be made by means of a hidden menu. Instructions for this are available at the FCC Certification website. Enter FCC ID number "K66 FT-1500M" and see for yourself!

This is not meant to be a full product review here, by any means—just a "heads-up" to alert in case this excellent product is right for your purposes. If so, you may well find it available either new at closeout pricing, or being resold or sold as used on the aftermarket. Go to the Vertex-Standard website, read the product specifications, and download the complete user manual, too! Visit www.yaesu.com.

Setting The Record Straight

Form time to time I feel compelled to wield my iconoclast's hammer and bring it to bear on a persistent rumor or piece of disinformation circulating about the hobby, consumer, or commercial radio

communications world. I really do sleep much better at night every time I've taken the opportunity to shatter a falsity.

One idiotic thing I keep hearing is certain radio-oriented people comparing commercially produced amateur radio equipment to consumer-grade radio products, while presuming that commercial-grade radio equipment is somehow magically superior in quality to amateur gear. Well, I'm here to tell you that this is a load of bull. Those who propagate this fallacy are obviously not intimately familiar

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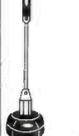
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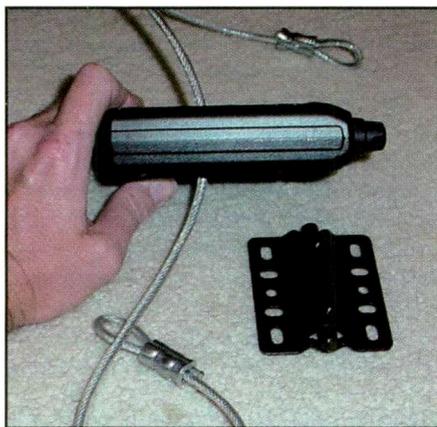
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The FT-1500M comes with a hinge-like mounting plate. Bolts run right through the transceiver to the mount! Here, the user had a steel security padlock cable, which runs through one of the boltholes, made up at a local Ace Hardware store. A home-brew exterior bracket will completely hold the unit in place in your vehicle.



The FT-1500M's fully functional DTMF mic handset.

with the design and manufacture of electronic communications equipment, or they're indulging in self-deception—for what purpose I cannot imagine and really don't care.

There is, and has been for at least the last 15 years or so, essentially no difference in manufacturing and design quality between commercial-grade equipment and amateur-grade equipment. Period. And I do speak from experience. State-of-the-art production of both amateur and commercial radio communications products almost always involves component Surface Mount Technology (SMT) and the adherence to various MIL-SPEC or MIL-STD (military equipment requisition specifications) durability standards, whether voluntarily or as specified by vendor-client contract.

In fact, amateur-grade radio equipment is always designed with much more operational flexibility in mind, such as VFO tuning, adjustable transmit power level, and user-adjustable tone and DCS signaling, as well as DTMF signaling. Some

of these advanced operational features are not even permissible on commercial-grade equipment because they are prohibited by FCC equipment certification-related rules! This is precisely why amateur radio requires individual operator licensing, whereas Part 90 land-mobile radio products are simple by design so that any untrained bozo can get on the air, at or within a properly licensed station or system. And getting a Part 90 radio license (by qualified entities) is 100 percent paperwork and money, and zero-percent operator skill.

Still, these functional design differences have little to do with any alleged quality divergence between amateur-grade and commercial-grade equipment. Case closed.

Okay, one more piece of disinformation comes to mind that also needs to be beaten to death. In this case, radio equipment vendors are more to blame than any other party. More and more often lately, I see land-mobile radio vendors describing their products as "professional" or "professional-use" radio equipment. No, not quite. Professional radio equipment properly describes radio transceivers and systems that require operators to hold individual professional FCC radio operator licenses. This primarily entails maritime shipboard radio officers as well as HF shore station radio operators and their radio communications equipment, of course.

On the other hand, land-mobile radio products that are primarily intended for on-the-job use are correctly referred to as "occupational" or "occupational-use" equipment. I do give my heartfelt gratitude to those vendors who continue to use this correct terminology. Oh yes, there are quite a number of occupational two-way radio users whose careers are properly described as being within the *professional* category. These include law enforcement personnel, firefighters, emergency medical personnel, and military personnel.

Still, "professional" or "professional-use" radio equipment must necessarily refer to the operator's *professional* qualification solely in relation to *radio operator status*. Otherwise, we would also have to describe amateur radio equipment as being for "professional" use, since ham radio is so often used in support of official emergency and disaster mitigation operations, not only in supporting served agencies, but very often coincidentally, by professional rescue, mitigation, logistical, and government agency personnel in the performance of their official duties. (Please

note that these professionals do not necessarily have a pecuniary interest in their emergency situation duties for a couple of reasons, including voluntary duty status, off-the-clock duty, and unpaid overtime due to unforeseen circumstances. Also, Amateur Radio Service rules permit broad regulatory latitude in emergent circumstances when "normal" communications channels become unavailable.)

Bottom line here: Do not label occupational radio users as "professional" radio operators, unless those individuals in question are, in fact, required to hold professional radio operator licenses. 'Nuff said.

What the heck, we might as well obliterate one more misconception while I still have the hammer in hand. After all, I was just commenting above on the new international ITU Amateur Service rules revision regarding the elimination of the CW proficiency requirement for operation on frequencies below 30 MHz.

Someone wrote in to suggest that since this rule has finally been changed, and the requirement dropped, that the FCC might be ready to entertain a change to the CB Radio Service rules to permit legal international DX operation. This correspondent went on to assert that this had been the major stumbling block in such a rules change.

Whoa there, Nellie!! Let's just hold our horses for a moment, here! This is totally incorrect. CB radio is not a form of amateur radio and is, therefore, not subject to ITU rules concerning the Amateur Radio Service in general, and amateur licensing rules, specifically. As far as the ITU is concerned, 11-meter CB radio is just another land-mobile radio service within the HF spectrum. And ITU regulations have not required any knowledge of CW for any land-mobile operators in recent history, if ever. Even professional shipboard radio officers have not been required to have any knowledge of CW in their FCC licensing (if their assigned ships were not required to be equipped with a radiotelegraph station) for decades.

Well then, have we covered enough misunderstandings for one month? I'll just put away my iconoclast's hammer for now, in that case. I really don't think we want to turn "O-T-G Radio" into a question-and-answer column, do we?

As another springtime approaches, take some time to do some spring-cleaning and maintenance at your home base station and around your mobile stations as well. Always turn to *Pop'Comm* to keep up with the latest happenings in radio communications products, technology, and regulation. ■

pirate & alternative radio

by Edward Teach

It's Enough To Give You—Cramps Radio!

Aaarr! Last time it was a loggings feast, this time it's nearer to famine! Let's check out what's shown up in the "In" file.

WHYP, 6925 signing on at 0000 with "Whip It" and talking about pirate operator Captain Ron. Unreadable by 0020. (Brian C.) 0109 with Sex Pistols, Uncle Schleckstein, more music, and something by Steve Allen. Excellent signal at tune-in but much worse five minutes later. (Dave Balint, N8IW, OH)

Unidentified—also on **6925 (USB)** with an old-time radio show with fiddle-type songs from the likes of Bill Monroe at 0013. No ID caught. (Brian C.)

6949.9 USB at 0000 with lots of country-style music including "Mr. Songman." Also a clip: "Bond...James Bond" and "Stirred, not shaken." Both in a fluttery voice.

WJAM (Punk rock Shortwave) on **6925** at 0025 with talk about a signal generator a friend of the announcer stole from high school, Uncle Schleckstein in the studio, 1940s-sounding music, talk about FRS walkie-talkie modifications and running the antenna wire and other technical aspects. Also the song "Walking in L.A." and an "odd" version of "Twelve Days of Christmas," clips from Jay Smilkstein, and song "You Dropped a Bomb On Me." Also some possible George Carlin clips with Smilkstein clips intermixed. (Balint, OH)

6950 USB at 0234 tune in with pretty awful "punk" stuff with just a so-so signal level. (Dave Schildkraut, OH)

Undercover Radio, 6950 USB at 0208 with real heavy metal things about torture and murder, dismembering body parts, highest form of his art (apparently all part of one piece), and other heavy metal things. Clear ID at 0222 including mail drop and e-mail address. (Brian Duddy, NY)

Oxycontin Radio, 6925 at 0100 with Jay Smilkstein clips, Uncle Schleckstein bits, talk about wieners, parody on "Eleanor Rigby." (Balint, OH)

Shadow Radio, 6950 at 0010 with something about a man or men and some kind of commercial announcement. The signal was rather poor and hard to pick out. No address or e-mail copied, although I thought the announcer mentioned something about asking for input. (George Roberts, PA)

WMPR, 6925 at 0020 with "techno" music but not much talk. (Roberts, PA)

THE VOICE OF CAPTAIN RON SHOTWAVE
 To: Richard D'Angelo
 For broadcast on 6-17-03. 6.925 us
 at 0146-0202 utc
 QSL
 73!
 Captain Ron

Richard A. D'Angelo of Pennsylvania received this very stylish QSL from The Voice of Captain Ron Shortwave.

Ironman Radio, 6925 at 0320 with rock songs and someone named Scruffy doing a traffic report. They gave their address as P.O. Box 1, Belfast, NY 14711. (Roberts, PA)

CRMP—Cramps Radio, 6956 USB at 0000 with various music types and OM announcer now and then. (Schildkraut, OH)

Power Radio, 6955 USB heard at 0143. Heard a guy with a quick ID and then lost in noise, or perhaps went it off the air. (Schildkraut, OH)

Undercover Radio, 6925 USB at 0203 noted with rock numbers. Another day at 0130 on **6950 USB** with basically the same format. (Roberts, PA)

Betty Boop Radio, 6925 at 0232. (Davies, GA) (Program details?—et)

James Bond Radio, 6925 at 0101 with Bond bits, general talk, and music. Also at 0101 on **6950 USB**. (Roberts, PA) ('scuse my ignorance but I wonder if this is, or has any connection with, WJAM (above) and their Bond drop-ins.—et)

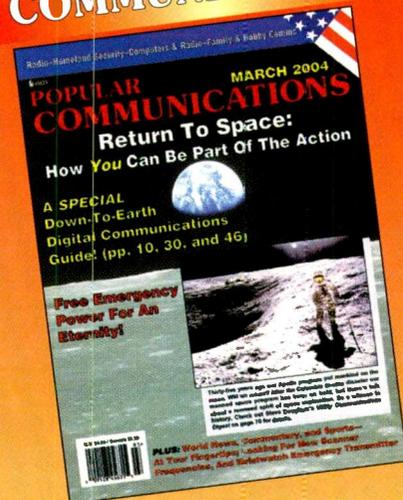
Sunshine Radio, 6925 USB at 2330 with lots of talk and various bits of stuff, not much music. (Roberts, PA)

And that's all she (meaning "you") wrote! I guess pirate activity has gone into something of a slide lately or else the nasty propagation conditions we've been experiencing of late have depleted signals. Anyway, please keep on contributing whatever loggings you come up with and I'll look forward to including them in the column. I'd also like to have copies of pirate QSLs you receive for use as illustrations. And as for you operators—if you're feeling bold and brave I'd love to have photos of your setup!

That's it for this time. Keep those cards and letters coming my way! ■

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discoveries connecting as a radio amateur

Basic Radio For City Dwellers

Not sure exactly how to get started with the radio hobby, hardware-wise? Too many radios to choose from? Too many confusing features? If you need to spend a little and get a lot, please read on. And don't be discouraged if you live in or near a reasonably sized metro area—there's a way to get on the air without breaking the bank. A handheld FM rig (a walkie-talkie) that covers one or more VHF/UHF bands will get you off to a good start, and its versatility will pay off in more than just dollars!

“Handheld transceivers save money over buying separate mobile and base units, and they work fine for FM simplex, repeater, or packet operation.”

Hams call them HTs, handie-talkies, walkie-talkies, and bricks. Countless amateurs choose these pocket-sized handheld VHF/UHF FM transceivers as their first rigs (some HTs require larger pockets than others!). Handheld transceivers save money over buying separate mobile and base units, and they work fine for FM simplex, repeater, or packet operation. That's a lot of versatility for such a small package!

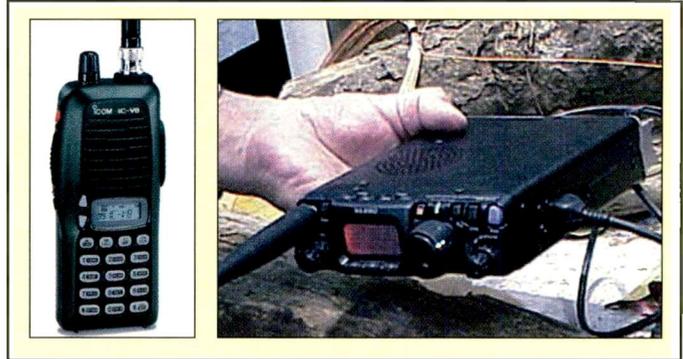
Because I live out in the boonies when it comes to repeaters—as in there aren't any—I might be a bit behind the times when it comes to recommending *specific* handheld models, so let me encourage you to do your own research before you plunk down any hard-earned cash. In that light (unless someone snuck some newfangled doo-hickeys under my nose) there are no mainstream HTs that offer SSB or CW, or coverage of bands below 2 meters, so you'll be limited to FM simplex and repeater voice operation and packet. Most VHF and UHF operation is on FM, however, so there's probably plenty of activity in your area (remembering that we're assuming you live in or near a metro area).

In the United States alone there are thousands of repeaters on 2 meters, 222 MHz, 440 MHz, and even 1.2 GHz. There are repeaters that are linked to 10 meters (not terribly useful now that we're in the dregs of the solar cycle) opening up the possibility of long-distance contacts. Speaking of long-distance contacts, if you take advantage of wide-area repeater “interties” and newer technology, such as IRLP and Echolink (more on this later), the world can be your oyster, even with a handheld. And if terrestrial DX isn't enough, under the right conditions you can even work the space station and several ham radio satellites with your trusty handheld!

Single-band handheld transceivers cover 2 meters, 222 and 440 MHz, and 1.2 GHz. Multi-band rigs may include 2 meters and 222 MHz, or 2 meters and 440 MHz.

Get A Radio And Go!

If you've attended a hamfest, you've seen plenty of people walking around with handheld rigs. They conveniently hang



For less than \$150 you can acquire an ICOM IC-V8, a 2-meter handheld that's not too big and not too small. It's a veritable Swiss Army Knife for 2-meter hams. It represents 2-meter handhelds to a “T”: it's solid, versatile, and definitely affordable. Thanks to tremendous advances in circuit miniaturization, however, Yaesu offers the slightly larger—but oh so powerful—FT-817, the world's first, self-contained, battery-powered multi-mode transceiver that covers every ham band from 160 meters to 70 centimeters (222 MHz excluded), with SSB, CW, and FM, including data modes. It's bigger than a handheld but smaller than a mini-mobile, but Yaesu also throws in a DC-to-daylight general coverage receiver, making the \$550 FT-817 a “ham-shack you can hold in your hand.” This photo appears on the DJ8JZ FT-817 website.

from your belt or slip into your shirt pocket. It's great to keep your radio nearby, whether you're in the living room, in your backyard, or out for a walk. Handheld transceivers can be used to talk to the ground crew while you're working atop a backyard radio tower, to keep in touch with friends as you browse at a flea market, or to chat with someone on another continent via Internet linking.

To get the most from portable operating, be sure your battery's charged and keep a spare on hand. The “rubber duckie” antennas supplied with most handheld transceivers are adequate, but you can substitute a telescoping whip for increased performance.

“A handheld rig can become a mobile unit if you have a cigarette-lighter power adapter and a magnetic-mount or trunk-lip mount antenna.”

On The Road

A handheld rig can become a mobile unit if you have a cigarette-lighter power adapter and a magnetic-mount or trunk-lip mount antenna. Using VHF/UHF FM, you can ask for directions, call for help (for yourself or another stranded motorist), exchange information on road conditions, or just enjoy a pleas-

ant chat during your daily commute. A lonesome road through unfamiliar terrain is safer if you can contact other hams.

If you use a handheld rig in your car, it's worthwhile to invest in a remote speaker/mic to avoid having to hold the transceiver up to your face when you transmit. In noisy vehicles, handheld transceivers may not put out enough audio to be heard clearly. This can be remedied by connecting an extension speaker with a built-in 12-volt audio amplifier to boost the sound level.

"If you use your handheld transceiver in your car, be sure that both sides of the power cable are fused."

If you use your handheld transceiver in your car, be sure that both sides of the power cable are fused. The manufacturer may offer a power adapter with this feature or you can make the cable yourself. Secure the radio so it doesn't fly off the console during quick maneuvers or conk you in the head if you have to stop quickly. Keep it shielded from direct sunlight, but mount it near your line of sight. Better yet, get to know your rig well enough so you don't need to look at it to make adjustments while driving. Don't leave your rig inside your car on a hot summer day.

Handhelds At Home

Do you enjoy traffic handling? Do you like to chat with friends while cooking dinner or watching *Star Trek*? Bring your handheld into the house, connect it to a 12-volt power supply and you're all set. You can mount a high-gain antenna on your roof, tower, or inside the attic. Plop a mobile mag-mount antenna on top of the refrigerator or a cookie sheet. In urban areas, almost anything will get you on the air!

The Digital Dimension

Standard AX.25 or TCP/IP packet radio operation on FM will work fine with your handheld transceiver. You can use it in the field or in your car with a laptop computer, or in your shack with a desktop PC or terminal. All you need is a source of power (a battery or a power supply) and a cable to connect your rig to your TNC. Almost every type of handheld radio has been used for packet, so it shouldn't be difficult to get information

on how to wire the mic and speaker connections. Once prevalent, packet operation has evolved and blossomed in some areas, but virtually withered and died in others. Check with your ham club buddies to determine packet radio's status in your area.

Hunting Foxes

Participating in on-foot hidden-transmitter hunts without a handheld transceiver is inconceivable! You need to cruise around in a vehicle sniffing for bearings and poke around on foot when you get close to the hidden transmitter. Why switch rigs, antennas, meters, and other direction-finding gear when one transceiver will do it all?

DX In The Palm Of Your Hand

There are several technologies that enable handheld users to communicate over great distances. Regionally, repeater interties can connect dozens of repeaters, giving users 100- to 500-mile range—not bad for a handheld transceiver! You can read about perhaps the most famous of its kind, the Evergreen Intertie, at www.qsl.net/k7nws/int-tie.htm.

"For DX operation on a wider scale you'll need to learn about the Internet Radio Linking Project (IRLP) or a similar system called Echolink."

For DX operation on a wider scale you'll need to learn about the Internet Radio Linking Project (IRLP) or a similar system called Echolink. Basically, these systems link widely separated repeaters via the Internet. If your city has an IRLP or Echolink "node," you can talk with other hams across the country or even internationally. There's a bit of a learning curve for each of these fascinating systems, but if you want to add maximum flexibility to your handheld ham radio, these are the biggies. Check them out at www.echolink.org/ and www.irlp.net/.

How Much Will it Cost?

You can invest anywhere from about \$75 to \$600 for a handheld VHF/UHF/FM ham transceiver. It all depends on features, whether you buy new or used, sin-

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gle-band or multi-band, and other variables. Older models cost less and are easy to find at hamfests and flea markets, but may be crystal-controlled, put out less power, and lack fancier features. It's also difficult to find battery packs and accessories for older types. To access the various interties and Internet linking systems you'll likely need a modern handheld with subaudible tones, etc.

Go For It!

Modern units are computer controlled with dozens of features, put out more power than mobile rigs of a decade ago, and may include more than one band. These miniature FM stations can last longer than it takes you to learn how to use all their buttons and knobs!

The best strategy in selecting a rig is to talk to other hams. Ask to try out their radios, browse through used-equipment classified ads, and haunt local hamfests. Sooner or later you'll locate the perfect all-purpose handheld rig. Good luck, and good linking!

Send your QSL cards, questions and letters to me at *PopComm*, c/o "Ham Discoveries," 25 Newbridge Road, Hicksville, NY 11801. ■

Solving A Radio Riddle Saves Headaches Down The Road

Spring is always a good time to double check your mobile radio system. You know by experience the importance of a clean battery connection, so this is a logical starting point to check things out.

The positive battery post probably has just a little bit of white fuzz around it, so you know it's a good idea to undo the battery post connector and give it a good cleaning. But you don't want to chance dumping the 100 channels of your scanner by interrupting the constant 12-volt source to your radio equipment, so you temporarily piggyback one of those handy 12-amp, jump-starting batteries onto the business end of the positive lead.

Off comes the clamp, on goes the wire post-cleaning tool, and the clamp goes back with some grease to try to keep the corrosion off. You check the fluid levels, and they're right up to the top. This is a one-year-old battery, and the battery voltage check shows 13.1 volts DC resting with only the dome light on.

You inspect the battery negative lead and it's clean as a whistle. You once again check battery voltage, and again it reads above 13 volts DC.

But when you transmit on your mobile two-way radio, your scanner dims, your mobile radio dims, and power output is about half of what you would normally expect. You double-check your wiring and those gold-plated audio system connection blocks that join all of your accessory radio positive leads together with one big red lead going to battery positive. No voltage drop here!

Next you follow the battery negative leads on each radio as they join that other gold-plated audio system isolated connection block, and everything is tight and clean. You then trace that black heavy lead as it goes through the firewall and makes its way to the battery negative post. Every one is tight and clean.

The Green Ground Wires

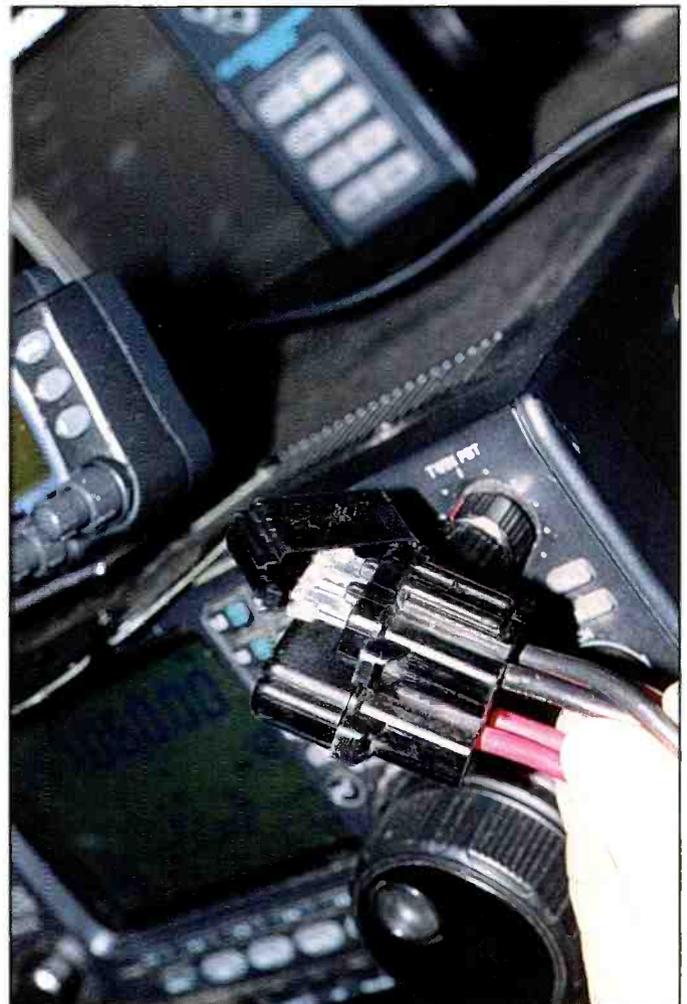
Next you check the green ground wires that hook up each radio chassis to the vehicle's single-point chassis connection. Everything looks clean, but nonetheless, you decide to undo the chassis ground connection point and make sure that each star washer is making a tight connection to the big self-tapping screw that firmly holds each chassis ground connection. As the screw comes out of the vehicle frame, you notice a small spark, and all radios go dead. Have you figured out the problem?

The Answer?

Your radio equipment is using the vehicle chassis as a return path for 12 volts DC minus to get to battery negative. Normally, battery negative is achieved by the hefty black wires to battery negative, right? Then something occurs to you: last winter the auto mechanic was fussing with your starter motor solenoid and cleaned up a loose connection it had to the engine block.



A two-way radio suffering from "brown-out" may have an open black lead fuse.



Surprise! The black fuse was blown.

Now can you figure out the problem? Current inadvertently was pulled through your hefty radio black leads that are also common with the vehicle chassis ground. The ground loop exceeded the amount of current your radio leads would deliver during engine starting, and popped the black negative fuse in your black radio wire connection at the battery negative post. *There's a fuse in the black line?* Sure enough, you spot protective fuses in BOTH red and black wires to the high-current voltage system you added for your radio equipment. You open up the black lead negative fuse holder and, sure enough, you can see the fuse is wide open. This probably occurred during the starter solenoid work down at the garage. Replace the black fuse and, presto, current now travels up and down the red and black wires as intended.

This same problem occurred with another radio operator who recently installed a major high-power audio system in his vehicle. The big amp in the back took DC negative from the chassis of the vehicle. Some current came up through the radio ground system and onto the radio's black wires to battery negative, popping the fuse. Same problem: the radio dims down on transmit and alternator noise was at an all-time high. Replacing the black fuse solved the problem, and the amplifier was rewired with an additional black lead directly to battery negative. And while some audio installers may claim this could create a ground loop for the audio system, it will generally spell less likelihood of popping other black-lead fuses in accessory equipment.

In A Motor Home

And in a motor home installation, starting the generator on a low "house" battery instantly took out all of the dash lights and instrumentation on three selected fused hot leads under the dash. This was because the house battery was not properly isolated, and this low battery couldn't deliver enough current to start the aft generator. Hence, current was pulled through the vehicle electrical system and selected positive fuses were blown to protect the wiring from overload.

When you pop a red fuse, you know it—whatever should work, DOESN'T at all. But when you blow a *negative* fuse found in two-way radio equipment, the grounded radio equipment will still operate, just not at full capacity.

When was the last time you checked out your radio system black fuses? ■

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RADIO EMERGENCY ASSOCIATED COMMUNICATIONS TEAMS



Searching Part II— Trunked Systems And Special Techniques

The new trunktracker radios from Uniden pose a new horizon for searching. It is difficult to even use these radios without at least a cursory run-through the search mode to find the ID numbers of the trunking system you're interested in monitoring. Identifying the dispatch and common use channels should be fairly easy, especially if you're at all familiar with the system that you're monitoring. However, finding some of the more obscure or seldom used talk groups may prove just as difficult, if not more troublesome than finding unknown frequencies.

On the surface, it appears that searching for talkgroups is fairly straightforward. You know where the frequencies are, and your trunktracker will follow the data channel with no problem. Spending just a few minutes with the radio is likely to turn up 20 or 30 talkgroups without any effort. And these are likely to be the dispatch groups you're after to begin with. But later, when you start hearing mention of "channels" that you didn't know existed, you may have some more homework to do.

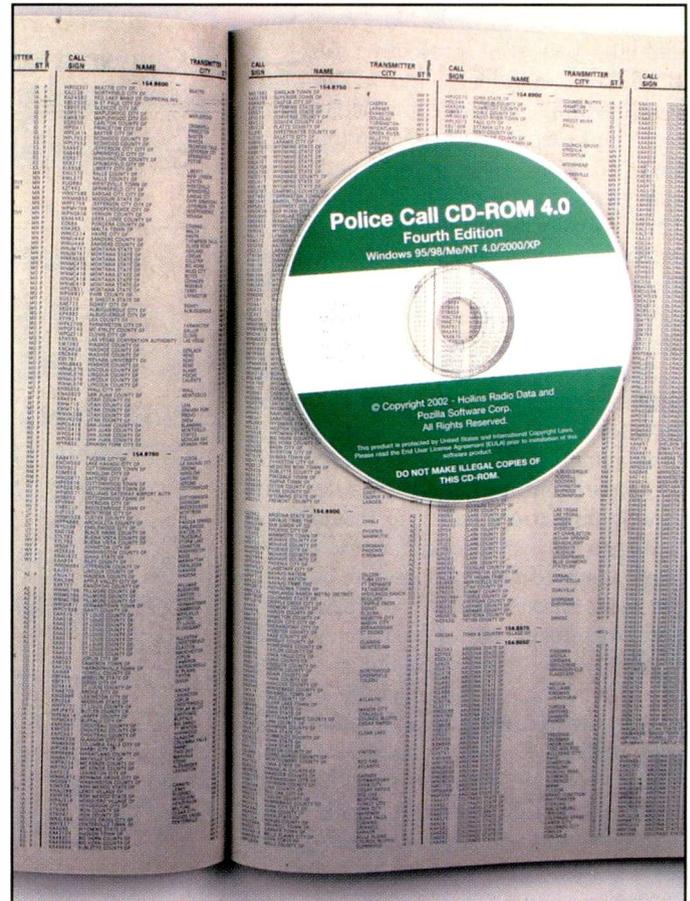
You have to remember that with a trunking system there aren't any hidden frequencies to identify (assuming the department you're listening to doesn't have additional capabilities outside the trunking system). Rather, once you're in the trunked mode, all the frequencies become meaningless, and it's the ID number of the talkgroup that matters. There can literally be hundreds of them in even a medium-sized system. Talkgroups are the new "channels" in the trunking world—frequencies are incidental once you've found which ones the system uses.

The most efficient way to search is just to let the radio do the walking. Put it in search mode and watch the screen. In almost no time, you'll have all the common use channels, and that may be enough for you. Great, have a good time. But if you're after the detectives, or other groups who have radios but don't talk much, you're in for quite a hunt. Also, sometimes identifying other users of the system can be quite a challenge.

You can find some channels quickly by just using the search function when you know there's going to be activity on a particular channel. For instance, if you hear the dispatcher tell someone to switch to Channel 2, you can begin searching until you hear the conversation that you expected to find on Channel 2. It won't work all the time, because sometimes those conversations are very short, and sometimes other traffic will interfere, but it is a helpful technique to identify just a few more talkgroups as you go forward.

Once you've exhausted this technique, the best method of searching for new "infrequent use" channels, and identifying the channels that are part of other systems, is to make good use of the *lockout* function. As you begin your search, you'll already know some of the channels and their uses. Lock those out as they appear. This way the radio won't be tied up with traffic from routine channels that you already know about while an interesting conversation takes place on a channel that you don't know.

One of the major problems with this method, however, is that it's not very easy to switch in and out of. The way the



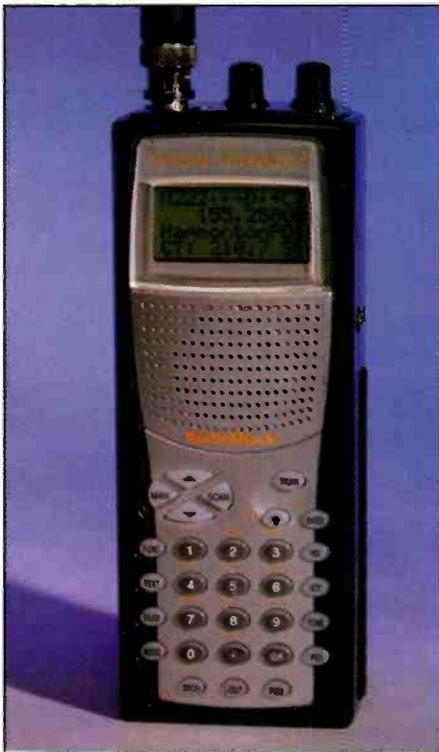
The frequency guide of either the printed version or the CD version of Police Call can make an excellent reference for channel ideas and for seeing what's supposed to be there. It gets interesting when something that isn't supposed to be there shows up!

trunktracker radios handle lockouts is to block a talkgroup universally. That is to say, once you lock out a particular talkgroup in the search mode, that talkgroup is also locked out in the scan mode when you get tired of searching. You have to unlock everything and start from scratch the next time you want to search again. All lockouts can be eliminated by pressing and holding the lockout key until it beeps twice, and then pressing enter.

Computer software can make all this easier, particularly if you can log the talkgroups received. Many of the currently available programs have this capability. Do some checking to see what's available for your radio.

What IS The Frequency, Kenneth?

I'd sure like to know where that phrase comes from. (A few years ago as I recall, CBS Network anchor Dan Rather was



Trunktracking scanners, like the new PRO-96 from RadioShack, require a different mindset in both scanning and searching operations.

reportedly approached maliciously in New York; the assailant reportedly said something like "What's the frequency, Kenneth?" Perhaps he thought Dan looked like Ken Reiss!—Ed.)

Another search problem for trunk-tracker users is finding and identifying channels that belong to an unknown system. New systems are being installed all the time, and the FCC records (and, therefore, the reference guides that are published) may not be of much help. It's worth a search of a particular licensee name or callsign if you can find that information based on the licensed user of the data channel, but even that's not always available immediately. You may have the data channel, because it's relatively easy to find with a conventional scanner, but have no idea where the associated frequencies are. Gone forever are the days of nice 1-MHz spacing on all the associated channels.

Here's where a wait-and-see attitude may finally have to prevail. Unless you can find license data from one of the reference guides, or have inside information from a user of the system, you're going to have a hard time finding the individual channels. It can be done by traditional searching methods, but it's

Frequency/Step Table

Part of the art of searching involves knowing where to look. If you can use the right channel plan, you can cut down the number of possible frequencies you have to plow through, thereby increasing your results. Below is a table of the allocatable frequencies and the correct search steps to use. There are a few exceptions to these rules, but by and large if your scanner has the capability to set the step rate, and you start off on the right frequency to begin with, you'll have much better luck using these search/step combinations.

As an example, most scanners default to 5-kHz steps in the VHF high band. And if you search in 5-kHz steps through the entire range, you'll hit every possible channel—and twice as many as are likely to be used. Your scanner will be doing three times the work it has to, and spending fully two thirds of its time on frequencies that are probably not in use. If you can set the step rate to the correct 15 kHz, you'll get results much faster. Here's the table.

Frequency Steps Between 25 MHz And 940 MHz

Lower (MHz)	Upper (MHz)	Step Mode (kHz)	Use/Notes
25.0200	25.3200	NFM (20.000)	Petroleum Industry
25.87	26.07	NFM (40.00)	Remote Broadcast
26.09	26.47	NFM (20.00)	
26.9650	27.4050	AM (10.000)	CB Radio
27.4300	27.5300	NFM (20.000)	
28.0000	29.7000	Any (None)	Amateur Radio 10M
29.7100	29.7900	NFM (20.000)	
29.900	29.55	Any (10.00)	Federal
30.580	31.980	NFM (20.000)	
32.0100	32.9900	Any (10.00)	Federal
33.0200	33.980	NFM (20.000)	
34.0100	34.9900	Any (10.000)	Federal
35.0200	35.980	NFM (20.000)	
36.0000	36.9900	Any (10.000)	Federal
37.0200	37.98	NFM (20.000)	
40.00	41.99	Any (10.00)	Federal
42.02	46.600	NFM (20.00)	
46.6100	46.9700	NFM (20.00)	Part 15 Services (Cordless Phones, etc.), Misc.
47.0200	49.580	NFM (20.000)	Part 15 Services, Misc. Business
49.6700	49.9900	NFM (20.00)	Part 15, Misc. Federal on other steps
50.0000	54.0000	varies (varies)	Amateur Radio 6M
54.0000	72.0000	WFM (6000.00)	Television Broadcast
59.750		WFM	Channel 2 Audio
65.750		WFM	Channel 3 Audio
71.750		WFM	Channel 4 Audio
72.0000	76.0000	NFM (20.000)	Operational Fixed
76.0000	88.0000	WFM (6000.00)	Television Broadcast
81.750		WFM	Channel 5 Audio
87.750		WFM	Channel 6 Audio
88.1000	107.9000	WFM (200.00)	FM Broadcast
108.0000	137.000	AM (25.00)	Aircraft
138.0000	144.0000	NFM (Varies)	Federal (5-kHz Steps to search)
144.0000	148.0000	Varies (Varies)	Amateur Radio 2M
148.0000	150.7000	NFM (Varies)	Federal (5-kHz Steps to search)
150.775	150.790	NFM (15.00)	
150.8150	151.610	NFM (15.00)	
151.6250	151.9550	NFM (30.000)	Business Radio Service, Itinerants
151.9850		NFM	Telephone Maintenance Radio Service
152.0075		NFM	Special Emergency Radio Service paging
152.0300	152.840	NFM (30.000)	Older Mobile Phone system, paging
152.8700	154.490	NFM (15.000)	
154.515	154.625	NFM (Varies)	5 kHz (Mostly Business services)

Popular Communications April 2004 Survey Questions

I'm a shortwave radio listener/DXer and regularly use World Band Tuning Tips on pages 40 & 41.

Yes1

No2

Sometimes3

I would, but it's hard to understand4

I just search the band for stations5

My primary shortwave activity is:

International broadcasts for news value6

Military comms in sideband7

Military digital comms8

DXing broadcast stations9

DXing aircraft10

Monitoring amateur comms11

Monitoring pirate and clandestine stations12

I rarely use shortwave13

I listen to AM broadcast band stations

Yes14

No15

Sometimes16

I used to, but not any more because there's little variety17

I used to, but not any more because there's a high level of noise at my home monitoring shack18

I mainly DX broadcast stations in the winter when the band is quieter...19

I listen to stations on the Internet because it's easier20

I find the broadcast loggings in Broadcast Technology useful

Yes21

No22

Sometimes23

Lower (MHz)	Upper (MHz)	Step Mode (kHz)	Use/Notes
154.650	156.255	NFM (15.00)	Public Safety, Local government
156.2750	157.450	NFM (25.000)	VHF Maritime
157.4700	157.740	NFM (15.000)	
157.7700	158.100	NFM (30.000)	Older Mobile Phone system, paging
158.1300	158.460	NFM (15.000)	Power/Petroleum/Forest Products
158.4900	158.700	NFM (30.000)	Older Mobile Phone system, paging
158.7300	160.200	NFM (15.00)	Public Safety, Business (Trucking)
160.215	161.565	NFM (15.000)	Railroad AAR Channels
161.600		NFM	
161.6400	161.7600	NFM (30.000)	Broadcast Remotes
161.800	162.000	NFM (25.000)	Marine Telephone
162.0125	173.200	Any (12.500)	Federal
173.2250	173.3750	NFM (25.000)	Press, Business
173.3875	173.9875	Any (12.500)	Federal
174.0000	216.0000	WFM (6000.00)	Television Broadcast Chs 7-13
179.750		WFM	Channel 7 Audio
185.750		WFM	Channel 8 Audio
191.750		WFM	Channel 9 Audio
197.750		WFM	Channel 10 Audio
203.750		WFM	Channel 11 Audio
209.750		WFM	Channel 12 Audio
215.750		WFM	Channel 13 Audio
222.0000	225.0000	varies (varies)	Amateur Radio (1.25 meters)
225.0000	400.0000	AM (100.000)	Military (Some new channels appearing in between. Other modes can appear)
400.0000	406.0000	(None)	Space
406.125	420.0000	NFM (12.50)	Federal
420.0000	450.0000	ANY (None)	Amateur Radio 70CM
450.0500	450.925	NFM (12.50)	Broadcast Auxiliary
451.025	457.475	NFM (12.500)	Business, Industrial
457.525	467.525	NFM (12.500)	Public Safety, Business, Misc
467.5500	467.925	NFM (12.500)	GMRS, FRS, Business
467.9500	469.975	NFM (12.500)	
470.0000	512.0000	WFM (6000.00)	Television Broadcast chs 14-20 (This band can be assigned for public safety use in some areas)
475.7500		WFM	Channel 14 Audio
481.750		WFM	Channel 15 Audio
487.750		WFM	Channel 16 Audio
493.750		WFM	Channel 17 Audio
499.750		WFM	Channel 18 Audio
505.750		WFM	Channel 19 Audio
511.750		WFM	Channel 20 Audio
512.0000	806.0000	WFM (6000.00)	Television Broadcast Chs 21-69
517.750		WFM	Channel 21 Audio
523.750		WFM	Channel 22 Audio
529.750		WFM	Channel 23 Audio
535.750		WFM	Channel 24 Audio
541.750		WFM	Channel 25 Audio
547.750		WFM	Channel 26 Audio
553.750		WFM	Channel 27 Audio
559.750		WFM	Channel 28 Audio
565.750		WFM	Channel 29 Audio
571.750		WFM	Channel 30 Audio
577.750		WFM	Channel 31 Audio
583.750		WFM	Channel 32 Audio
589.750		WFM	Channel 33 Audio
595.750		WFM	Channel 34 Audio
601.750		WFM	Channel 35 Audio
607.750		WFM	Channel 36 Audio
613.750		WFM	Channel 37 Audio
619.750		WFM	Channel 38 Audio
625.750		WFM	Channel 39 Audio
631.750		WFM	Channel 40 Audio
637.750		WFM	Channel 41 Audio

Lower (MHz)	Upper (MHz)	Step Mode (kHz)	Use/Notes
643.750		WFM	Channel 42 Audio
649.750		WFM	Channel 43 Audio
655.750		WFM	Channel 44 Audio
661.750		WFM	Channel 45 Audio
667.750		WFM	Channel 46 Audio
673.750		WFM	Channel 47 Audio
679.750		WFM	Channel 48 Audio
685.750		WFM	Channel 49 Audio
691.750		WFM	Channel 50 Audio
697.750		WFM	Channel 51 Audio
703.750		WFM	Channel 52 Audio
709.750		WFM	Channel 53 Audio
715.750		WFM	Channel 54 Audio
721.750		WFM	Channel 55 Audio
727.750		WFM	Channel 56 Audio
733.750		WFM	Channel 57 Audio
739.750		WFM	Channel 58 Audio
745.750		WFM	Channel 59 Audio
751.750		WFM	Channel 60 Audio
757.750		WFM	Channel 61 Audio
763.750		WFM	Channel 62 Audio
769.750		WFM	Channel 63 Audio
775.750		WFM	Channel 64 Audio
781.750		WFM	Channel 65 Audio
787.750		WFM	Channel 66 Audio
793.750		WFM	Channel 67 Audio
799.750		WFM	Channel 68 Audio
805.750		WFM	Channel 69 Audio
806.0125	823.9875	NFM (12.500)	Mobiles
824.0400	834.9900	NFM (30.000)	Cellular - Non-wireline Mobile
835.0200	848.9700	NFM (30.000)	Cellular - Wireline Mobile
849.0550	850.9735	AM (6.000)	Mobile Telephone - Aircraft ground Base
851.0125	868.9875	NFM (12.500)	Cellular - Non-wireline Base
869.0400	879.9900	NFM (30.000)	Cellular - Wireline Base
880.0200	893.9700	NFM (30.000)	Cellular - Wireline Base
894.0055	895.9735	AM (6.000)	Mobile Telephone - Aircraft airborne
895.0125	901.9875	NFM (12.500)	Mobiles
902.0000	928.0000	All (None)	Amateur Radio 33CM
928.0000	929.0000		Private Fixed Service
929.0125	931.9875	NFM (25.000)	Paging
932.0000	935.0000		Fixed
935.0125	939.9875	NFM (12.500)	Base

truly a monumental trial and error task. Good luck.

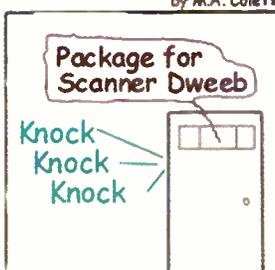
Frequency Of The Month

Our frequency this month will be **153.860**. Give that one a listen, (unless you recognize it right away) and let me

know what you hear. Even if you don't hear anything, let me know that too!

Send your entry to radioken@earthlink.net or via more traditional means to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126. Please put the frequency in the subject line or on the envelope for correct entry!

The Adventures of Scanner Dweeb
by M.A. Coletta



Package for Scanner Dweeb

My new antenna hat is here.... This one is designed for that specialty band in mind...

Let's go try it out...

Into the wild blue



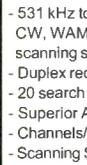
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April 2004 / POP COMM / 35

Tomorrow Is Here Today, And Satellite Radio Update

National Public Radio (NPR) reports a successful test of multicasting via FM IBOC digital, or HD "high-definition" radio. Per a joint press release it was reported, "NPR, Kenwood USA and Harris Corporation, Broadcast Communications Division revealed the complete, positive results of the 2003 Tomorrow Radio Project field test on supplemental audio channel (SAC) broadcasting to the National Radio Systems Committee. Tomorrow Radio's 2003 field tests prove that multiple program channels are fully attainable using iBiquity's HD Radio FM digital system."

Tomorrow Radio is a multi-year research project, funded in part by a \$500,000 grant from the Corporation for Public Broadcasting, that will explore, test, and demonstrate technologies and services compatible with IBOC digital. Tomorrow Radio engineers tested SAC coverage on NPR stations KALW-FM in San Francisco, KKJZ-FM in Long Beach, California, WETA-FM in Washington, D.C., and WNYC-FM New York. The results showed that millions of radio listeners in each city would be within range of new SAC signals. Tests were conducted with a "production-class" Kenwood KTC-HR 100 receiver, introduced to the public this year as the first AM/FM/HD IBOC digital receiver.

Satellite Radio Update

Competition is becoming fierce between the two satellite radio services as the number of subscribers grows. XM satellite radio is making moves to secure its place ahead of Sirius by offering local broadcasts in major markets, over objections by the National Association of Broadcasters (NAB). XM plans to provide local channels via terrestrial boosters for continuous traffic and weather reports. The NAB claims this is in violation of an agreement with the FCC that satellite radio services would not compete directly with local radio. In addition, XM music channels have gone commercial-free in response to the growing popularity of Sirius commercial-free offerings.

Sirius returned fire by announcing plans to provide 24-hour traffic channels and 5.1 surround sound. Both Sirius and XM are making moves out of the car and into the home. Look for the Tivoli Audio Model Three AM/FM/Sirius clock radio by Henry Kloss, and the eton/Grundig AM/FM/SW/XM portable developed by communications receiver manufacturer R.L. Drake in catalogs and on store shelves soon. XM at over 1.3 million subscribers is well ahead of Sirius at just over 300,000.

Rare DX Test

Radio station engineer Craig Healy has announced via AM-DX.com,

We are trying a new sort of DX test. Rather than the longish one-shot test historically run, we've arranged for **1220 WRIB Providence, Rhode Island** (tough state to hear!) to raise power to 1 kW non-directional every night at 2:55 to 3:05 a.m. Eastern time. This will run

The new Tivoli Model Three satellite radio features a digital display in place of the analog clock on the original.



through at least March and will have a recorded ID at 3 a.m. Hopefully a special ID with Morse code will be added. There ought to be good propagation for a fair number of these nights, and it's late enough for the west coast folks to have a shot. Fire up those recorders and let us know if you hear them!

The WRIB antenna is located on an island at the mouth of the Providence River where it spills into Narragansett Bay, a great salt water path for DXers to the south. Visit AM-DX.com for more info, and good luck! Don't forget to check www.ircaonline.org for a complete list of DX tests, updated regularly by Lynn Hollerman for the International Radio Club of America.

QSL Information

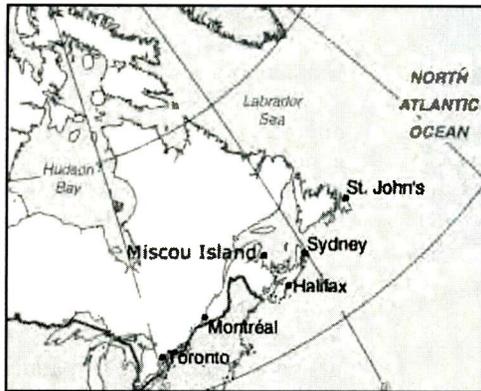
550 KFYI Tempe, Arizona, friendly partial-data letter in 18 days, mentions that at the time I heard them they were receiving "heavy interference from a Mexican pirate" that has since moved to 560 kHz. Signed John P. Baker, Dir. of Eng. Address: 600 E. Gilbert Dr., Tempe AZ 85281. (Griffith, CO)

570 WNAX Yankton, South Dakota, very nice full-data QSL card and business card in 6 days for report and \$1, signed David Onsted, GM. Address: 1609 East Hwy 50, Yankton SD 57078. (Griffith, CO)

630 CNR sychros, China, received full detail card (except location), unsigned, in 82 days for taped report. Beautiful stamps on envelope. Address: China Radio International, PO Box 4501, Dept Audience, Beijing, China. MW China QSL #34. (Martin, OR)

711 2XP Wellington, New Zealand, a fantastic package of goodies in 30 days; QSL letter, bumper sticker, and a beautiful long sleeve Radio Pacific shirt, from Richie Fullard, Network Promotions Manager. They also called to interview me on the air. This is really great. Cost almost \$18 NZ to air mail the package to me. Address: Radio Pacific, Private Bag, Ponsonby, Auckland, New Zealand. (Martin, OR)

720 WGN Chicago, Illinois, partial-data oversized QSL card and WGN Cubs stickers in 15 days for report of test and silent period, signed James Carollo, Dir. of Eng. Address: 435 N. Michigan Ave., Chicago IL 60611. (Griffith, CO)



Miscou Island, New Brunswick.

1010 WMOX Meridian, Mississippi, a nice QSL form letter and business card in 23 days for taped report of DX test, signed Bill Smith-Station Mgr. Address: PO Box 5184, Meridian MS 39302. Only my 4th Mississippi station logged in 40 years of DXing. Not an easy state. I am very pleased with this! (Martin, OR)

1650 KBIV El Paso, Texas, a very friendly letter and QSL form with a photo of the KBIV transmitter site in 7 days for a report and self-addressed stamped envelope, signed James Lotspeich-CE. Mentioned they are operating with 8.5 kW days, 850 watts nights, co-located with 1150 kHz. The tower used is 70.1 meters in height. Address: 5426 N. Mesa St., El Paso TX 79912. (Martin, OR)

Broadcast Loggings

Brian Smith W9IND has been busy at the bottom of the AM dial and suggests, "For people in the northern U.S. who are trying to log Florida, check 540 during auroral conditions. As you'll notice in this month's report, WFLF seems to magically appear on my radio every time the Northern Lights are buzzing."

Welcome to Neil Wolfish, DXpeditioning from Miscou Island, New Brunswick. A well-known amateur radio DXpedition site, this remote location has been in use by mediumwave DXers for a couple of years now, and it may take the place of Newfoundland as a favorite destination. (The famed "DX Inn" of Cappahayden, Newfoundland, was torn down after weathering one too many North Atlantic storms, and a comparable site in Marconi-land is yet to be discovered.) Neil writes,

The "locals" in Miscou are on 540 and 610 kHz, both across the Bay Chaleur in New Carlisle, Quebec, and 810 in Caraquet, New Brunswick. A bit farther away are 950 kHz in Cambellton and 1360 kHz in Bathurst, New Brunswick. The only local that hampered transatlantic reception was 810 CJVA, which ruined 792, 801, 819, and 828 kHz. And there are two fewer "regulars" than last year as both 790 CFAN in Newcastle-Miramichi and the St. Pierre et Miquelon station on 1375 have moved to FM. I note from going back to look at my notes that I never bothered to stop long enough on a few frequencies like 621, 648, and 657 kHz, all of which I assume were probably Spain.

This month's selected logs include many from the Miscou Island DXpedition, received with an AOR AR7030 Plus and two Beverage wire antennas. All times are UTC.

540 CBEF Windsor, Ontario, fairly good at 2200 with French programming, finally offering enough information for a positive ID. Though I still don't speak French, the word

"Windsor" in the top-of-the-hour ID was unmistakable, allowing me to confirm the previously suspected identity of this once-mysterious CBC station. (Smith, IN)

540 CBK Watrous, Saskatchewan, good at 1234 over insignificant unidentified interference. Like the swallows in Capistrano, the booming late-year appearance of CBK seems to be an annual one-day tradition at my location. News, weather for various nearby cities, and a program called "The Morning Edition." Station tends to ID as "CBC Saskatchewan." (Smith, IN)

540 WFLF Pine Hills, Florida, fair at 2334 with traffic and the "Dr. Laura" program. Only my second-ever reception of this station, which constantly IDs as WFLA and seems to appear only during auroral conditions. So far, it's been a reliable Northern Lights monitor. (Smith, IN)

540 WGTH Richlands, Virginia, poor to fair at 0020 with country gospel music and a station ID by a male announcer who also mentioned 105.5 WGTH-FM. The WGTH website says the stations go by the nickname of "The Sheep." (Smith, IN)

580 WGAC Augusta, Georgia, at 1113, fairly good amid an aurora. Weather, news, and an ID of "News Talk 580." (Smith, IN)

594 R. Renascenca, Muge, Portugal, heard at 2256 a station promo by man with Web address given, fading above Morocco now. At 0121 good with Nelly Furtado's "Like A Bird." (Wolfish, NB)

610 WAGG Birmingham, Alabama, fair at 0700 with gospel music. Slight interference from a "Sporting News Radio" affiliate. (Smith, IN)

620 WRJZ Knoxville, Tennessee, at 0130, good with Christian news, plus ID as "Joy 62." (Smith, IN)

640 KTIB Thibodaux, Louisiana, fairly good at 1122 during auroral conditions. Mention of the station's nickname, "Oldies 640," along with appropriate songs such as "Splish Splash," "Runaround Sue," and "The Book of Love." Some interference courtesy of Cuba. (Smith, IN)

660 KTNN Window Rock, Arizona, at 0355 a huge S+25 signal with Navajo chants. At 0359, "Now CNN news on KTNN, AM 660, Window Rock," followed by a sharp decrease in signal strength to S+10 and 5 minutes of dead air as CNN did not come up. At 2304 Navajo chants resumed at lower signal strength. (Griffith, CO)

666 SWR Rohrdorf, Germany, at 0050 German announcer playing Aretha Franklin/George Michael and Commodores tunes, ID at 0100, over/under Spain, later at 0134 with Sheryl Crow's cover of "The First Cut Is the Deepest" and The Cardigan's "Love Fool." Noted a couple of nights later at 0112 parallel to 7265 kHz. (Wolfish, NB)

680 WAPA San Juan, Puerto Rico, at 0155 in Spanish with news, sport, and music. (Medina, FL)

710 WOR New York, New York, at 1023 news and weather with report on New York/New Jersey school closings due to snow storm. (Medina, FL)

909 BBC Radio 5 synthros, United Kingdom, at 0032 the announcer mentioned solar and geomagnetic activity; fair through WABI slop. (Connelly, MA)

945 France Info, Toulouse, France, at 0116 fair with woman announcer playing the Travis single "Re-Offender." Parallel to 603 and 1557 kHz. (Wolfish, NB)

1020 R. Reloj, Cuba, at 2314 RR code IDs through unidentified Spanish (likely Mundial Venezuela) and KDKA, no sign of bubble jammer, later becoming stronger with the syncopat-

ed clock over unidentified French (Florida?) and KDKA. New, unlisted. (Conti, NH)

1050 XEQOO R. Pirata, Cancun, Mexico, at 0111 heard with local news and weather, then Spanish music. (Medina, FL)

1107 RNE Radio 5 synchronos, Spain, at 0018 parallel 1098 kHz with a woman in Spanish, echoey audio; over a second station with Arabic-style music (Egypt?). (Connelly, MA)

1188 Radio Free Europe, Marcali, Hungary, heard at 2202 dominating with a Serbian newscast and then a woman talking about democracy. Getting hammered by annoying splatter from 1190 WLIB. Not present at 2253 recheck. (Wolfish, NB)

1190 WSDQ Dunlap, Tennessee, at 0110 classic country hits, strong signal that faded into the slop by 0120. "The New Q, WSDQ Dunlap, Tennessee." (New, GA)

1215 Virgin Radio synchronos, England, at 0128 over Spain for a while with Badly Drawn Boy's "Something to Talk About," The Coral's "Pass It On," and The Verve's "Bittersweet Symphony." Also heard a station promo with David Bowie saying, "You're listening to Virgin



The AM/FM/SW/XM portable from the eton/Grundig/Drake group.

Radio." No luck finding parallels on 1197, 1233, or 1242 kHz. (Wolfish, NB)

1290 WKLJ Sparta, Wisconsin, at 0300, poking its head out of the bog with fair but short-lived intelligibility. Male announcer IDing with "Right here on Talk Radio 1290, WKLJ." (Smith, IN)

1296 COPE Valencia, Spain, at 2158 strong with "Radio Diario de Valencia" program. Earlier at 2038 it sounded like there were two Spanish stations on 1296, but only one is listed. (Wolfish, NB)

1314 NRK Kvitsoy, Norway, at 0530 pop music, Norwegian talk, and the next night at 2052 heard with an old-style folk/country vocal (a blend of the styles of Hank Snow and early Gordon Lightfoot); good. (Connelly, MA)

1332 RAI Radio Uno synchronos, Italy, at 2101 with a woman reading news in Italian; fair to good and parallel to 1575 kHz. At 0048 noted parallel to 6060 kHz (Caltanissetta, Sicily) with Italian jazz music. (Wolfish, NB)

1370 WDEF Chattanooga, Tennessee, fairly good (briefly) with a Nashville Predators hockey broadcast and Nashville-oriented commercials at 0235. No ID during that time, but the Predators website lists only this affiliate on 1370. (Smith, IN)

1422 Radio Culture, Algiers, Algeria, at 2019 strong with a woman singing what almost sounded like opera music. Noted later at 2023 with more typical sounding Middle Eastern-style music. (Wolfish, NB)

1422 Deutschlandfunk, Heusweiler, Germany, heard at 2139 weak with a woman speaking in German, parallel to 153 kHz, heard later with opera music. (Wolfish, NB)

1430 WGFS Covington, Georgia, at 1843 oldies music, "Your official good times oldies station, Hometown Radio 1430 Covington." (New, GA)

1476 ORF Wien-Bisamberg, Austria, at 2128 strong with German

announcer playing what sounded like "beer garden" music and also some somber horn music. (Wolfish, NB)

1503 IRIB Bushehr, Iran, at 2124 parallel to 15084 kHz with a female announcer and Middle Eastern music. Mixing with a second station in Arabic (Egypt?). (Wolfish, NB)

1521 BSKSA Dubai, Saudi Arabia, at 2021 parallel 9555 and 9870 shortwave with Arabic telephone interview; fair to good. (Connelly, MA) At 2115 a fair signal with man in Arabic, parallel to both 9555 and 9870 at this time. (Wolfish, NB)

1575 RAI Radio Uno synchronos, Italy, heard at 2121 on top of Spain with a telephone interview parallel to 1332 kHz. (Wolfish, NB)

1602 SER synchronos, Spain, at 2127 parallel to 1044 and 1575 kHz with a soccer match. A second Spanish station with talk by a man could be heard underneath, I assume this was Euskadi Radio. (Wolfish, NB)

1670 WMWR GA Warner Robins, Georgia, at 1830 the "Dr. Laura Show" with a good signal. "This is the news on Talkradio 1670 WMWR." (New, GA)

Thanks to contributors Mark Connelly, WA1ION, Patrick Griffith, N0NNK, Patrick Martin, Alberto Medina, KG4RWO, Ira Elbert New, Brian Smith, W9IND, and Niel Wolfish.

Final Thought—NAB Is Upset

Why is the NAB upset over satellite radio providing local traffic and weather channels? The popular nationally syndicated talk radio programs carried on so-called local radio stations have long been available via satellite radio. So, why should a local radio station have exclusive rights to local traffic and weather reports inserted during breaks in national network programming?

Thinking ahead, relaying local radio stations via satellite radio terrestrial repeaters just might be the perfect alternative for the many small community broadcasters that are about to be buried in digital interference by IBOC digital. Even better, once-powerful clear-channel AM radio stations like 1030 WBZ Boston could reclaim interference-free coverage across 38 states and Canada with a satellite channel. Legacy analog radio has long been behind the times and is now trying to catch up with the digital revolution. Either tomorrow is here today, or it's here today, gone tomorrow.

For now, 73 and Good DX!

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Listen to maritime users, diplomats and amateurs send and receive *error-free* messages using various forms of TOR (Telex-Over-Radio).

Monitor Morse code from hams, military, commercial, aeronautical, diplomatic, maritime

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"World Radio TV Handbook" says MFJ-1024 is a "first-rate easy-to-operate active antenna... quiet... excellent dynamic range... good gain... low noise... broad frequency coverage."

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Receives strong, clear signals from all over the world. 20 dB attenuator, gain control, ON LED.

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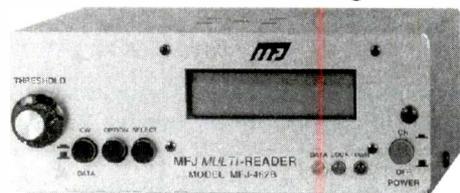
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MFJ-959B \$99⁹⁵

Matches your antenna to your receiver so you get maximum signal and minimum loss.

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High-Gain Preselector



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High-gain, high-Q receiver preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Push buttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, \$14.95.

CW, RTTY, ASCII Interface



MFJ-1214PC \$149⁹⁵

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Includes interface, easy-to-use menu driven software, cables, power supply, manual and JumpStart™ guide. Requires 286 or better computer with VGA monitor.

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MFJ-1046 \$99⁹⁵

New! Improves any receiver! Suppresses strong out-of-band signals that cause intermod, blocking, cross modulation and phantom signals. Unique Hi-Q series tuned circuit adds super sharp front-end selectivity with excellent stopband attenuation and very low passband attenuation and very low passband loss. Air variable capacitor with vernier. 1.6-33 MHz.

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world band

tuning tips *your monthly international radio map*

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

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

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	9410	BBC, via Cyprus		0330	7160	Radio Tirana, Albania	
0000	9620	Radio Exterior de Espana, Spain	SS	0400	4910	Radio Zambia	Swahili
0000	9810	Adventist World Radio, via UAE		0400	4845	Radio Mauritanie, Mauritania	AA
0000	9575	Radio Medi Un, Morocco	FF	0430	5980	RTV Marocaine, Morocco	AA
0000	6145	Radio Japan/NHK, via Canada		0430	5865	Voice of Greece	Greek
0000	9425	All India Radio, Bangalore	Hindi	0430	4960	Radio Cima Cien, Dominican Republic	SS
0000	9580	Radio Budapest, Hungary	Hungarian	0500	7275	RTV Tunisienne, Tunisia	AA
0000	11725	Radio Cairo, Egypt		0500	11710	Channel Africa, South Africa	
0000	13750	University Network		0500	7507	AFN/AFRTS, Puerto Rico	USB
0030	15395	Radio Thailand		0500	7255	Voice of Nigeria	
0030	5678	Radio Ilucan, Peru	SS	0500	4770	Radio Kaduna, Nigeria	
0100	6175	Voice of Vietnam, via Canada		0500	11915	Radio Japan/NHK, via Gabon	SS
0100	9715	Radio Tashkent, Uzbekistan	Uzbek	0500	17780	KWHR, Hawaii	
0100	7230	Radio Slovakia Int.		0500	9625	CBC Northern Service, Canada	
0100	17675	Radio New Zealand Int.		0500	11835	Voice of America relay, Botswana	
0100	11735	Voice of Korea, North Korea		0500	4950	Radio Nacional, Angola	PP
0100	11800	RAI Int., Italy		0600	6185	Radio Educacion, Mexico	SS
0100	4052.5	Radio Verdad, Guatemala	SS	0600	4835	RTV Malienne, Mali	FF
0100	7345	Radio Prague, Czech Republic		0600	4760	ELWA, Liberia	
0130	13780	Deutsche Welle, via Rwanda	GG	0800	3291	Voice of Guyana	EE/Hindi
0130	5905	Radio Ukraine Int.		0900	6010	Radio Mil, Mexico	SS
0130	9770	Sri Lanka Broadcasting Corp.		0930	13620	Voice of America relay, Northern Marianas	
0130	6020	Voice of Justice/VOIRI, Iran		0930	4902	Radio San Miguel, Bolivia	SS
0130	11715	All India Radio	Hindi	0930	5990	Radio Senado, Brazil	PP
0130	13362	AFN/AFRTS, Guam	USB	1000	4925	Radio Educacao Rural, Brazil	PP
0130	11825	CPBS, China	CC	1000	4940	Radio Amazonas, Venezuela	SS
0200	9680	Radio Taiwan Int.		1000	9520	Radio Veritas Asia, Philippines	CC
0200	9495	Radio Sweden, via Canada	SS	1000	3279	La Voz del Napo, Ecuador	SS
0200	9560	Radio Korea Int., S. Korea, via Canada		1000	6045	Evangelium Radio Hamburg, via Germany	GG
0200	4387	Radio Imperio, Peru	SS	1000	4815	Radio El Buen Pastor, Ecuador	SS
0200	6020	Radio Victoria, Peru	SS	1000	6135	Radio Santa Cruz, Bolivia	SS
0200	3340	HRMI/Radio Misiones Internacionales, Honduras	SS	1000	4885	Radio Clube do Para, Brazil	PP
0200	4780	Radio Coatan, Guatemala	SS	1030	6195	BBC, via Antigua	
0200	7130	Int. Radio of Serbia and Montenegro		1030	7285	Radio Thailand	Thai
0230	9605	Vatican Radio		1030	4975	Radio del Pacifico, Peru	SS
0230	4915	Radio Cora, Peru	SS	1030	4845	Radio K'ekchi, Guatemala	SS
0230	9400	Radio Bulgaria		1030	4780	Radio Buenas Nuevas, Guatemala	SS
0230	5045	Radio Guaruja Paulista, Brazil	PP	1030	9600	Radio Rebelde, Cuba	SS
0300	7180	Voice of Russia, via Moldova		1030	9635	La Voz Cristiana, Chile	SS
0300	3250	Radio Luz y Vida, Honduras	SS	1045	5010	Radio Cristal, Dominican Republic	SS
0300	7285	Croatian Radio		1100	9740	BBC Relay, Singapore	
0330	7225	Trans World Radio, Swaziland	Swahili	1100	4832	Radio Litoral, Honduras	SS
0330	6940	Radio Fana, Ethiopia	Amharic				

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
1100	5767	AFN/AFRTS, Guam	USB	1900	15315	Radio Jamahiriya, Libya, via France	AA
1100	4960	Radio Federacion Sucua, Ecuador	SS	1900	9780	Republic of Yemen Radio	AA
1100	4919	Radio Quito, Ecuador	SS	1900	12005	RTV Tunisienne, Tunisia	AA
1100	6140	Radio Melodia, Colombia	SS	1900	17850	Radio Exterior de Espana, Spain, via Costa Rica	SS
1100	9810	CPBS, China	CC				
1130	6130	Lao National Radio	Lao	1900	15175	Adventist World Radio, via Austria	AA
1130	4890	NBC, Papua New Guinea	EE/Pidgin	1930	17660	Swiss Radio Int., via French Guiana	
1130	6010	La Voz de tu Conciencia, Colombia	SS	1930	7205	Radio Ecclesia, Angola, via South Africa	PP
1130	9440	China Radio Int.	unid				
1200	15390	HCJB, Australia		1930	17810	Radio Netherlands Relay, Bonaire, NWI	
1200	9650	Radio Korea Int., S. Korea		1930	11605	Kol Israel	HH
1200	6045	Radio Universidad, Mexico	SS	1930	15545	Radio Ndke Luka, Cent. Af. Rep., via England	FF
1200	9405	Far East Broadcasting Co., Philippines	CC				
1200	4870	Radio Republik Indonesia, Wamena	II	1930	13790	Deutsche Welle, Germany, via Portugal	GG
1200	15235	All India Radio, Panaji (Goa), India	Hindi	2000	11955	Radio France Int., via Gabon	FF
1200	5040	Radio Myanmar, Myanmar (Burma)	Burmese	2000	11635	Radio Jamahiriya, Libya, via France	AA
1230	11530	Denge Mesopotamia (clandestine) via Moldova	unid	2000	15150	Voice of Indonesia	
1230	4790	Radio Republik Indonesia, Fak Fak	II	2000	9580	Africa Number One, Gabon	FF
1300	12065	Radio Netherlands, via Uzbekistan	unid	2000	9600	Radio Free Europe, vi Morocco	unid
1300	15385	Adventist World Radio, via UAE		2030	11890	Deutsche Welle, via Sri Lanka	AA/GG
1300	11500	Voice of Russia, via Tajikistan	Hindi	2030	11975	Voice of America relay, Sao tome	
1300	11785	Voice of America relay, Thailand	CC	2030	17680	RDP Int., Portugal	PP
1300	11710	Voice of Korea, North Korea		2030	9515	RAI Int., Italy	
1300	7270	Radio Malaysia		2030	11760	Radio Havana Cuba	
1300	15160	Voice of America relay, Philippines		2100	12133	AFN/AFRTS, Key West, FL	USB
1300	9500	Far East Broadcasting Co., Philippines	CC	2100	17800	Voice of Nigeria	
1300	11680	Korean Central Broadcasting Station, N. Korea	KK	2100	9745	Radio Sawa, USA, via Greece	AA
1300	9930	KWHR, Hawaii		2100	9880	Radio Kuwait	AA
1300	11990	Voice of America, via Russia	CC	2100	17630	Radio France Int.	SS
1300	11695	Trans World Radio/KTWR, Guam	CC	2100	12025	Radio Ibrahim via Germany	AA
1300	11650	Radio Australia		2100	11680	BBC, England	
1330	9665	Radio Singapore Int.		2130	7380	Voice of Biafra (clandestine) via South Africa	
1330	13630	UAE Radio, Dubai		2130	7210	Radio Minsk, Belarus	
1330	12010	Radio Australia, via Singapore	CC	2200	9605	BBC Relay, Seychelles	
1400	9900	Voice of Russia	Pashto/Dari	2200	7235	Voice of Islamic Rep. of Iran	AA
1430	18960	Radio Sweden		2200	6025	Radio Budapest, Hungary	
1430	15330	Radio Marti, USA	SS	2200	11730	Radio Vlaanderen Int., Belgium, via Bonaire	
1500	17630	Sudan Radio Service, via England		2200	21740	Radio Australia	
1500	17770	Channel Africa, South Africa		2200	7460	R. Nat. de la RASD, Sp. Sahara, via Algeria	AA
1500	21600	Broadcasting Service of Kingdom of Saudi Arabia	AA	2230	11976	China Radio Int., via Mali	CC
1530	17630	Africa Number One, Gabon	FF	2230	11655	Radio Japan/NHK	JJ
1600	13675	UAE Radio, Dubai		2230	12050	Egyptian Radio	AA
1600	11570	Radio Pakistan		2230	7210	Cyprus Broadcasting Corp.	Greek
1600	11690	Radio Jordan		2230	6165	Croatian Radio	Croatian
1600	9561	Radio Ethiopia		2230	11765	Radio Tupi/Universo, Brazil	PP
1600	17705	Voice of Greece, via Delano, CA	Greek	2300	4830	Radio Tachira, Venezuela	SS
1600	13635	Voice International, Australia		2300	6957	Voz del Campesino, Peru	SS
1630	12115	Voice of America relay, Sri Lanka	unid	2300	11655	RDP Int., Portugal	PP
1630	17545	Kol Israel	HH	2300	15100	China Radio Int.	CC
1630	11560	Adventist World Radio, Guam		2300	17680	La Voz Cristiana, Chile	SS
1630	21745	Radio Prague, Czech Republic	Czech	2300	11600	Radio Bulgaria	SS
1630	17870	Radio Austria Int.		2330	9655	Voice of Turkey	
1730	15215	Radio Africa Int., via Germany	FF	2330	9885	Swiss Radio Int.	
1730	17515	Vatican Radio		2330	9665	Radio Marumby, Brazil	PP
1730	15435	RTV Marocaine, Morocco	AA	2330	9875	Radio Vilnius, Lithuania	
1800	11820	Broadcasting Service of Kingdom of Saudi Arabia	AA	2330	7125	RTV Guinnee, Guinea	FF
1800	11990	Radio Kuwait		2330	9645	Radio Bandeirantes, Brazil	PP
1800	15190	Radio Pilipinas, Philippines	Tagalog	2330	15345	RAE, Argentina	SS
				2330	15820	Radio Rivadavia, Argentina	SS/USB

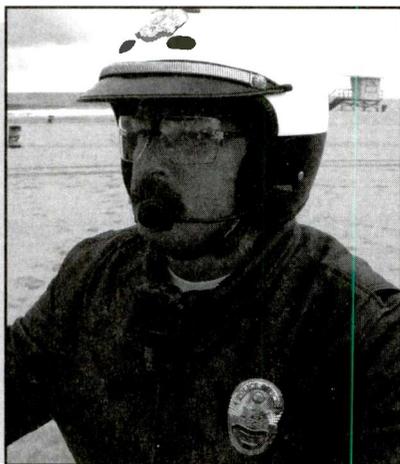
power up: radios & high-tech gear

review of new, interesting, and useful communications products

PVP Communications Extends "No Cable" Radio Benefits To Bicycles Via New Cycle-One Wireless Kit

PVP Communications, a leading provider of turnkey communications solutions for the professional motor officer, has announced the debut of its Cycle-One Wireless Kit for patrol bicycles. The kit joins the company's recently-announced Motor-One Wireless Motor Kit for motorcycle patrols as the first products to enable practical push-to-talk radio capability from the handlebar without a cabled connection.

PVP Communications new Cycle-One Wireless Kit allows bike patrol officers to keep both hands on the bike and still use the radio. We're in contact with the company about reviewing a unit in an upcoming Pop'Comm.



PVP Communications' Cycle-One Wireless Kit is comprised of a portable radio speaker-microphone, optional helmet kit, and a wireless handlebar-mounted push-to-talk switch. Using Bluetooth technology to power its wireless handlebar radio control, the system gives the officer the option of push-to-talk from either the handlebar switch or the shoulder mic. Installation is a snap since Cycle-One connects to the officer's portable radio like a conventional shoulder mic.

Cycle-One requires no external power source and has an operational range of 10 meters. Lightweight and unobtrusive, the kit increases safety, convenience, and effectiveness for the officer by enabling radio communications with a dispatcher while keeping both hands in full control of the bike whenever necessary.

"Bike units have the same need for operational safety as motorcycle units do," said Michael Dieringer, founder and president of PV Communications. "The Cycle-One Wireless Kit allows patrol officers to conveniently and safely talk to dispatch when in hot pursuit, or simply when traffic or terrain dictates that both hands remain on the bike. Cycle-One is a powerful and essential enhancement for every bicycle patrol officer."

The Cycle-One Wireless Kit is designed and manufactured exclusively by PVP Communications and is available for immediate purchase from the company as well as its dealers across the United States. For more information, including technical specifications, contact PVP Communications at 800-584-4119 or log on to www.pvpcom.com.

Eton Expands Yacht Boy Shortwave Radio Line With New 550PE Receiver

Eton Corporation, a leading designer and manufacturer of innovative consumer electronic products, has announced the immediate availability of the Yacht Boy 550PE, portable AM/FM/Shortwave world receiver. The Yacht Boy 550PE combines performance and an updated modern design in a lightweight, compact unit making a perfect travel companion on the road, water, or at home.

"The Yacht Boy 550PE combines the powerful performance of a tabletop radio with the enhanced portability of a handheld radio," says E.A. Hozour, CEO of Palo Alto-based Eton. "The Yacht Boy line has been manufactured since the 1960s, and this latest model utilizes the most advanced audio technology to access global news and information."

The Yacht Boy 550PE receives all 14 international shortwave bands and allows five tuning methods, including 200 programmable memories and shortwave autoscans. The Yacht Boy 550PE features an illuminated LCD, with signal and battery strength indicators, and alarm with sleep timer and snooze feature.

Other features include:

- Power failure backup feature and auto power off
- 200 programmable station memory presets—create and customize memory pages for better organization in 4 ways: 4 pages of 50 memories, 5 pages of 40, 8 pages of 25, or 20 pages of 10
- Continuous shortwave coverage from 1.711 to 29.999 MHz includes all 14 international broadcast bands and citizen's band
- A keypad for direct entry of all AM/FM and shortwave stations, or tune via a scroll wheel
- Alarm with snooze feature and ability to wake up to a preset station or the last one tuned, and 5- to 120-minute sleep timer
- Built-in telescopic antenna for shortwave and FM, and internal ferrite bar antenna for AM
- A complete product kit that includes ear buds, snap-on stand, carrying case, owners manual, Shortwave Listening Guide, and 3AA batteries

The new Yacht Boy 550PE measures 6.5 x 4.5 x 1.5 inches (HWD) and weighs only 10 ounces. The radio is available at select national retailers for \$99.95. For additional information about the Yacht Boy 550PE

The new Yacht Boy 550PE is the latest portable radio from Eton Corporation, headquartered in Palo Alto, California. The 550PE covers all shortwave bands and is powered by three AA batteries. Look for a review in Pop'Comm soon.



and other Eton products, please call 800-872-2228, or visit the website at www.etoncorp.com.

Eton designs, develops, manufactures and distributes innovative, high-quality consumer electronics products. By licensing agreement, some of Eton's brands, including leading edge short-wave radios, are sold under the Grundig brand name in North America. Eton products can be found at over 1,000 national retailers in North America, including RadioShack, Goodguys!, The Sharper Image, Restoration Hardware, Neiman Marcus, and Macys. Additional company and product information is available at <http://www.etoncorp.com>.

B+K Precision Introduces Programmable DC Switching Power Supplies

B+K Precision Corporation announces the addition of Models 1696, 1697, and 1698 cost-effective, high-reliability, PC-compatible programmable switching DC power supply systems. All three models offer a new level in programmable performance at a price point not previously available.

Features of the three systems include PC Windows software; RS-232 port and cable; remote PC preset, activate, and data logging; RS-485 interface, four-digit LCD display ammeter, voltmeter and power meter; adjustable upper voltage limit; over temperature, tracking OVP protection; and power factor correction. All three supplies offer nine user-programmable preset memory recalls, 10-step user-programmable output routines and RS-232 communications to a PC Windows-based software.

B+K Precision's new Model 1696 Programmable DC switching power supply is one of three models that sell for \$449. This high-tech supply is currently in stock and ready for shipping.



Data analysis can be achieved using data logging with color graphic display in adjusting range voltage, current, watt, and time periods. The built-in micro-controller unit and related software permit user re-calibration without opening the case. Each supply weighs 6.6 pounds and is 3.86 x 7.6 x 8.5 inches (HWD) and costs \$449. All models are covered by B+K Precision's one-year warranty and are available for immediate delivery from stock.

For additional information or the name and location of an authorized distributor near you, contact B+K Precision Corporation at 22820 Savi Ranch Parkway, Yorba Linda, CA 92887; Phone 714-921-9095; Web: www.bkprecision.com.

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Platforms supported include Windows 9x/NT/2000/XP. The working area of the program is divided into several windows, the sizes of which can be changed by the user by dragging the borders. Downloaded information on this nifty program is available directly from www.DXSoft.com. Be sure to tell them you read about SeaTTY in *Popular Communications*.

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The Eavesdropper/C— A Shortwave Broadcast Receiving Antenna

“Random wire...Random results...” I’ve long remembered this sage advice offered by a radio Elmer many years ago when I complained that my antennas weren’t doing the job! I was a fledgling amateur radio Novice class licensee in my early teens. The concepts of resonant antennas and coax cables were foreign concepts. I’ve since learned the proper antenna is the key to success, especially if you want to get the most out of your receiver investment!

Perhaps you’re a shortwave listener getting by with a length of wire strung between the eaves and a nearby tree for an antenna; or maybe you’re a ham using your amateur antennas for monitoring shortwave action. If your antenna happens to be an even multiple of a quarter wavelength at your favorite shortwave frequency, it will be highly reactive and most of the signal can be lost in the coax—especially over long runs—before it reaches your receiver. Or, even worse, if you’re using a length of indoor wire strung across the room or attic, it could be picking up electrical noise from every light dimmer and appliance in your home.

How about a simple dipole antenna? Well, you’ll end up needing several antennas to efficiently cover the most popular shortwave bands!

Luckily there’s a practical solution: Antenna Supermarket’s Eavesdropper/C trap-dipole antenna. The Eavesdropper/C is a compact 42-foot center-fed trap dipole antenna. According to the supplied literature, it uses eight traps (four on each side) for full coverage of 11, 13, 16, 21, 25, 31, 41, 49, 60, 75 and 90 meters (see **Table 1**). Wow!

The antenna traps work like “switches,” automatically tuning the antenna so it works as a resonant half-wave dipole for those bands it’s designed to cover. The traps also add some “inductance” to the antenna. In layman’s terms this means that the antenna can be made physically shorter, although its 42-foot span is easily accommodated in most urban and suburban lots.

The antenna comes fully assembled and is ready for use. All connections are soldered for longevity and reliability. There’s no measuring, cutting, or soldering needed! I don’t know about you, but I hate trying to measure and cut antenna wires, all while trying to keep things untangled! The kind folks at Antenna Supermarket have already done the dirty work for us. The traps and center insulator are ultrasonically welded and hermetically sealed, and the materials are ultraviolet light resistant. The antenna wire is 14-gauge stranded, making it very easily to work with and tangle resistant.

Unpacking the antenna from the sealed-plastic display packaging reveals the items shown in **Photo A** (the included package of Coax Seal is not shown in this photo). An Antenna Supermarket RCVR/C gas surge protector is included, as is a generous hank of nylon support rope, and even Coax Seal.

Frequency (in Meters)	Coverage For Various SW Bands (in MHz)
60 Meters	4.75–5.06 MHz
19 Meters	15.10–15.45 MHz
49 Meters	5.95–6.20 MHz
16 Meters	17.70–17.90 MHz
41 Meters	7.10–7.30 MHz
13 Meters	21.45–21.75 MHz
31 Meters	9.50–9.78 MHz
25 Meters	11.70–11.98 MHz
11 Meters	25.60–26.10 MHz

You only need to supply the coax and a place to mount the antenna.

The antenna can be mounted as a dipole (see **Figure 1A**), with the ends and center insulator supported by high nearby objects, or as an Inverted Vee with the ends near ground and the center supported at a high spot (see **Figure 1B**). The center insulator has an eye hook to attach a support lanyard at the center point of the antenna, as needed. Or the antenna can be placed in your attic if that’s the only option open to you. Don’t be afraid to experiment—zig-zag the wire elements if you need to, but try to keep them at least 25 feet above ground. The best reception will be for directions at right angles to the dipole wires; the

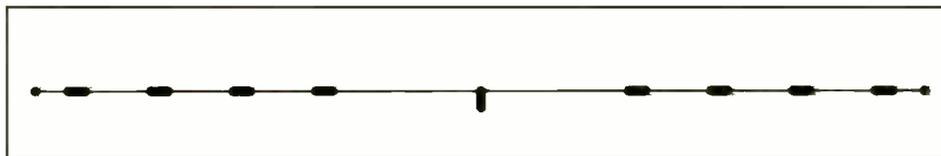


Figure 1A. Eavesdropper installed in a dipole installation. Two elevated tie points are needed to support the antenna end insulators.

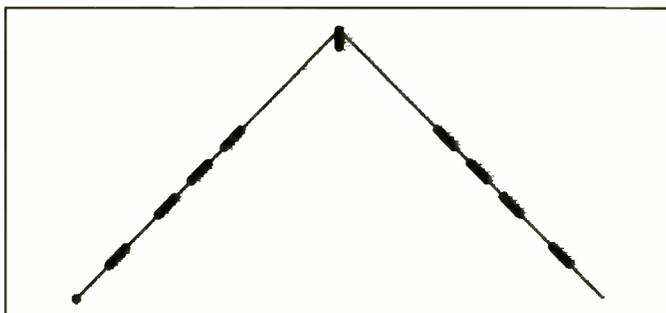


Figure 1B. Mounting the antenna as an inverted Vee configuration also works, and is useful if there is only one elevated support structure nearby.

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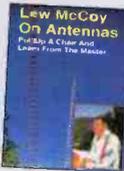


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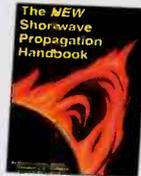


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Photo A. Here's what you'll find upon opening the Eavesdropper/C package. The Coax Seal weatherproofing tape is not shown in this photograph.

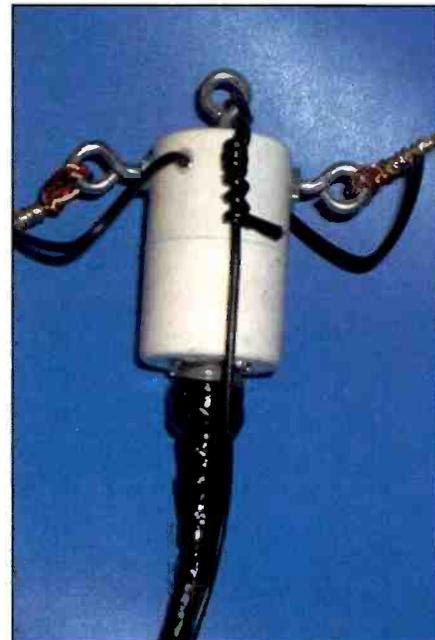


Photo C. The coax connection at the center insulator should be properly weather-sealed to avoid water damage. Note how the coax messenger coax is tied off to the center insulator support eye ring.

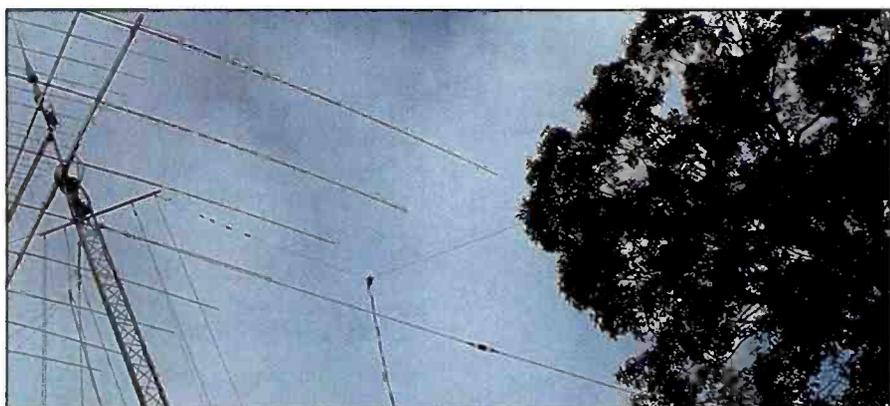


Photo B. My Eavesdropper was installed as a sloper. The high end is supported by a 60-foot tower. If you look closely, you can make out the top four traps to the left of the tower (other wire antennas, guy wires, and clutter precluded getting a clearer shot of the installation).

weakest reception will be in the directions off the ends of the antenna wires for a half-wave dipole. It's best to keep the antenna away from metal objects, such as aluminum siding, down spouts, gutters, and electrical wires.

I chose to run the antenna as a "sloper," with one end tied near ground and the other end supported at 60 feet on my tower (see **Figure 1C**). I ran the coax off at right angles to the antenna dipole elements to the tower, where it was brought down to ground level inside of the tower. My installation is shown in **Photo B**. As

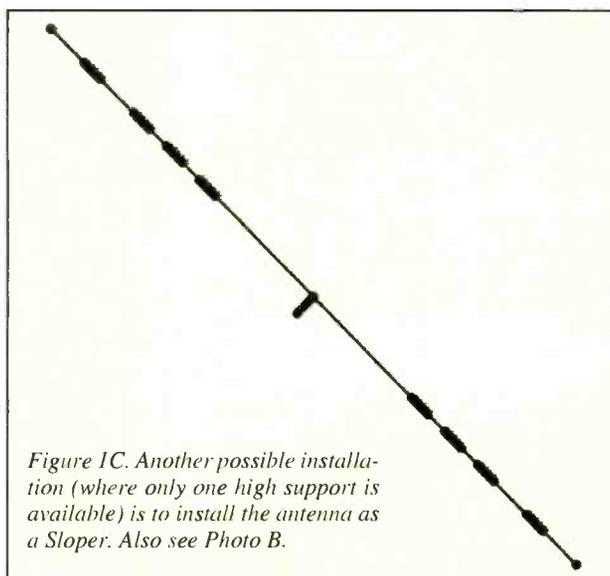


Figure 1C. Another possible installation (where only one high support is available) is to install the antenna as a Sloper. Also see Photo B.

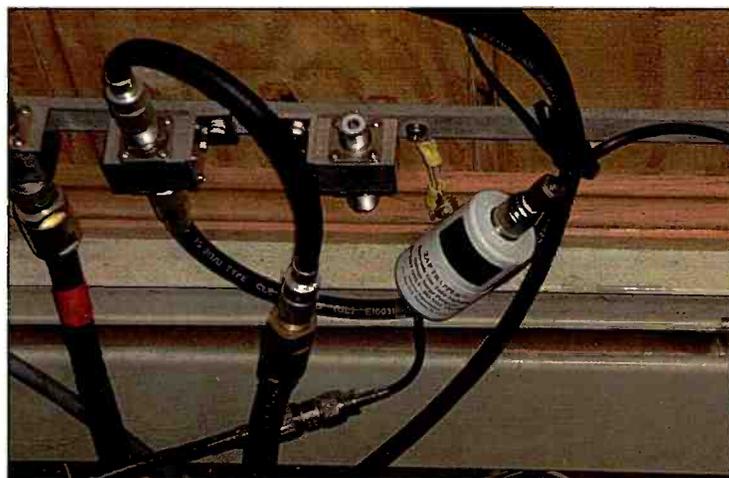


Photo D. A good ground is needed to ensure that the Zap Trapper works as intended. Here the Zap Trapper is attached to the ground buss in my station, along with several other lightning arrestors for the amateur antennas.

a sloper, best reception is along the length of wire, favoring the down-tilt direction, which is east towards Europe at my location. Antenna Supermarket does offer an end-fed sloper version of the antenna: the SWL Sloper model. If your lot layout precludes a dipole installation, a sloper-style installation might work, especially if there is only one high supporting structure or tree to attach to.

You can use either 52- or 75-ohm cable. I used inexpensive 75-ohm CATV cable, the type with the internal messenger wire used by cable companies for drops spanning between houses and poles. Low cost 52-ohm RG-58 will also do fine. In my case, the messenger was tied to the center support of the center insulator, reducing the strain on the coaxial fittings and cable. This cable necessitated using an F-to-UHF coax adapter at the SO-239 connector at the center insulator (see **Photo C**).

The coax connector at the center insulator *must* be wrapped with the supplied weather sealant tape or you risk voiding the antenna warranty. Also be sure to use the Zap Trapper protector where the coax enters the house—this is important! The Zap Trapper serves to drain weather induced electrical charges, or lightning induced voltages from reaching you or your equipment! It must be properly grounded to do its job, however. Mine is attached to the ground buss bar in my station (see **Photo D**).

Check It Out

The antenna works quite well, delivering good signals and reception on the bands it was designed for, and at signal strengths that equaled or usually exceeded my other wire antennas. The only exception was above 14 MHz, where the standard of comparison was a 13- to 30-MHz log periodic array! Note these antennas are designed for receiving applications only, *not* for transmitting.

Antenna Supermarket also offers an Eavesdropper/T model, which includes 100 feet of balanced 75-ohm balanced feedline, but doesn't include the SO-239 center insulator assembly. The recommended list price for the three antenna models is \$89.95 each, with dealer street pricing typically discounted to \$79.95.

For more information, contact Antenna Supermarket, P.O. Box 563, Palatine, IL 60078. Phone the company at 847-359-7092 or fax them at 847-359-8161. Try one, you'll like it, and be sure to tell 'em *Pop'Comm* sent you! ■

washington

beat Capitol Hill and FCC actions affecting communications

FCC Opens Proceeding On Smart Radios

A Notice of Proposed Rule-making has been released setting forth proposals and seeking comments on the use and applications for cognitive "smart" radio systems. Smart radios have the technical capability to adapt their use of spectrum in response to information external to the radio. Many smart radios also can interpret and transmit signals in different formats or modulation schemes. Because of their technical and operational flexibility, they also make it possible to use vacant spectrum channels that would otherwise go unused.

Wireless Bureau Restructuring

The FCC is restructuring its wireless bureau in an effort to sharpen its focus and management on broadband deployment, spectrum management, and homeland security. The new wireless bureau will cover six new divisions that include auctions and spectrum access, broadband, mobility, public safety and critical infrastructure, spectrum and competition policy, and spectrum management resources and technologies.

FCC And NIMA Join Forces

The FCC has signed an agreement with the National Imagery and Mapping Agency (NIMA) to exchange unclassified database information on tower locations. The Memorandum of Understanding will support the efforts of the two agencies in maintaining accurate information on vertical obstructions and antenna facilities for purposes of national security, aircraft navigation safety, and the deployment of wireless communica-

tions services. The FCC has agreed to provide information contained in its Antenna Structure Registration (ASR) database, while NIMA will contribute its Digital Vertical Obstruction File (DVOF). The ASR database contains information about antenna structures in the United States and its Possessions and Territories, while NIMA's DVOF contains certain unclassified geospatial data.

Short-Range Comms On 5.9 GHz

The Commission has adopted licensing and service rules for the 5.9-GHz Band (5.850 to 5.925 GHz) for Dedicated Short-Range Communications (DSRC) in the Intelligent Transportation Systems (ITS) Radio Service. DSRC systems are intended to provide a short-range, wireless link to transfer information between vehicles traveling at high speeds and roadside units or other vehicles. Examples include intersection collision avoidance, work zone warnings, road condition warnings, electronic toll collection, and electronic payment for gas, fast food, or parking.

Specifically, the FCC adopted the tentative conclusion that the 5.9-GHz band should be used primarily for public safety purposes, noting that sharing the band with limited non-public safety uses would benefit public safety. Both public safety and non-public safety users will be eligible for licensing on all channels. The Commission also opted for open eligibility for licensing and a geographic area licensing regime where licensees will receive non-exclusive geographic-area licenses authorizing operation on seventy megahertz of the 5.9-GHz band and will register RSUs by site and segments. ■

computer-assisted radio monitoring

by Joe Cooper, joe@provcomm.net

Digital Control—Part II Inside The Ten-Tec RX-320/D Receiver

Over the next series of columns I'm going to be taking a detailed look at modern computer-controlled radios and how they work. My intention is to help you understand what actually takes place when you hook up your computer-compatible radio to your computer and then begin to operate it using control software.

In my last column I introduced you to Ten-Tec's RX-320/D, outlining its main characteristics and operating parameters. It's a true "black box" radio, having no external controls other than an on-off switch. Operating between 100 kHz to 30 MHz, the radio is one of the best performing general coverage receivers on the market today. It's also one of the most affordable at only \$329, which is very reasonable given performance and features.

While from a strictly consumer and user point of view the radio is a good product, the main reason I've chosen to use the RX-320/D in this series is because of Ten-Tec's supporting policy. They encourage the development of third party software to control the radio and they're extremely open in providing technical information about its circuits. Because of this, the RX-320/D has developed a very dedicated following of commercial and amateur users. I hope that other radio manufacturers come to see the value of this open access philosophy in maintaining their own market share in the future.

Frankly I believe that the future of the radio-monitoring hobby will be based increasingly on its merging with the personal computer hobby, rather than being an isolated niche. Certainly you're not going to be able to recruit many young people today simply on the appeal of radio monitoring alone. The use of a computer in addition to a radio is going to have to be the "hook" that brings a new generation into the hobby.

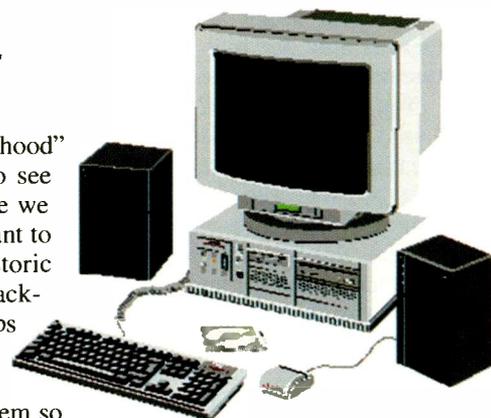
The key point here is that I truly believe, based upon many years experience from working in the computer industry and teaching computer skills to non-technical people, that what we cover is within the capabilities of any hobbyist who reads instructions carefully and takes the time to plan things out. Having said that I intend to show you how to control the RX-320/D over a small LAN (Local Area Network) or even the Internet.

Again, once you have a clear idea of how software and hardware actually operates a computer-controlled radio, such as the RX-320/D, it will be relatively easy to do it yourself. This is due to the simplicity of the new generation of "plug-and-play" components and the increasing simplicity of computer operating systems, particularly those that offer "wizards" to set up functions such as networking.

If you'd like a preview of what the end result of all of your work will be, take a look at <http://www.ralabs.com/>, which was created by Bob Arnold, N2JEU. There you can directly control, and listen to, Bob's RX-320 and ICOM IC-R75 receivers.

In future columns we'll look at radios from other manufacturers with the same intention, but in the meantime, Ten-Tec has made the task of showing you how things work an easy one.

We'll "open up the hood" on the RX-320/D to see what's inside. Before we do that, though, I want to give you some historic and technical background on the IC chips you'll be looking at so you can understand what makes them so important. So now let's take a quick look at how we came to have "Black Box" radios in the first place.



Radio On A Chip

Back during the earlier days of mass-produced radios (about 1920 to the 1950s), the products available were made up of many discrete parts, such as vacuum tubes, variable resistors, and tuning capacitors. Back then many people were required to assemble these individual parts into a finished radio. No matter what techniques were used, the standard procedure was to connect each component to connections on the radio chassis by hand and then solder them in place.

Needless to say, such manufacturing techniques required good technical skill on the part of those constructing the radio, if the results were to be satisfactory. As with anything made for mass consumption, the results could range from works of art to the barely usable, depending upon what level of commitment a manufacturing company had regarding quality.

The 1960s saw the introduction of increasingly inexpensive solid-state components, beginning with the transistor. Around this time many manufacturers began to move away from wiring



This is how circuitry is soldered today. No more soldering irons or people working on assembly lines. Instead the circuit boards are passed through a machine where all soldering takes place through automated processes. Fewer people are involved, there are fewer mistakes, and the savings are passed on to you.



Here's an example of an early version of a "radio on a chip" set. This AM radio kit uses the popular MK484 chip, which is a series of TRF (Tuned Radio Frequency) RF amplifiers with a diode detector built on a single IC chip. You can see that the IC itself is small, though the other components (tuning capacitor and coil) are not. The chip is cheap (\$2) and reliable. (Photo courtesy Quasar Electronics)

radios and other electronic devices together component-by-component and began to use printed circuit boards. The printed circuit board allowed individual components to be "dropped" into place and then quickly soldered. Later techniques were developed that allowed these boards to be soldered using automated systems.

At the same time solid-state devices became increasingly sophisticated through the integration of more discrete transistors, capacitors, and resistors onto a single chip. The goal of many manufacturers was the development of a "device on a chip"—that is a complete audio amplifier or radio tuner built into a single integrated circuit.

By the mid-1970s this goal had been achieved with the development of a num-



This is a picture of the future of radio. What you have here is a complete AM/FM radio with the capability of receiving digital broadcasts on either of those bands. The complete radio rests on top of a conventional computer floppy disk for scale. The unit plugs into a socket for easy installation and connects to a separate audio power amp and display panel. This radio is available now and will be showing up in American automobiles very soon. (Photo courtesy Texas Instruments)

ber of integrated circuit devices (or ICs as they came to be called) that were able to amplify analog signals. These devices also simplified the design and building of various devices, which allowed developers to focus on functions. So rather than developers having to sit down and design a complete circuit, choosing each component so that they complimented another, they would simply choose a single chip that performed the required task. The resulting electronic products were simpler, more reliable, and less expensive, and at the same time offered more features and better performance.

This generation of ICs was very important, but it had one limitation: each chip could only perform one function. So while you could build a radio device into a chip, such as a radio's RF amplifier and detector circuitry, it could only amplify and detect, not tune.

An example of this is the MK484 chip, one of the first "radio's on a chip." Running at very low power (1 volt) and very inexpensive (about \$2), it has been popular with both manufacturers and hobbyists who like to construct miniature AM radios. The chip itself is a simple device, being a series of TRF (Tuned Radio Frequency) circuits that provide RF amplification, which is then connected to an internal diode detector. The output of the chip is pure audio, which can then be amplified using a second IC specialized for that task.

The only "problem" with the MK484 chip is that to tune it to a radio station you still need a conventional tuning capacitor and coil, which can only be miniaturized so far. So while it removes many components from the circuit board of a radio, it did not provide the true "solid-state radio" that many developers wanted.

IC developers realized that to develop true "single-chip" radios they would have to develop a device that could change its internal functions on command. The initial problem in accomplishing this was the limited number of transistors, capacitors, and resistors that could be built into a single integrated circuit. However, technological changes during the late 1970s and early '80s enabled chip manufacturers to build hundreds, then thousands, of transistors into a single chip. This allowed ICs to not only amplify analog data, but to process large amounts of digital data as well.

These advances led to the development of programmable devices that are literally small computers on a single chip. Like your home computer, they have CPUs that

access data stored in RAM and ROM memory to run computer programs and perform tasks. However, unlike your home computer, they're generally self contained (no keyboard and video monitor) and are more limited in their functions.

These programmable ICs allow a developer to take a particular chip and program what it will do. IC tasks are defined through a series of software commands. Rather than storing this software on a hard drive or floppy disk, it's placed into an IC called an EPROM (which stands for Erasable/Programmable Read Only Memory).

An EPROM is a semi-permanent storage device that the main IC accesses to perform its tasks. Initially, erasing the data from an EPROM so it could be re-programmed was a somewhat difficult process (you needed to put the chip under a strong ultra-violet light, which would literally bleach the programming out of chip). Modern EPROMs, however, can be re-programmed on the fly, making it extremely easy for developers of programmable devices to continue improving their products, literally after they've already been sold to a customer.

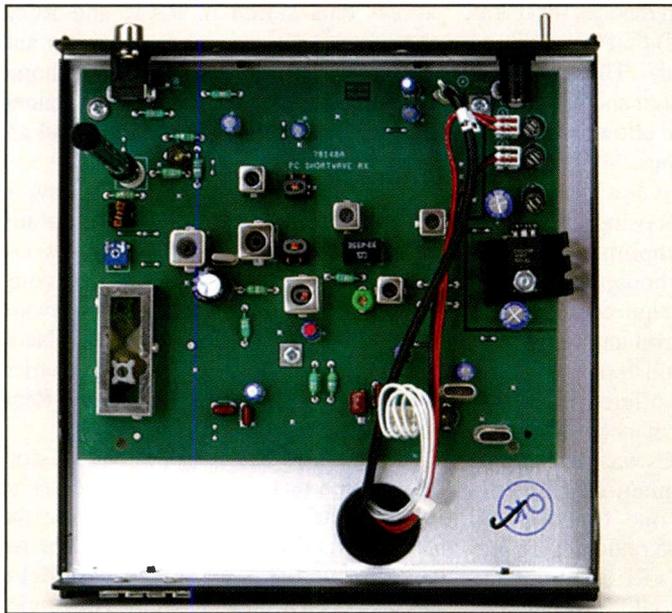
More importantly, the development of these programmable devices, particularly in the area of radio circuitry, allowed for the creation of true "radios on a chip." These devices have allowed for improved tuning accuracy (often down to 1-cycle steps) and stability, and have also opened new modes of communication.

Not only do we continue to enjoy AM, FM, SSB, and even CW on our monitoring radios, but we will also soon be listening to new digital modes of radio broadcasting over the broadcast and shortwave bands. Digital transmissions promise to provide us with CD-quality sound, sometimes in stereo, over those frequencies. And new digital modes on the FM broadcast band promise even higher levels of audio quality than CD, which will improve the live broadcasts of performances.

The field of programmable chips is far too vast to cover here. But now that you've been introduced to some of the main concepts, let's take a look under the hood of the RX-320/D to see how the engineers at Ten-Tec used "radio-on-a-chip" technology in their very successful communications receiver.

Inside The RX-320D

One reason the RX-320D is so popular with radio hobbyists who also like to work



This is what you see when you take the top off of the RX-320D—not very much except for the RF circuit board. The built-in antenna and active antenna circuitry are seen in the upper left hand corner. On the board itself are some tuning and IF coils, and that's about it. Not very exciting, I'm afraid. (Photo courtesy Ten-Tec, Inc.)

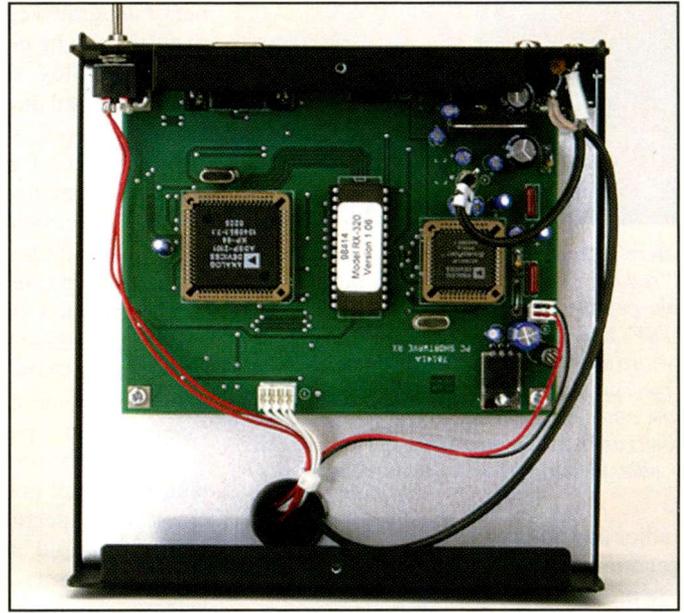
with computers is that the information needed to create control software programs for it is easy to get. As pointed out in my last column, you can download this information for free from <http://www.rfsquared.com/rx320/rx320main.htm> along with the latest control program. For your efforts, you receive the schematics for the radio, a programmer's guide for developing control software, and an sample control program written in the BASIC programming language. Even if you don't own an RX-320D it would be worthwhile familiarizing yourself with this information.

Don't be worried if you don't have a strong technical or programming background. I'll be helping you "translate" that information over the next few columns. If you haven't yet taken the time to look over this kind of material, or if you're more familiar with conventional schematics with tubes and transistors, it's not a bad idea to start.

Speaking of programming, that's what we'll look at next month. Starting with BASIC, I'll be demystifying the way in which control programs work, showing you how a command goes from the software in your computer into the radio, and then how it's used to perform a task. I don't promise that I'll turn you into a computer programmer, but you'll be able to appreciate what takes place and how it works. But first you need to understand the chips involved.

Once you've unscrewed the six screws holding the cover on the RX-320D you'll find there really is not much to see. The radio is made up of basically two components: the RF circuit board and a DSP (Digital Signal Processing) circuit board. Very simply, the RX-320 can't work unless it is attached to an external computer that's running the radio's control software program.

The RF circuit board contains all the functions needed to amplify and detect a radio signal. However, to tune the radio signal, both the RF and DSP chips work together using the RF circuit board's PLL (Phase Locked Loop) and the DSP's internal registers. The DSP chip is a programmable device that uses a third chip (an EPROM) for its software. This DSP chip also



The bottom of the RX-320D is a bit more interesting. What you have here (from left to right) are the DSP chip, the EPROM chip, and the serial port interface chip. The DSP chip holds the CPU that actually controls the radio. The EPROM contains the computer program, called Firmware, that runs the DSP chip's functions. When you use your control program on your personal computer, it's passed through the serial port chip. Any response back from the DSP CPU, such as changes in signal strength, goes back through that serial port chip to your computer. Tuning the radio is accomplished by the DSP CPU working with the RF circuit board's PLL (Phase Locked Loop) circuit, using calculations made by the control software on your personal computer. (Photo courtesy Ten-Tec, Inc.)

contains a serial IO interface that allows it to communicate with an external computer.

While the DSP chip and the RF circuit are able to process analog and digital signals, they need the commands from the control software to "tell" them how to do those tasks. For example, in order for the two chips to tune into a particular frequency, the control software must first perform certain calculations to provide a numeric value that the chips use to set the frequency. (I'll explain that in more detail in next month's column).

The DSP chip deserves a closer look, given its importance. It's an ADSP-2101 made by Analog Devices, and is a complete microcomputer on an IC chip. It comes with its own CPU and memory, with access to the EPROM for stored data. When you turn on the radio's power, the chip "boots up" like your computer, performing a number of different programmed tasks to make the radio "ready."

Once the DSP chip determines that the radio is ready to be used, you will be able to control it (tuning, turning functions on and off, and setting levels, such as volume) by sending commands to the DSP chip. The CPU of the DSP chip will use these commands to change certain values in the radio's circuitry, which will result in certain actions taking place (frequency changes, volume increasing or decreasing, for example).

The CPU of the DSP chip, using the built-in software contained in the EPROM, also checks the status of the radio and reports back to the control software in the personal computer. Among other things, this allows the control software to display a "real-time" signal strength meter or, when a scanning function is performed, allows the control software to show radio sig-

nal activity over a range of frequencies by sending a sample of signal strength levels encountered.

The important thing to understand is that the modern programmable radio is no longer a "passive" device like the analog radios of the 1940s and '50s. Those radios were simply a series of tuning devices that amplified and filtered RF and AF radio signals. You turned the tuning knob and the radio selected a single frequency off the antenna and amplified it. You could "tweak" the signal using the various components available, but generally what you heard is what you got.

Today's computer-based monitoring radios are "dynamic" in that they are constantly processing the RF, AF, and digital information that flow through them. Their internal CPU's are constantly monitoring various functions taking place in the radio, ensuring its proper operation.

Likewise, the programmable circuitry found within the chips that make up the radio can be changed through a number of different programming methods, such as those provided by the developers of the EPROM and the commands that you provide via the control software.

So you may look inside the RX-320/D and say "Where is the radio?" feeling that you're missing something because all you see is a couple of chips. The fact is that there are just as many "parts" in that radio as there are in one with conventional components; they're now just "virtual" in nature. What goes into such a radio is largely the work of the software programmer who puts the code into the EPROM, which makes it work.

This new way of building a radio may be very different from the "good old days" when people wound coils and soldered wires, but frankly the results make the new technology worth understanding. What analog radio could provide you with tuning accurate to one cycle? Who could afford to have an analog radio with as many selectable audio filters as the RX-320/D offers, and with the selectivity/sensitivity specifications it provides?

Next Month

Now that you have a good understanding of what's inside the RX-320D and the basic functions of the chips found there, the next step is to understand what happens in the radio when you use the control software. To provide you with that, we'll look a little deeper at the chips them-

selves and what happens inside of them when you send a command to the radio via your control software on your personal computer.

Don't be intimidated by this—it's really not that difficult to understand. Again, I don't promise to turn you into a computer programmer simply by reading one column, but I will explain how the various computer commands are generated in your personal computer, sent to the radio via the serial cable, and then processed by the DSP chip's CPU.

Knowing how each step takes place and what occurs when it does will help you later with topics like networking and the Internet. What's coming next is just as straightforward, so relax and enjoy.

If you wish e-mail me with any questions, please use carm_popcomm@hotmail.com. As mentioned before, I cannot answer general questions on computers, but will be more than happy to help you with any issues raised in the columns.

You can also write to me at "Computer-Assisted Radio Monitoring," PMB 121 1623 Military Rd., Niagara Falls NY 14304-1745. Remember, I'm interested in any pictures you may have of your computer-assisted monitoring station or stories about how you built it and operate it. Don't worry about your writing, as I'm more than happy to help you.

A Special Memorial

This month I would like to dedicate this column to the memory of my father, John Cooper (1921–2003). After battling with cancer for several months he passed away in his sleep at home in his bed, two days before Christmas Eve.

It was through my father that I developed my lifelong involvement in radio. He had been interested in radio as a hobby throughout his life and passed that interest on to me. For example, we had an old console radio from the 1930s in the house, which could tune shortwave stations. He did not discourage me from using it, even at a young age.

Seeing that I had an interest in radio, my father bought and built a Knight Kit "SpanMaster" radio for me for my 10th birthday. It was a two-tube regenerative set capable of tuning the broadcast band and shortwave frequencies, and which squawked terribly if you didn't tune it right. No matter how difficult it was to operate compared to today's radios, it still got me hooked for life on the radio hobby. From there I went on to build my own

radios, eventually earning my ham radio license as a teenager.

My father had many other accomplishments in his life as well. He was a veteran, a successful businessman, a lifelong member of the Masonic Lodge, and a family man. He lived through the Great Depression, World War II, and all the changes and turmoil of the Cold War. I have to agree that he was part of a very special generation who faced some hard times that we could not imagine today and succeeded in overcoming them with courage and dignity.

For myself, I still have a SpanMaster in my collection (the original disappeared along with many other cherished parts of my youth, such as my old Lionel train). I still fire it up once in a while and enjoy fighting with the regeneration controls in order to tune in a station. Whenever I look at the radio now it's with an understanding of what I have both gained and lost over time.

Thanks, Dad, for bringing something special into my life. May your spirit live on whenever I use the skills you taught me when you took the time to show me how to use a radio. ■

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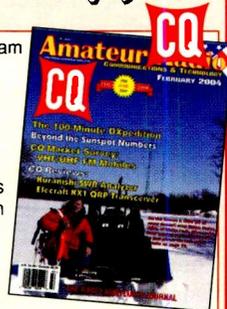
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Shannon's Broadcast Classics

a look back at radio & TV's golden years

Tiny Television Stations And TV Translators

It's one of those long-ago memories that isn't really much of a memory at all. That is to say, I probably recall the 1976 visit to New Jersey's smallest TV station only because my Dad has mentioned it so many times over the years. "Hey, Shannon," he'll begin, "How about

that time we toured little Channel 40 down on the Jersey shore?" Then, to let him know it's okay to tell the tale again, I'll respond, "You mean that tiny black and white station in Wildwood?" Next, as if being cued by some famous director, my father describes the saga's setting.

Our family always took a short vacation in late November. Dad liked to complain that doing time with the in-laws *twice* during the holiday season was more than any sane citizen should suffer, so he made a point to take Mom, my brother, and me out of town to some fancy inn. There we'd stay in style for off-season rates, eat a nice restaurant-style Thanksgiving dinner, and see a few attractions. Mom would select one outing—usually some Christmas play—and Dad always picked a broadcast station for us to inspect. Of course, except for the NBC studios in New York, very few radio or TV facilities offered official tours. No matter, we just usually showed up in the lobby and, with his gift of gab, my father talked us past the secretary and into the inner workings of whatever AM, FM, or TV outlet seemed promising. (Once, we even got behind the control board of a modest shortwave station in Red Lion, Pennsylvania, but I'll save that episode for another column.)

On this particular trip in 1976, on the day after Thanksgiving, Mom and my brother quickly volunteered to wait in the car and read, as the old house—emblazoned with the letters WCMC—that Dad parked next to didn't appear to be beckoning any tourist trade. In fact, when we called out "hello" in the lobby, no one responded. After another shouted query, my father shrugged his shoulders in a way that seemed to say, "Well, if nobody's here to greet us, we'll just have to explore on our own." A few seconds later, we startled an engineer who was adjusting overhead lighting in WCMC-TV's modest studio. I guess the sight of a smiling man with his seven-year old in tow didn't appear to be much of a threat to the television technician, who went right back up a small ladder after accepting my Dad's gregarious handshake and reason for our visit.

"My daughter, Shannon, and I are real broadcasting buffs," he offered, "and we'd be honored to see your unique AM-FM-TV operation." The soft-spoken engineer indicated that it was pretty quiet at the station, "especially because of the holiday weekend." He pointed across the hall to the FM and TV transmitters chugging away behind a pane of glass. Though I can't

Before the days of VCRs, my father was notorious for snapping pictures of TV station identifications. This one shows a WCMC-TV ID like the one given to me by an engineer at the little Wildwood UHF outlet. Dad shot it during our vacation, using a Kodak Instamatic without a flashcube, aiming at the motel's fuzzy, black & white television set.

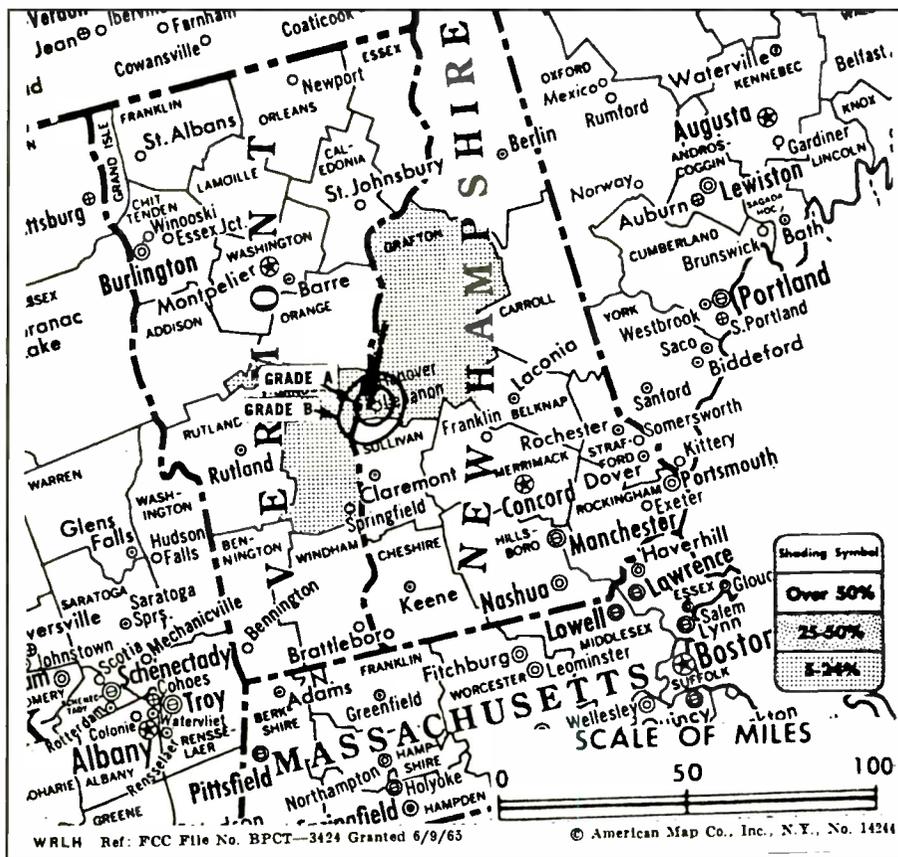


be sure now, it seems to me that the television unit was an old—even then—RCA with ample tubes peering through the port-holes in a black steel cabinet. When the tech was satisfied with the bright white illumination bathing several rows of risers, he mentioned that a local choir was slated to be telecast at WCMC-TV that evening. "They'll sing some Christmas carols," he noted, "and get folks in the mood for holiday shopping at the sponsors' stores. It's a popular show around here because local folks like to see people on TV that they know—especially kids."

Finally, we peeked into the WCMC radio studio and saw a DJ reading a live commercial and starting one of the turntables. Dad brought up his customary exit request for a souvenir. The engineer apologized for not being quite sure where the station advertising rate cards and coverage maps were kept, but then he snapped his fingers as if having a better idea. A minute or so later, he handed me a 35-mm slide he had pulled from a control room drawer, saying "Here's something for you to take to show and tell, missy."

Holding it up to the fluorescent light fixture overhead, I made out the image of a colonial drummer boy marching near WCMC-TV's Channel 40 Wildwood, New Jersey, legal identification. The drummer's three-cornered hat said 1976. "Because the bicentennial year is almost gone," the engineer smiled, "we won't be needing this any more." Dad and I gave a sincere thank you, and he had me promise that I would let my classmates know about the finer points of WCMC-TV.

Wildwood, New Jersey, rests on what can be considered an island broken off from the Garden State's southern tail. As a relatively remote community, Wildwood was a wonderful place for a small radio station to be located in late 1951, when WCMC (which stood for Cape May County) began as a 100-watter on 1230 kilocycles. By mid-December 1959, this local AM service (having upped power to first 250 and then 1000 watts) was joined



Real local TV—northern New England style. Thousand-watter Channel 31, WRLH-TV's 1967 area of greatest influence fell within the little circle over Lebanon, New Hampshire. Though there is no direct connection with the old WRLH-TV, today another Lebanon-area Channel 31 telecaster, WNNE-TV, lays down a multi-megawatt signal that blankets large portions of New Hampshire and Vermont.

by an FM sister, WCMC-FM, a 3.5-kW Class "B" facility at 100.7 on the dial.

The television side of the broadcast operation took to the air on UHF Channel 40 just a few weeks after 1966 got underway. Its antenna was mounted at the 223-foot level of a tower next to the WCMC building. The 1969 *Broadcasting Yearbook* lists the WCMC-TV effective radiated power (ERP) at 14 kW visual and 2,500 watts sound. Helping get the picture to area viewers, then, were seven small cable TV systems with a total of 36,000 subscribers.

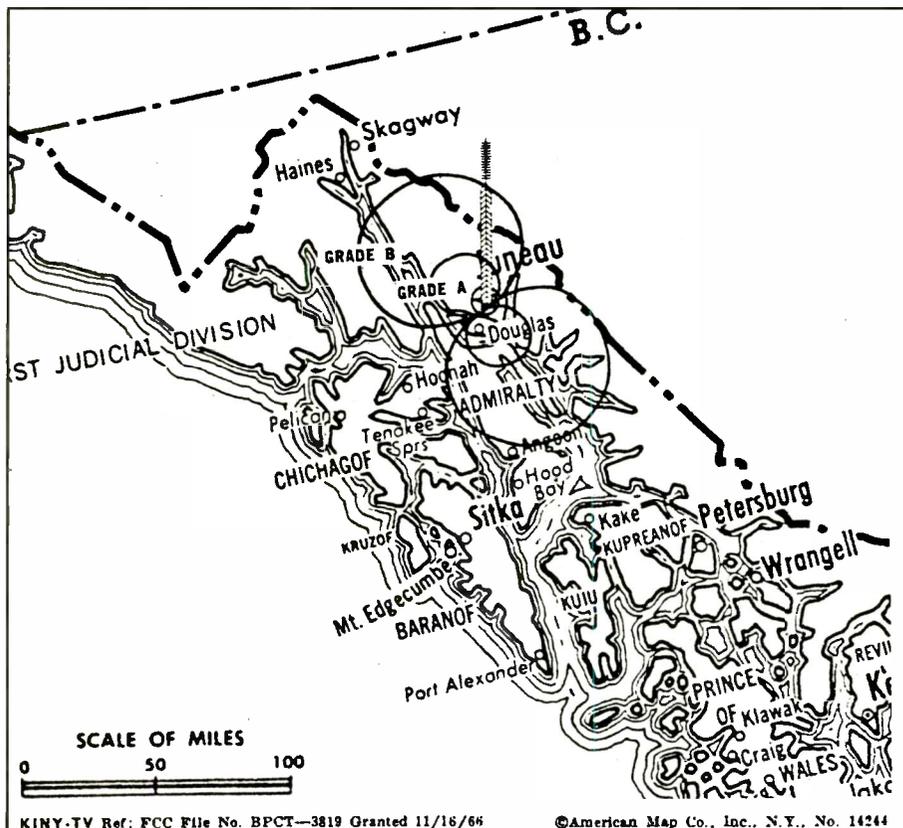
For years, the modest television property had the distinction of being New Jersey's only television network affiliate. That's because it ran NBC-TV fare that was simply received over the air from KYW-TV in Philadelphia. Otherwise, stations licensed to Philly or New York City provided most all New Jersey residents with their network television programming. Some 10 years after our visit, WCMC-TV was sold to an Atlantic City area broadcaster who moved the station to new transmitter and studio locales, beefed up the power, and renamed it WMGM-TV.

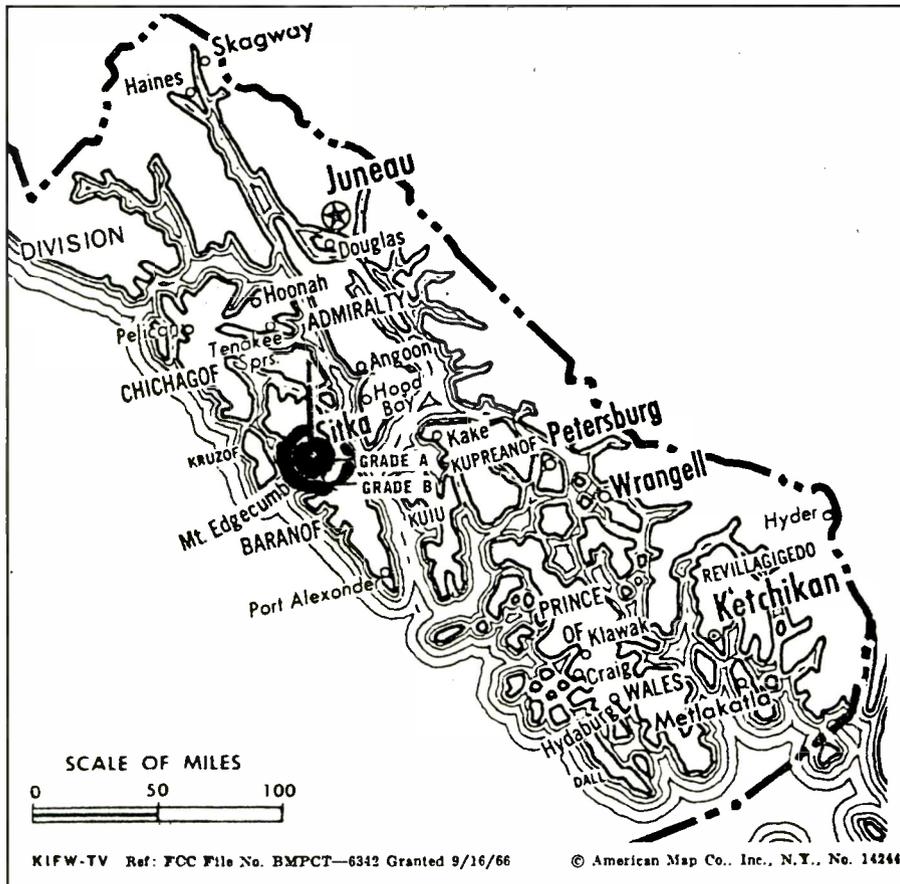
That Cute Little "U" Upon Craft's Hill

Around the time we were touring Wildwood's modest video outlet, an even smaller television facility (one it would also have been fun to see in person) called it quits. Lebanon, New Hampshire's WRLH-TV had taken to the air in late September 1966, aiming to serve viewers in the Lebanon/Hanover, New Hampshire (near Dartmouth College), and White River Junction, Vermont, area. This tiny TV operation sported only a 1,005-watt video ERP and just 105 watts of sound from a tower about 160 feet tall. Everything was run from a studio/transmitter site on Craft's Hill, well over 1,000 feet above sea level.

In the days before significant cable television penetration, WRLH-TV founder, Nelson A. Crawford, figured that his little Channel 31 UHF-TV station would provide a nice local service and also bring NBC network shows to the rural coverage area. Like the very basic WCMC-TV

The Grade "B" coverage appears to extend over 50 miles. That's a lot of punch from KINY-TV's 239 watts! No doubt viewers outside the KINY-TV primary or Grade "A" foot print needed good antennas.





Arguably CBS's tiniest affiliate, circa 1972. KIFW-TV's fringe coverage only reached about 10 miles. With most area viewers cozily situated within sight of Sitka's Channel 13, though, the station's 199 watts did the trick.

method of obtaining a network feed, Crawford installed a Yagi receive antenna for pulling in a useable picture from WWLP-TV in Springfield, Massachusetts. Channel 22, WWLP-TV had a sister station on channel 32, WRLP-TV in Greenfield, Massachusetts, which was a bit closer to Craft's Hill, so there was also a back-up plan for getting NBC to the WRLH-TV control board.

The station gave it the old college try for a decade, but without a set of co-owned radio stations (like WCMC AM/FM) to help support its operation, keeping WRLH-TV in black ink proved overly challenging.

California Dreamin' Slightly Ahead Of Its Time

Broadcast Pro-File's Jan Lowry knows vintage TV as well as he does his radio history. When I asked if any relatively small Golden State-based television operations came to mind, he quickly asked, "How about KKOG-TV Channel 16 at Ventura, California?" He continued,

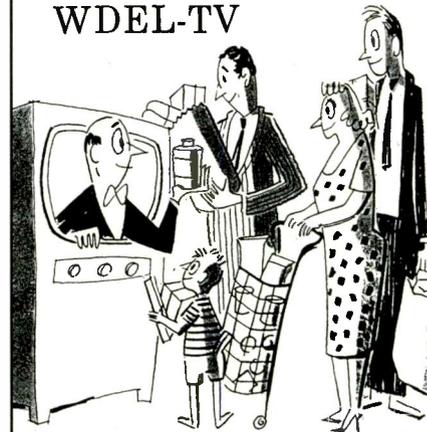
It was put on the air in a "non-market" of San Buenaventura (legal name of town) on December 14, 1968, and went off September 13, 1969. This noble experiment was conducted by one Julian Myers, an L.A. advertising executive. KKOG-TV [Kalifornia's Koast Of Gold] was housed in a converted storefront and transmitted from atop nearby Red Mountain. The station's two studios were pumping out live local black & white programming all day long. Myers even employed a used 19-foot mobile unit for live remotes around town. A single color film chain and a low-band color video tape recorder were its only color sources.

Unfortunately KKOG-TV's timing was wrong, UHF set penetration was low, and local cable systems were unwilling to bump popular Los Angeles stations to let KKOG-TV have channel space. Mr. Myers invested his life savings and mortgaged his home to give life to his dream.

Myers was one of a handful of local programming-oriented UHF-TV proponents and should be definitely be considered a true television pioneer.

The 1969 *Broadcasting Yearbook* lists KKOG-TV as existing only as a construction permit. While the *Yearbook* is

in the
Wilmington,
Delaware
market
WDEL-TV



reaches
more people
who buy more*

WDEL-TV is the only television station in this area. With NBC and DuMont network shows, many popular local night and daytime programs—it's the favorite with viewers throughout the area.

*IMPORTANT Wilmington is FIRST in per family buying income among all U. S. Metropolitan cities 100,000 to 250,000. (Sales Management—1951 Survey of Buying Power)

Delaware is FIRST in per capita buying income of any State. (U.S. 1948 Census of Business)

WDEL AM TV FM Represented by ROBERT MEEKER ASSOCIATES

Wilmington, Delaware's WDEL-TV began telecasting on Channel 7 in June of 1949. During the early 1950s, it still only put out 1 kW of effective radiated power. The station was sold several times and experienced call changes from WDEL-TV to WPFH-TV, and finally WVUE-TV. Due to a reallocation plan, the FCC deleted Channel 7 in Wilmington and added Channel 12. The station went dark and Channel 12 there was awarded to Philadelphia educational broadcaster WHYY.

always an interesting resource, the late summer/early fall (of the year prior to publication date) deadlines created some informational lag times. In KKOG-TV's case, its listing went from "construction permit" to "ceased operations" in a single *Yearbook* publication cycle.

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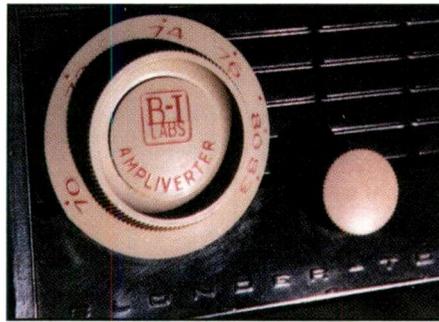
OTTO BRANDT
Vice Pres. & Gen. Mgr.

JOHN BLAIR CO.
National Rep.

Never really a "small" television station, still the early incarnation of Seattle's KING-TV only telecast with 19 kW of picture and 10 kW of sound. This channel first transmitter was an RCA model TT-5A. It and the related RCA TF-3A Superturnstile antenna were located at 301 Galer Street.

Incidentally, Ventura's Channel 19 was authorized for a little over 35-kW visual and just under 7-kW aural ERP. That's a lot more zing than our column's tiny New Hampshire station, but very modest by today's UHF-TV power norms.

I should mention that our study focuses on the smallest of what the FCC considers "full-power" television broadcasters. These are in contrast to the "low-power," or LPTV, service authorized in the 1990s. LPTV stations are not subject to certain rules and regulations mandated for their "regular" brethren, nor are they given the "full-power" sta-



Close inspection of this circa 1963 Blonder-Tongue brand UHF-TV Ultraverter dial reveals it's built to receive only "translator" Channels 70 through 83. Though equipped to concentrate on only 14 channels (compared to a standard UHF-TV converter's 70) the Ultraverter specialization costs a bit more.

tions' protections for the primary use of their operating frequency. Even so, semantics are in play here, as some LPTV operations have higher power than the "full power" outlets chronicled in this month's column. By the way, the FCC rules simply say that no application for a ("full-power") television station will be accepted unless the applicant proposes at least "100 watts of visual effective radiated power."

North To Alaska

Ironically, some of the most notable small TV stations were built in America's biggest state. Alaska's panhandle is home to VHF Channel 8 in Juneau that commenced operation in the winter of 1956. With an antenna situated 69 feet above ground, KINY-TV (now KJUD-TV) ran 239 watts of picture and 47 watts of sound. It featured both ABC and NBC network shows.

The present-day KTNL-TV at Sitka takes our teeny-weeny prize for having signed on as KIFW-TV (a CBS affiliate) during the fall of 1966 with a diminutive 199-watts visual and 30-watts aural power! KIFW-TV's signal radiated from an antenna positioned 157 feet above ground. Both the Juneau and Sitka television outlets were founded by broadcasters who operated AM stations in their respective communities.

If you're wondering how so few watts could be employed in the huge 49th State, it's likely due to the compact nature of Juneau's and Sitka's population distribution. Most of the residents lived not far from the center of town, making it possible for a couple hundred watts or less to

hit folks' nearby receive antennas. And in the case of locales with heavy cable penetration, any TV signal capable of reaching the cable system's "head end" receiving point will look crystal clear to every cable subscriber.

Translators

Prior to cable TV's widespread influence in areas without strong (Grade "A" or "B") broadcast television signals, the FCC came up with a way for enterprising broadcasters to reach the hinterlands (and neighborhoods in metropolitan venues where tall buildings adversely impacted TV coverage) with acceptable quality pictures. The FCC authorized the Television Translator service, by which a flea-powered transmitter with associated receiver and high-gain receive antenna could pull in a distant signal on, say Channel 25. It could then retransmit (or "translate") it on another channel (perhaps Channel 72) to viewers who'd otherwise not be able to get programming from that Channel 25 outlet.

If you imagine some idyllic country valley with a couple hundred homes nestled together and blocked from receiving a particular TV station because of sheer distance and surrounding mountains, you might picture the value of a translator. Using a high-gain receive antenna on a tower, it could, for example, take in a decent image of the ABC affiliate 50 miles away and send (on another channel) 100 watts or so of clear signal to those bucolic homes otherwise unable to get the ABC station's primary transmission. During the 1950s and '60s, the FCC assigned many such translators to UHF Channels 70 through 83 (or the 806- to 890-MHz range) in order to keep out of the way of most of the full-power UHF-TV outlets.

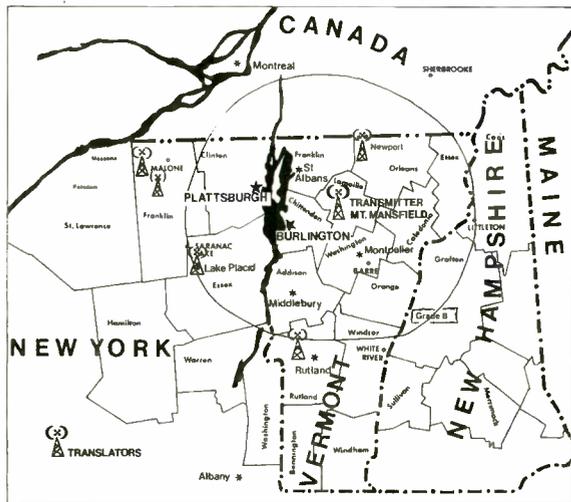
A now defunct TV translator at Torrington, Connecticut, serves as an example. There, through the 1970s, the signal from the Hartford area's Channel 30 (NBC affiliate WVIT-TV) was tough to see. Plus, cable wasn't hooked to a majority of homes. Circa 1971, the FCC authorized Channel 30's owners to build translator W79AI (translators' callsigns include their transmit channel number) way up on UHF Channel 79. The 100-watt unit served folks around Torrington. By the late 1980s, though, Channel 30 WVIT-TV boosted its main signal, plus cable delivered a fine picture from WVIT-TV. Reportedly, only a few people were

22 abc

WEZF-TV

Burlington/ Plattsburgh Market

COVERAGE MAP



Effective Buying Income	\$2,481,000,000	Population (Pers. 2+)	1,085,400
Total Retail Sales	\$1,596,505,000	Adults (Pers. 18+)	773,700
Food Store Sales	\$393,417,000	CATV Households (U.S.)	77,822
General Merchandise Store Sales	\$171,101,000	CATV Households (Canada)	295,000+
Automotive Store Sales	\$309,000,000	Montreal Metro Coverage (Pers. 2+)	2,769,100
Total Households	378,700		

National Representatives — H. R. TELEVISION, INC. New England Representatives — CREED ASSOCIATES

Box 22 Burlington, Vt. 05401 (802) 655-3663

The coverage map of Burlington, Vermont's Channel 22 shows the location of its main transmitter and five translators. See how the two translators in Franklin County, New York, one between Saranac Lake and Lake Placid, New York, and another in Rutland, Vermont deliver programming to viewers who are either completely outside or on the far fringes of the main signal. That translator up near Newport, Vermont, was installed to provide picture clarity to TV homes that, though within the big transmitter's province, are shaded by mountainous terrain. By the way, this Channel 22 began as WVNY-TV, but had a stint as WEZF-TV before reverting to its original calls.

watching W79AI in 1987 when management decided to shut it off for good.

According to Peter George's wonderful UHF-TV website (<http://www.geocities.com/radiojunkie1/W79AI.html>), where a picture of the little Channel 79 can be seen, WVIT-TV never went back to Torrington to get W79AI's gear. Someone stole the tower, but the rest of the equipment is still there, though it's been ruined by critters and weather coming in through the defunct translator's leaky roof.

Curiously, the 1963 *Broadcasting Yearbook* shows a W79AD in Southampton, New York translating Connecticut's Channel 30. This seems peculiar because Southampton is way out on Long Island, many miles from central Connecticut. Perhaps at that time, though, Channel 30's tower was closer, as the crow flies, to Southampton than any other NBC-TV affiliate.

During the 1970s, the Commission started slowly bumping translators down the band so that Channels 70 through 83 could be reassigned to "land-mobile" communication, and then to cell phones. Today, FCC rule revisions end the UHF-TV band at Channel 65. By the way, as of last summer, there were over 2,600 UHF-TV translators on the air, and nearly 2,100 (some



When Channel 16 ceased operation, Broadcast Pro-File's Jan Lowry photographed its storefront studio not long before the broadcast gear and signage were removed.

with just a couple of watts) on VHF-TV channels. Many of these are located in rural western towns.

Translator-only UHF-TV Converters

True rarities among the set-top boxes that allowed VHF televisions to receive UHF-TV stations are the converters designed only to dial in the translator (or 70 through 83) channels. Among the companies offering such gizmos were Blonder-Tongue and Jerrold. The latter firm even sold the model UAP-7083, UHF Pre-amplifier for the viewer in the absolute fringes of a needed TV translator signal. The tube-fired preamp in a small birdhouse sized box was mounted to one's rooftop antenna mast. Its power supply was remotely located (probably in the attic).

Ben Tongue, the co-owner of the electronics firm that built Blonder-Tongue UHF-TV converters (its model 99 was arguably the early 1960s sales leader among all such adapters) recalled why his company offered a special UHF converter for just the very top of that television band. He said,

The BT-70B UHF converter was designed to provide the best possible weak-signal performance for two applications. The first was to maximize reception of the MPATI (Midwest Program on Airborne Television Instruction) signals in areas where the *Stratovision* educational broadcasts were receivable. [The MPATI program consisted of educational shows broadcast on the upper end of the UHF-TV band from an airplane doing wide figure eights high above America's heartland.] The second was for reception of low power TV Translators. The product utilized a selected, low loss Germanium diode mixer. The version of the double-tuned RF pre-selector had less insertion loss than that used in the wide tuning range 14 to 83 channel converters because, due to the restricted tuning range, a better optimized circuit could be designed. Another benefit from the design was the greater band-spread that enabled easier tuning. To further improve weak signal reception, B-T also offered a tunable UHF booster, UTB-1, that used one tube and covered the whole Channel 14 to 83 band. A September 1963 price list for the model BT70-B suggests it should retail for \$46.15.

A Really Neat Broadcast-related Hobby

One evening, after working on a *Pop'Comm* column, I clicked

over to eBay and typed *UHF CONVERTER* in the search box. Only half expecting anything would be in this category, I was truly surprised to see over a dozen listings. The uncommon, aforementioned Blonder-Tongue UHF-TV converter caught my eye and ultimately came my way via a modest bid.

Not only did I learn about the existence of “Channels 70-83 only” units, the transaction also put me in contact with Mark Nelson from Massachusetts. Mark had put the item on eBay in order to slim down his sizable collection of vintage TV set-top boxes, both UHF converters and VHF-TV signal boosters. He says his “unique collecting niche was found several years ago when I decided to actively collect something television-related.” He says he’s, “been in TV engineering for many years [1971–1995] in various areas, and had just moved into a non-video job.” Mike says he “loves them—early round-screen TV sets didn’t seem practical to collect and restore—too bulky and expensive.” He continued, “So, casting my mind back to when I was a kid, the boxes that sat on top or beside the TV set came into view.”

He grew up in Warren, Ohio, 60 miles from Cleveland and Pittsburgh VHF stations, so as he says, “everyone had big ‘rotatable’ antennas and boosters. And nearby Youngstown had just become one of the first [and still one of very few] all-UHF towns, so UHF tuners were increasingly common.” A few years ago he didn’t know if such gadgets were still out there, but figured they’d be cheap and simple and small. In other words, ripe for collecting! After checking on eBay and at some local amateur radio hamfests, Mark’s collection was launched. He notes that TV boosters and UHF-TV converters are pieces “of television history that are not remembered much, if at all, so I’ve made it my goal to preserve and help record their contribution to early TV.”

How Radio “Gets Done”

Next time, among a variety of vintage AM and FM memories, we’ll identify the drop of radio’s past preserved in bottles of A-1 Steak Sauce.

Meanwhile, I shall sign off by saying...and so ends another day of broadcast history from Pop’Comm. ■

v.i.p.

spotlight

Congratulations To Bob Heinle, Jr., Of Pennsylvania!

Popular Communications invites you to submit, in about 300 words, how you got started in the communications hobby. Entries should be type-written, 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.

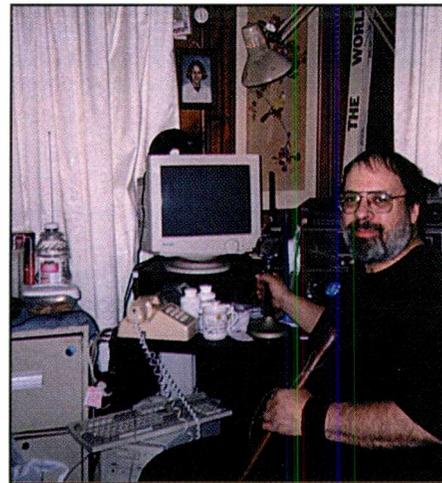
Our March Winner: Bob Heinle, Jr.

Bob tells us,

I enjoy reading *Pop’Comm* very much. My radio listening started when I was about five years old with a Rocket Crystal set. When I was a teenager we used a pair of three-channel CB walkie-talkies, which got me hooked. From there I had a tube clock radio which my younger sister now has. I’m 51 years old and retired.

When I was eight I bought two books on shortwave listening and ham radio, but didn’t get far with no “Elmer” to help me. I always listened to AM broadcast radio, and in 1969 bought an AM radio. We also had a German shortwave radio with AM/FM and record player from the early 1960s until 1977. It was a tube radio, and I heard President Kennedy’s demise on it. What a shame!

I also bought a six-channel RadioShack CB and 102-inch whip antenna for my van. I had customized a couple of vans in the 1970s when I got married in ’74. I used the CB during the 1970s’ gas crisis when I had to drive from home in Doylestown, Pennsylvania, to



Pop’Comm reader Bob Heinle, Jr., at his radio post in Pennsylvania.

Coatesville, Pennsylvania, to date my girlfriend. Mary was later my wife—for a while. It was a 56-mile run and the CB came in handy. We got married in 1974 and used CB for communication between us then we met others in the hobby and helped form the Diamond T Radio Club in 1976 and helped with community activities.

I also got a used tube-operated shortwave, which I rebuilt with new tubes and fixed the analog slide tuning with nylon fishing line. It worked quite well; I think the radio is still up at my parent’s summer place in the Pennsylvania mountains.

In 1986 my wife divorced me and I got into shortwave listening. I started studying for my No-Code ham license while I worked at Hatfield Auto Auction. I knew enough to get my ticket, but working hard and all, it just wasn’t feasible to get my license. Right now my Mom and I are studying the books for taking our Tech class test.

Right now I have scanners, CB radios with SSB, shortwave radios with SSB, and I also have military comm phones from the Vietnam era, which I use as an intercom to talk to my son in the apartment upstairs. I also have a Pentium I computer, which I don’t like too much—I really like radios more. I really want to build a 2-meter beam when I get my ham ticket. I just bought a Kenwood TM-2530A.

My old CB callsign is KGS-8775 from 1975. Thanks again for a great magazine. ■

our readers

speak out letters to the editor

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

Don't Forget The Radios

Dear Editor:

I read with some interest the letter from the past president of React International in your October issue. As one who is active in communications for the mariner on an amateur radio net I would like to respond to a few of the points he made in his letter. Carrying adequate communications especially when sailing on the oceans is a must. You wouldn't leave home for a day of blue water fishing without your personal flotation devices and adequate supplies of your favorite beverage, so give the same consideration to your communications capabilities. More boaters than we'd like neglect this at their peril.

First, let's look at the cell phone for marine communications. They may be fine if you're on inland waters, such as lakes or rivers, but I don't know of many cellular providers that are constructing towers out on the big blue. When you find you need your cell phone, if that's all you have, you may be out of luck.

Your FRS radio's range will be improved out on the water, but I wouldn't want to stake my life on it were I in need of rescue. I maintain that if you regularly find yourself out on the big blue you should avail yourself of marine HF equipment, as well as the VHF FM gear. On your HF marine unit you will always find somebody who can communicate with the Coast Guard. He or she can also provide you with expert advice, which will help you increase your chances of a successful rescue. The Coast Guard is accustomed to getting such reports from marine shore stations and ham operators. People regularly providing communications for the boating community know what information they need to collect and can communicate effectively with the Coast Guard watch officers when they need to do so.

The REACT monitor in Salem, Oregon, no doubt acted in a professional manner. Yet the Coast Guard station he contacted isn't accustomed to getting reports from CB 9 monitors. When people think of CB, most think of "smokey and the bandit" or something similar. This operator was familiar with the area and with the conditions as they might exist for the fishermen, but I don't think that a homemaker on the plains of Kansas has as good a chance of being aware of the conditions these gentlemen might face. Add to this the fact that our good REACT monitor was violating existing Federal regulations, ludicrous though they may be. For his troubles he could have been hit with a monetary forfeiture or other government action. It's always a real slap in the face to have your good deed met with a slap in the wallet, and other parts, by your government.

Before you write me off as just another ham with an anti-CB bias, consider this. I'm an active net control on the Maritime Mobile Service net on 14.300 MHz. We will answer distress calls from anyone at all! When we get such a call we know what information we need and how to go about relaying it to the Coast Guard. In turn, the Coast Guard is accustomed to dealing with our operators and is sure that when they get such reports from us that they're not hoaxes. We always ask boaters for a land-based phone number to contact, which helps weed out the hoaxes.

We also have checklists for dive emergencies as well as other situations the mariner in distress might find himself in. We have an extensive list of medical professionals and others we can call to get expert help for mariners, which may actually keep a rescue from being necessary. Coast Guard resources are finite and every time they must go on a call they are unavailable for others. If we can assist the mariner in such a way that they can make port without assistance from the Coast Guard, then the resource is available for others. Commercial marine shore stations have these resources as well.

Make these resources available to you by acquiring an HF marine transceiver for your boat, as well as a VHF FM unit. Be sure to keep both properly maintained. You don't leave the dock without flotation devices and other safety equipment, so take the same care with your radio equipment, flares, etc.

Richard Webb, NF5B
New Orleans, LA

The Not-So-Wonderful World Of BPL

Dear Editor:

I enjoyed your piece on the wonderful world of BPL. If the FCC is no longer worried about interference, does that mean that amateur radio operators can "get back to our roots" and start operating spark gap transmitters? From what I've heard, they threw out tons of interference. Can I look forward to some building articles in upcoming issues along those lines?

Bob Sturtevant, KD7KTS
Bandon, Oregon

Dear Bob:

Isn't it strange how something as outrageous as BPL could even be *considered*? I don't think we'll be doing any spark-gap articles any time soon, but maybe we could talk the FCC's Kathleen Abernathy into penning some articles on ethics and common sense. On second thought...

Galaxy DX Radios

Dear Editor:

I am not sure but the readers of your magazine may be interested in a web technical reference on Galaxy DX Radios. You will find this is the most comprehensive service information on Galaxy DX Radios anywhere. Visit http://www.cbtricks.com/galaxydx_index.htm. Also if you have the time look around the rest of the site, <http://www.cbtricks.com/>.

Bennie

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Antenna Topics

by Pat Hawker, G3VA

RSGB, 2002 Ed. 384 pages. This book is a chronological collection of selections of G3VA's words over the years. Hundreds of areas and subjects are covered and many a good idea is included.

Order No. RSAT **\$29.00**



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.

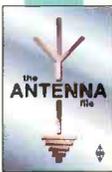
Order: RSPP **\$19.00**

Low Power Scrapbook

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



Order: RSLPS **\$19.00**



The Antenna File

RSGB. ©2001. 288 pages. \$34.95. Order: RSTAF. 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!

Order: RSTAF **\$32.00**



The Antenna Experimenter's Guide

RSGB. 2nd Ed, 1996. 160 pages. Takes the guesswork out of adjusting any antenna, home-made or commercial, and makes sure that it's working with maximum efficiency. Describes RF measuring equipment and its use, constructing your own antenna test range, computer modeling antennas. An invaluable companion for all those who wish to get the best results from antennas!

Order: RSTAE **\$28.00**



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, and 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 hand 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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New Transmitters For The Far East Broadcasting Corporation, And Bhutan Expands Broadcasting Schedule

The Far East Broadcasting Corporation (FEBC) in the Philippines recently put four 100-kW transmitters into play, along with a new antenna system. The new units replace equipment of WWII vintage, which manage do only 30 kW.

Lao National Radio, which had been off the air for a while, has resumed broadcasts at their **6130** position. It's best heard in most of North America around 1100 or 1200.

Frequency **9545**, unused for decades by the Solomon Islands Broadcasting Corporation, should be active again. It's been restored by Nigel Holmes, an engineer at Radio Australia and is expected to operate 24 hours a day. We should be able to hear it during the late evening/early morning hours, especially as we advance into spring.

Akhbar Mufriha (Joyful News) is one of the newer independent "stations" to appear on shortwave. These Arabic language broadcasts are on from 2100 to 2230 via Sackville, Canada, on 12025, but at other periods during the year Skelton, England, relays them. This operation is connected with the Arabic Broadcasting Service and also partners with Radio Ibrahim, which, in turn, has connections to HCJB. E-mail reports on this can be sent to abraio@hcjb.org.

The Broadcasting Service of Bhutan has expanded its broadcast hours and now operates daily (Monday to Friday) from 0055 to 1500 and Saturday/Sunday from 0100 to 1300, all on **6035**.

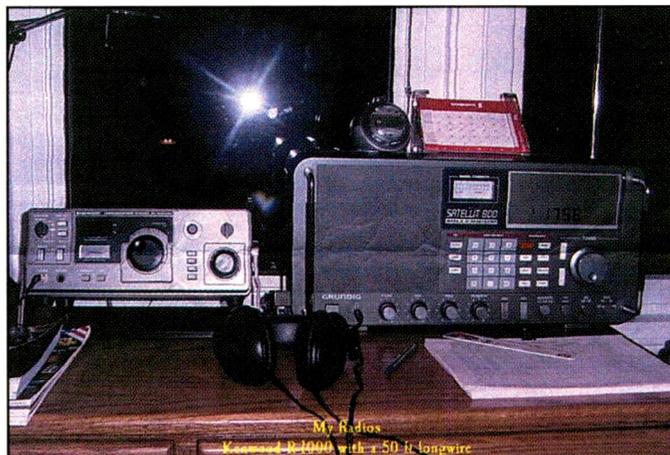
Radio Tezulutlan in Guatemala has left shortwave and is now FM only. For many years it was one of the most easily heard stations on 60 meters (4835).

Sometimes we wonder if more transmitter time is being used for relays than for basic studio-transmitter broadcasts. Voice International (Christian Voice) in Australia is now also being aired over the facilities of Radio Tashkent!

World Music Radio should be on the air from Denmark as you read this. A new studio and office complex was to be ready for use in January, and a 10-kW shortwave transmitter was scheduled for delivery a couple of months ago. Assuming everything went according to plan, the station should be on the air as you read this. We don't have an operational schedule at this writing but they'll be using **5815** or **15810**, depending on time of day, so keep an ear on those spots. We wish WMR every success in their new shortwave endeavor!

It turns out that the death of **Radio Denmark** brought about a double funeral. Without the Danish broadcasts to relay, the Norwegian shortwave facilities at Kvitsoy and Sveio also closed down at the end of 2003, meaning programming from Norway has also been lost. At the moment we don't know what adjustments the lesser broadcasters that used these facilities have had to make.

Still another European has bitten the dust. **RTE Ireland** has discontinued its daily broadcasts (which amounted to a mere half an hour per day). But you can relax because they have taken



Pop'Comm reader, Bob Charlton really rakes in the logs from his set-up in Windsor, Ontario.

your needs to heart and decided to increase their output over the World Radio Network, so you won't have the slightest difficulty hearing them. You are equipped for that, aren't you?

You can always count on there being action from **Peru**. The newest station in that very active shortwave country is **Radio Cielo**, broadcasting from Chiclayo on slightly variable **5629**. No schedule has been determined so far, but it's being heard around 1100 and again in the early evening hours. There's some feeling that this may actually be an illegal operation, run by a local cop!

Radio Apinte in **Surinam** has been reactivated on its former **4991** spot. This one is being heard in mid-evening and on into the wee hours of the morning.

A new one in **Bolivia** is **Radio Uncia**, in the town of the same name in Norte Potosi province. It's assigned to **4700** but in real life it's using **4722v**. For most of us, these small Latins require dogged pursuit.

The **Voice of America** is airing a new Urdu language program for Pakistan called "Aap Ki Duniyaa," which translates as "Your World," and is said to have been designed based on a survey of Urdu language listeners in Pakistan. It airs from 0100 to 0200 on 6170, 7175, and 9705; from 1330 to 1430 on 9510, 11715, and 15540; and from 1700 to 1800 on 11975, 13680, and 15130. Incidentally, the IBB site at Holzkirchen, Germany, closed at the end of last year.

WMLK in Bethel, Pennsylvania, should have a new 250-kW transmitter in use by now, which is quite a jump from the converted 50-kW AM unit they've used for many years. The fate of the old unit is unknown.

Our book winner this month is **Bruce R. Burrow** of Washington State. Bruce has received a 2004 edition of *Passport to World Band Radio* from Universal Radio, 6830 Americana



Parkway, Reynoldsburg, OH 43068. And “universal” is an accurate description of their catalog—it offers just about everything there is to want and wish for in the radio realm. Get a copy by writing them at the above address, phoning 614-866-4267, or sending an e-mail to dx@universal-radio.com.

Remember, your shortwave broadcast station logs are always welcomed with open arms. But please be sure to double or triple space them, list them by country, and add your last name and state abbreviation after each log. Also welcome are spare QSLs you don’t need returned, station schedules, brochures, pennants, photos, and anything else you think would be of interest. And we continue to wonder if there are any brave enough to send in a shack photo, an activity that seems to have all but disappeared in recent years!

Here are this month’s logs. All times are in UTC. Double capital letters are language abbreviations (SS = Spanish, RR = Russian, AA = Arabic, etc.). If no language is specified the broadcast is assumed to be in English (EE).

ALBANIA—Radio Tirana, **7160** at 0346 with news and features. (Newbury, NE)

ANGOLA—Radio Nacional, **4960** with PP talks and ads at 0120, into news at 0200. (Strawman, IA)

ANGUILLA—Caribbean Beacon, **6090** with Gene Scott at 0005. (Newbury, NE) 0007. (Charlton, ON)

ANTIGUA—Deutsche Welle relay, **11985** in GG at 0715. (Barton, AZ) BBC Relay, **5975** at 2230 with news, “World Book Club.” (Paradis, ME) 0000. (Newbury, NE) **15190** with news at 1615. (Quinby, PA)

ARGENTINA—Radio Rivadavia, **20276 USB** with soccer in SS at 2330. //15820LSB. (Alexander, PA) Radio Nacional/RAE, **6060** in SS at 0908, **11710** at 0121, and **15345** at 2257. (DeGennaro, NY) RAE, **11710** at 0105 in SS. (Newbury, NE) 0201 in EE thanking listeners for letters. Also **15345** in SS at 2309. (Charlton, ON) **15345** in SS 2328. (Brossell, WI)

ASCENSION ISLAND—BBC relay, **12095** at 2335. (Brossell, WI) 0000. (Newbury, NE) **15105** at 1919 and **15400** at 2115. (Jeffery, NY) Family Radio/WYFR relay, **21680** at 1741 with Bible Q & A. (Foss, Philippines) VOA relay, **11855** at 2013. (Brossell, WI)

AUSTRALIA—Radio Australia, **6020** in pidgin at 1010; **9475** to SE Asia at 1140; **9580** at 1125; **9590** at 1043; **9710** at 1050. (DeGennaro, NY) **6020** at 1149, 9580 at 1130, **11650** at 1141, **17865**, via Singapore, at 1642. (Charlton, ON) 6020 at 1305. (Newbury, NE) 9590 opening at 0800. (Barton, AZ) 11650 with ID and news at 1300. (Brossell, WI) **17715//17795//21740** at 2310 with news, ID and “Asia Pacific” program. (Burrow, WA) **17865** in EE/GG at 1600. (Quinby, PA) 21740 with domestic network relay at 2200. (Paradis, ME; Linonis, PA) Voice International, **13635** at 1605 with local weather, “Your Voice” ID, and into Christian and other rock. (Barton, AZ)

AUSTRIA—Radio Austria Int., **6155** in GG at 2018 and **9545** in GG at 1953. (DeGennaro, NY) **7325** in GG at 0108, multi-lingual ID at 0115 and into EE. Also **17870** answering listener mail at 1628. (Charlton, ON) Adventist World Radio relay, **15175** in AA at 1920. (Brossell, WI)

BELARUS—Radio Minsk, **7105** with news at 2130. (Paradis, ME)

BELGIUM—Radio Vlaanderen Int., **9590** via Bonaire at 0500.

(Linonis, PA) **15565** via Bonaire at 2239 and **17670** in Flemish at 1554. (Charlton, ON)

BOTSWANA—VOA Relay, **11835** at 0519. (Newbury, NE) **12080** at 2050. (Charlton, ON)

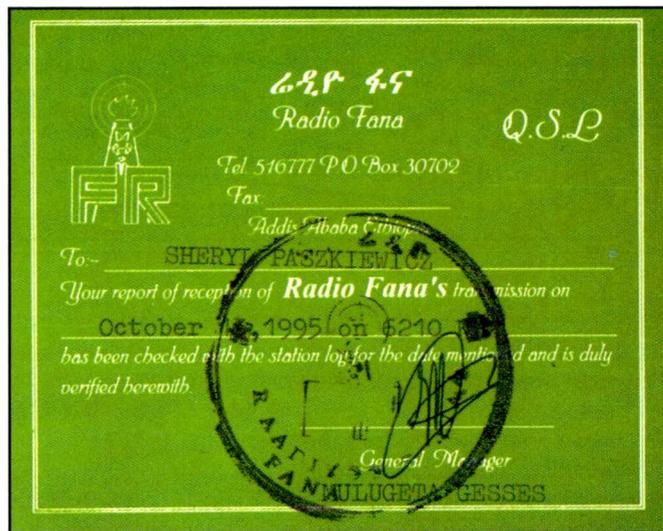
BOLIVIA—Radio San Miguel, Riberalta, **4902** at 0925 with SS talks, IDs, LA music. Drifting down slowly. (Alexander, PA) 1000 with frequent IDs. (Wilkner, FL) 1010 in SS. (DeGennaro, NY) Radio Santa Cruz, Santa Cruz, **6135** in SS at 1008. (DeGennaro, NY) Radio Yura, Yura, **4717** at 2300 and 1000 but weaker than its previous appearances. (Wilkner, FL) Radio Nacional, Huanuni, **5965** at 0930 but very, very weak. (Wilkner, FL)

BOSNIA—International Radio of Serbia and Montenegro, **7130** at 0200. (Paradis, ME)

BRAZIL—Radio Universo/Radio Tupi, Curitiba, **9565** with religious message in PP at 0008. (DeGennaro, NY) 0022 (Jeffery, NY) **11765** at 2246 with long religious talk in PP. (D’Angelo, PA) Radio Nacional/Radio Nacional Amazonas, **6180** in PP at 2358. (DeGennaro, NY) **11780** at 2254. (Brossell, WI) 2313 in PP. (Charlton, ON) 0115 with futbol. (Quinby, PA) 0120 with sports coverage. (Newbury, NE) 0800. (Barton, AZ) Radio Rio Mar, Manaus, **9695** in PP at 2244. (DeGennaro, NY) Radio Nacional, Sao Gabriel, **3375.1** with religious vocals and PP religious talks at 0936. (D’Angelo, PA) 0945. (DeGennaro, NY) Radio Alvorada, Londrina, **4865** in PP with music and talk at 0930. (DeGennaro, NY) Radio Difusora, Acreana, Rio Branco, **4885** in PP at 1006. (DeGennaro, NY) Radio Brazil Central,

Abbreviations Used In This Month’s Column

//	—	Parallel frequency
ABC	—	Australian Broadcasting Corporation
AFRTS	—	Armed Forces Radio Television Service
AFN	—	Armed Forces Network
AIR	—	All India Radio
anncr	—	announcer
anmt(s)	—	announcement(s)
BSKSA	—	Broadcasting Service of the Kingdom of Saudi Arabia
CNR	—	China National Radio
GOS	—	General Overseas Service
ID	—	identification
Int’l	—	international
IS	—	interval signal
Lang	—	language
LSB	—	lower sideband mode
NBC	—	National Broadcasting Corporation
OA	—	Peru, Peruvian
PBS	—	People’s Broadcasting Station
Pgm	—	program
RRI	—	Radio 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



Sheryl Paszkiewicz got this small but nice green and white QSL from Ethiopia's Radio Fana.

Goiania, **4985** in PP with music and talk at 0225. (DeGennaro, NY) Radio Difusora, Taubate, **4925** with local news in PP at 1008. (DeGennaro, NY) Radio Anhanguera, Goiania, **4915** with PP phone-in calls at 1018. (DeGennaro, NY) **11830** with PP talks at 2249. (Brossell, WI) Radio Difusora da Amazonas, Manaus, **4805** with PP ID at 1040, domestic news. (DeGennaro, NY) Radio Difusora, Roraima, Boa Vista, **4875** in PP with ID at 1102. (DeGennaro, NY) Radio Aparecida, Aparecida, **6135** with religious talk in PP at 2354. 9630 at 2343 with women talking in PP. (DeGennaro, NY) Radio Nova Visao, Santa Maria, **9530** with religious message in PP at 0011. (DeGennaro, NY) **11735** at 0855 with PP talks, multiple IDs. (D'Angelo, PA) Radio Educacao Rural, Tefe, **4925** in PP with local notices. (DeGennaro, NY) Radio Rural, Santarem, **4765** with PP commercials at 1020. (DeGennaro, NY) Radio Guaruja Paulista, Presidente Prudente, **5045** with PP vocals at 0232. (DeGennaro, NY) Radio Clube do Para, **4885** with religious messages, vocals in PP at 1011. (DeGennaro, NY) Radio Senado, Brasilia, **5990** in PP at 0940. (DeGennaro, NY) Radio Cancao Nova, Cachoeira Paulista, **4825** with PP religious programming. //**6105, 9675**. (Alexander, PA) 9675 with religious talk in PP at 2324. (DeGennaro, NY) Radio Cultura, Ondas Tropicais, **4845** with sign on in PP at 1006. (Alexander, PA) Radio Bandeirantes, Sao Paulo, **9465** with PP quiz show at 2337. (DeGennaro, NY) 0200 with ballads. (Linonis, PA)

BULGARIA—Radio Bulgaria, **5800** in BB at 2116 and 9400 at 0110. (Charlton, ON) **7400/9400** with ID, EE news at 0001. (Burrow, WA) 9400 at 0230 in FF. (Newbury, NE) 9400 at 0323 and **15700** at 1211. (DeGennaro, NY) **9900** in unid language at 1305. (Northrup, MO) **11600** in SS at 2300 and 15700 in PP at 1310. (Brossell, WI)

CANADA—RCI, **9590** at 0021, **11725** via Netherlands in FF at 2025 and **11865** in SS at 0137. (DeGennaro, NY) **5960** in FF at 2320, **9590** in EE at 2340 and **17720** in EE at 1523. (Charlton, ON) 9590 with "As It Happens" at 0026. (Newbury, NE) CBC Northern Service, **9625** with "Northern Lights" classical music program at 0505. (Burrow, WA) CBC Radio One, **9515** at 1315. (Northrup, MO) Ahkbar Mufriha (Joyful News Station) via Sackville, **12025** via Sackville at 2125 with mix of AA Christian broadcasters here with Arabic Broadcasting System to 2130 then Radio Ibrahim opening at 2158. (D'Angelo, PA)

CHILE—Voz Cristiana, **9635** in SS at 1046, **11890** in SS at 1042, and **17680** at 2309. (DeGennaro, NY) **11745** at 0128. (Newbury, NE) 11745 at 0155. (Quinby, PA) 11745 at 0206, **17680** at 1438 and **21500** at 1918, all in SS. (Charlton, ON)

CHINA—China Radio Int., **5960** via Canada at 1122, **9440** in CC at 1111 and **11975** via Mali in FF at 2200. (DeGennaro, NY) **9570** at 1335, **9580** via Cuba at 0110, **9790** via Canada at 0111, **11640** via Mali at 2102, **11650** in SS at 0103, 13630 via Mali at 2113, **13680** via Canada

at 2316, and **17720** via Cuba at 1413. (Charlton, ON) 9440 in unid language at 1150, **9550** in unid language at 1206, **15100** in CC at 2320. (Jeffery, NY) 9570 in EE at 1701. (Burrow, WA) **9870** in RR at 1315. (Brossell, WI) 17720 via Cuba at 1410. (Barton, AZ) Heilongjiang PBS, Harbin, **5945** in CC at 1007. (DeGennaro, NY) CPBS, Xi'an, **9810** in CC at 1104. (DeGennaro, NY) CNR Geermu, **6090** in CC at 1230. (Paszkievicz, WI) Xizang PBS, Lhasa, **4820** in Mandarin at 2330. (Strawman, IA) Music Jammer, **9905** at 1615 against RFA via Palau and **11750** against RFA-Northern Marianas. (Brossell, WI)

COLOMBIA—La Voz de tu Concencia, Puerto Lleras, **6009.8** with SS religious messages at 1121. (DeGennaro, NY) Radio Melodia, Bogota, **6140** at 0338 with vocals, mentions of Colombia, "HJQE," xylophone effects. (Paszkievicz, WI) 0720 in SS with nice ballads. (Alexander, PA) SS ID at 1105 and news. (DeGennaro, NY)

COSTA RICA—University Network, **5030** heard at 0112, **13750** at 0020. (Charlton, ON)

CROATIA—Croatian Radio, **6165** in Croatian at 2237. (DeGennaro, NY) **7285** (via Germany) at 0300. (Paradis, ME)

CUBA—Radio Havana Cuba, **9600** in SS at 0024 and **11760** in EE at 2030. (DeGennaro, NY) **6000** at 0141, **9550** in SS at 2123, **9820** in SS at 2123. (Charlton, ON) **15120** with sign on in PP at 2000. (Linonis, PA) Radio Rebelde, **9600** in SS at 1055. (DeGennaro, NY)

CYPRUS—BBC Relay, **9915** in AA. Also **11820** at 1348. (Brossell, WI) Cyprus Broadcasting Corp, **7210** in Greek at 2240. Sudden close at 2245. (Paszkievicz, WI)

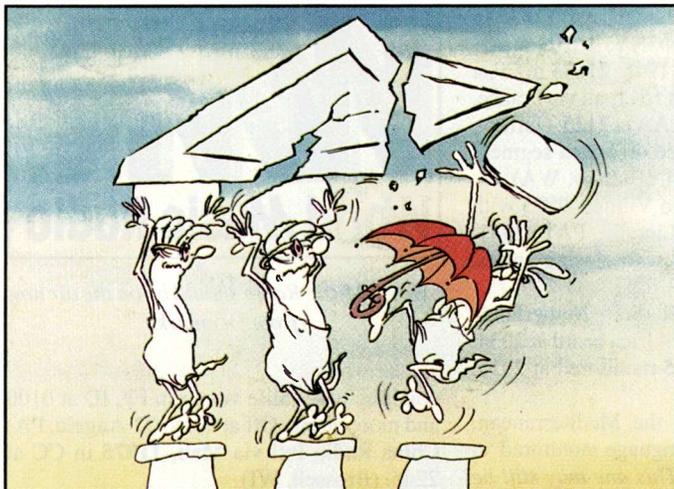
CZECH REPUBLIC—Radio Prague, **6200** at 0104, **7245** at 0105, **7345** at 0110, **21745** in Czech at 1630. (Charlton, ON) 6200 in SS at 0314. (DeGennaro, NY) **17485** in EE at 1659. (Burrow, WA)

DOMINICAN REPUBLIC—Radio Cristal, **5010** with religious programs in SS at 1037. (DeGennaro, NY) Radio Cima Cien, **4959.8** with meringue music and SS talks at 0432. (DeGennaro, NY)

ECUADOR—HCJB, **11920** at 0134 in PP, //**12020**. (Newbury, NE) 0140 in PP. (DeGennaro, NY) **15115** at 1225. (Northrup, MO) 1328. Also **15140** in SS at 1434. (Charlton, ON) Radio Centinela del Sur, Loja, **4772.6** at 2300 with music and one SS ID. (Wilner, FL) Radio Quito, **4919** with news in SS at 1110. (DeGennaro, NY) Radio Oriental, Tena, **4781.4** with SS anmts, ads, Ecuadorian music at 1010. (Alexander, PA) **4781** (t) in SS at 1031. (DeGennaro, NY) Radio Federacion Sucua, **4960** in QQ at 1111. (DeGennaro, NY) La Voz del Napo, Tena, **3279** with Ecuadorian music, SS religious programming at 0852. (Alexander, PA) 3279 at 0954. (DeGennaro, NY)

EGYPT—Radio Cairo/Egyptian Radio, **9900** in FF at 2107. (DeGennaro, NY) 2142 in EE. (Burrow, WA) 2213. Also **11725** in EE at 0008. (Charlton, ON) **12050** in AA at 2235. (Brossell, WI)

EL SALVADOR—Radio Imperial, Sonsonate, **17835** with hymn, sermon before an audience. (Paszkievicz, WI)



A BRT—now Radio Vlaanderen—QSL issued in 1988.

BRT WERELDOMROEP
BRT INTERNATIONAL
BRT INTERNACIONAL

Bevestiging van uw ontvangstrapporten
 Confirmation de vos rapports d'écoute
 Bestätigung Ihrer Empfangsberichte

This is to confirm your reception reports
 Confirmamos sus informes de recepción

DATUM/DATE: 11/1/88 DATUM/DATE: 05/1/88 DATUM/FECHA: DATUM/FECHA:
 UUR: 00.30 UTC UUR: 00.30 UTC A/HORA: UTC A/HORA: UTC
 ZEIT: 00.35 ZEIT: 00.35
 FREQUENTIE: 9.10 kHz FREQUENTIE: 9.95 kHz FREQUENCY: kHz FREQUENCY: kHz
 FRECUENCIA: kHz FRECUENCIA: kHz

Een Griekse Tragedie, tekenfilm van Nicole Van Goethem

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ENGLAND—BBC, **5975** via Antigua at 0203, **11675** via Antigua at 2123, **12095** via Ascension at 0033, **15400** via Ascension at 2048, **17640** at 1441, 17830 via Ascension at 1947, **17775** via Botswana at 1915, **21470** at 1807, **21630** via Ascension in FF at 1819, **21660** at 1513. (Charlton, ON) **11680** to the Falklands at 2127. (Jeffery, NY)

ETHIOPIA—Radio Ethiopia, **9561** with local vocals at 1426. (Strawman, IA) Tentative at 1624 with their distinctive “bells” bridge music, news at 1630, mention of Ethiopia and into music again at 1638. (Burrow, WA) Radio Fana, **6209.9** at 0318 with Horn of Africa music to ID and news in Amharic at 0330. (D’Angelo, PA) **6940** at 0330 with local talk and vocals. // **6210**. (Strawman, IA)

FRANCE—RFI, **6175** in SS at 1017. (DeGennaro, NY) **9790** in FF at 2328. (Newbury, NE) **9790** in FF at 2125, **9800** in FF at 0142, **15605** in EE at 1635, **17605** in FF at 1552, **17850** in EE at 1600, **21580** in FF at 1507, **21620** in FF at 1510. (Charlton, ON) **17620** heard at 1400. (Paradis, ME)

FRENCH GUIANA—RFI Relay, **11665** in SS monitored at 0114. (DeGennaro, NY) **17515** at 1423 and **17630** in SS heard at 2104. (Charlton, ON)

GABON—Africa Number One, **9580** in FF at 2005. (DeGennaro, NY) Radio France Int. Relay, **11955** in FF at 2015. (Brossell, WI) **17630** in FF at 1555. (Charlton, ON)

GERMANY—Deutsche Welle, **3995** in GG at 2230. (Paradis, ME) **6100** in GG at 0150. (Newbury, NE) **11615** in PP to Southern Africa at 2010. (DeGennaro, NY) **13790** via Portugal in GG at 1940, **11865** in GG at 2159, **15215** and **15680** in EE at 1747, **17715** in FF at 1556, **17845** in EE at 1600, **21790** in GG at 1459. (Charlton, ON) Bayerischer Rundfunk, **6085** in GG at 2012. (DeGennaro, NY) Evangelium Radio **6045**, via Julich with religious messages in GG at 0958 with IS and opening by woman with several IDs, into long talk. (D’Angelo, PA) Radio Ibrahim via Julich, **12025** at 2100 with piano IS, news, IDs, addresses. (Paszkiwicz, WI)

GREECE—Voice of Greece, **5865** in Greek at 0437 and **17565** via Greenville with live sports event in Greek at 2058. (DeGennaro, NY) **17705** via Delano in Greek at 1635. (Charlton, ON)

GUAM—KTWR/Trans World Radio, **11560** with ID and schedule at 1658. (Burrow, WA) **11695** in CC heard at 1328. (Brossell, WI) Armed Forces Network, **13362 USB** heard at 0151 with live sports. (Foss, Philippines)

GUATEMALA—Radio Tezulutlan, **4835** in SS at 0130. (Paradis, ME) (This has reportedly left shortwave.—gld) Radio K’ekchi, **4845** at 1020 with SS talks and polka-style music. Religious programming at 1100. (Alexander, PA) Radio Coatan, Coatan, **4780** at 0223 with soft vocals, SS talk, closing anmts and sign off at 0238. (D’Angelo, PA) 0240 to 0254 close. (Alexander, PA) Radio Buenas Nuevas, San Sebastian, **4799.8** with religious talks in SS at 1036. (DeGennaro, NY) Radio Verdad, Chiquimula, **4052.5** heard at 0320 with SS talks, IDs, religious music. (Alexander, PA)

GUYANA—Voice of Guyana, **3291** at 0812 opening with EE religious music, ID, Hindi vocals. (Alexander, PA)

GUINEA—RTV Guinnee, **7125** with music and FF anmts. (Brossell, WI)

HAWAII—KWHR, **9930** with Bible program heard at 1320. (Paszkiwicz, WI) **17780** with shouting preacher monitored at 0520. (Newbury, NE)

HONDURAS—Radio Litoral, La Ceiba, **4832** at 1100 sign on with light instl music, SS anmts, and into SS religious music. (Alexander, PA) 0424 with choral music. (DeGennaro NY) HRMI/R. Misiones Internacionales, **3340** at 0230 with SS religious programming. Off at 0501. (Alexander, PA) Radio Luz y Vida, **3249** in SS at 0100. (Paradis, ME) 0348 with SS preacher and U.S. address for letters. ID and closing anmts at 0354 and anthem. Open carrier from 0356 to 0359 when carrier went off. (D’Angelo, PA)

HUNGARY—Radio Budapest, **6025** at 2200 with ID, news and features. (Paradis, ME) **9580** in HH at 2359, EE ID and news in HH monitored at 0000. (DeGennaro, NY)

INDIA—All India Radio: **4790**—Chennai, 0027 to 0046 close with continuous sub-continental vocals, talk in presumed Tamil at 0040. **4860**—Delhi at 1220 with long talk by woman, time pips at 1230 and news in EE. **4880**—Lucknow (p) at 1224 with female vocals and sitar, man with HH talk. (D’Angelo, PA) **9445** in EE at 2121, **11620** in EE at 2213. (Charlton, ON) **9425**—Bangalore, in Hindi at 0014, 11620—Delhi in Hindi at 1115 and **15235**—Panaji (Goa) in Hindi at 1157. (DeGennaro, NY) **11620** at 1905 in EE. (Brossell, WI) (Newbury, NE) **11715** in Hindi at 0130. (Linonis, PA)

INDONESIA—RRI-FakFak, **4790** with pops in II at 1357, // **4870**—Wamena. (Strawman, IA) RRI-Cimanggis, (t) **9680** in unid language at 1055. (DeGennaro, NY) Voice of Indonesia, **9525** at 1111 with Indo-pops and II talk. (Newbury, NY) **15150** at 2010 in EE to 2100 close. “And that’s the news coming to you from the Voice of Indonesia.” Poor in noise. (D’Angelo, PA)

IRAN—VOIRI, **7130** in SS at 2043, ID 2045. (DeGennaro, NY) **7200** at 0157 in EE and **9580** in EE at 0203. (Charlton, NY) **7235** at 2214 with long AA talk. Off at 2227. (D’Angelo, PA) **15230** in Farsi at 1307. (Brossell, WI) Voice of Justice via Iran, **6020** at 0128 sign on with “This is the Voice of Justice,” choral anthem, and opening anmts mentioning **6025** and **9875** (neither heard). Koran, political talk, and other/only “Voice of Justice” IDs. (D’Angelo, PA)

ISRAEL—Kol Israel, **9390** in HH at 2245 and **11605** in EE at 2006. (DeGennaro, NY) 11605 in HH at 1957, **15640** in HH at 1933 and **17545** in HH at 1634. (Charlton, ON)

ITALY—RAI, **9515** with EE news at 12030. **9675** in II at 0046 and **11800** in II at 0133. (DeGennaro, NY) **11800** at 0110, // **9675**. (Newbury, NE) 2252 in II. (Brossell, WI) 9675 at 0100 and **11800** at 0101. Also **11895** in II heard at 2228. (Charlton, ON)

JORDAN—Radio Jordan, **11690** with rock at 1510. (Newbury,

NE) 1605 with ID "Radio Jordan, 96.3 FM." (Burrow, WA)

JAPAN—Radio Japan, **5960** via Canada in JJ at 0253. **6110** via Canada in JJ at 2232. **6120** via Canada in EE monitored at 1042. **11855** via Ascension at 2151 and **17605** via Netherlands in JJ at 2306. (DeGennaro, NY) 6120 at 1156. **6145** via Canada at 0016, 11705 via Canada at 1510, 11855 via Ascension at 2145. (Charlton, ON) 7230 via England at 0518. **11895** via French Guiana in JJ at 2210 and **11915** via Gabon in SS at 0523. (Newbury, NE) **11665** in unid language at 2230. (Paradis, ME)

KUWAIT—Radio Kuwait, **9880** in AA at 2103, **11990** in EE at 2055. (DeGennaro, NY) **11990** at 1800. (Burrow, WA; Paradis, ME) **13620** in AA at 1350. (Northrup, MO)

LAOS—Lao National Radio, **6130** at 1141 with music to 1159 when seven gongs f/by presumed ID and some instl. Music to news at 1200. (D'Angelo, PA)

LIBERIA—ELWA, **4760** at 0556 sign on with Celeste, IS, and into religious music.

(Alexander, PA) Radio Jamahiriya, **11635** in AA at 2017. (DeGennaro, NY) **15105** in AA at 1945, 15105 in AA at 1945, **21675** in FF at 1148 and **21640** in AA at 1511, all via France. (Charlton, ON) **15435** in AA at 2125. (Jeffery, NY) **15660//17880** Voice of Africa segment via France in EE at 1734. (Burrow, WA)

LITHUANIA—Radio Vilnius, **9875** with EE sign on at 1300. (Linonis, PA) 2331. (DeGennaro, NY) 2355 with closing anmts. (Charlton, ON)

MADAGASCAR—Radio Netherlands Relay, **7120** to Southern Africa heard at 2034. (DeGennaro, NY) **11655** monitored at 2015. (Newbury, NE)

MALTA—Voice of the Mediterranean, **9605** via Italy in unid language monitored at 1147. (Charlton, ON) (*This one may still be active.—gld*)

MALAYSIA—Radio Malaysia, **7270** with pops heard at 1345. (Barton, AZ) **7295** with news at 1601 and into music dedications. (Burrow, WA)

MALI—RTV Malienne, **4835** at 0048 with



World Music Radio should be on the air now from Denmark.

continuous Highlife vocals in FF, ID at 0100 and more music. Off at 0118. (D'Angelo, PA) China Radio Intl via Mali, **11975** in CC at 2245. (Brossell, WI)

MAURITANIA—Radio Mauritanie, **4845** at 2320 with string instrument, singing AA anmts. (Brossell, WI) 0338 with talk in AA. (Jeffery, NY)

MEXICO—Radio Educacion, **6185** with classical music and SS talk monitored at 1025. (DeGennaro, NY) 0150 with SS songs. (Charlton, ON) Radio Mil, **6010** in SS with variety of music at 0910. (DeGennaro, NY) Radio Universidad/XEXQ, **6045** in SS but poor at 1210. (Wilkner, FL) 0455 in SS with music. (DeGennaro, NY)

MOROCCO—Radio Medi Un, **9575** in FF with music at 0018. (DeGennaro, NY) RTV Marocaine, **5980** in AA at 0447. (DeGennaro, NY) **7135** in AA at 2340 and **15345** in AA at 1930. (Brossell, WI) 15435 in AA at 1751. (Chandler, ON) 2110. (Jeffery, NY) VOA Relay, **15220** in FF at 1955. (Jeffery, NY)

MYANMAR—Radio Myanmar, **5040.6** heard at 1215 with vocals and woman anncr in Burmese, apparent news at 1230. (D'Angelo, PA)

NEW ZEALAND—RNZI, **6095** with music, woman anncr at 1315. (Newbury, NE) **11675** with news at 0832. (Barton, AZ) **15265** at 1920 and **15340** at 0430. (Barton, AZ) **17675** at 2246. (Foss, Philippines) 2304 with news. (Burrow, WA) 0011. (Charlton, ON)

NETHERLANDS—Radio Netherlands, **5944** in DD at 0949. (DeGennaro, NY) **15220** via Canada at 1514, **15315** in DD heard at 12201. (Charlton, ON)

NETHERLANDS ANTILLES—Radio Netherlands Relay, Bonaire, **6165** in SS at 1126. (DeGennaro, NY) 0103 in EE. **9845** in EE at 0012, 21590 in EE at 1920. (Charlton, ON) 9845 at 0014. (Newbury, NE) **12080** ending EE at 1000. (Barton, AZ) **17810** in EE at 1951. (Jeffery, NY)

NIGERIA—Voice of Nigeria, **7255** at 0500. (Newbury, NE) **15120** in EE at 1530. (Alexander, PA) 1945. And **17800** at 2043. (Charlton, ON) 17800 with news at 2115. (Brossell, WI) Radio Kaduna (p) **4770** at 2229 with Afro-pops and reggae. (Strawman, IA)

NORTH KOREA—Voice of Korea, **7580** in EE at 1130. (Linonis, PA) **9335//11710** at 1300 with anthem and ID. (Brossell, WI) **9650** in KK at 1118. (DeGennaro, NY) **9975** inn EE

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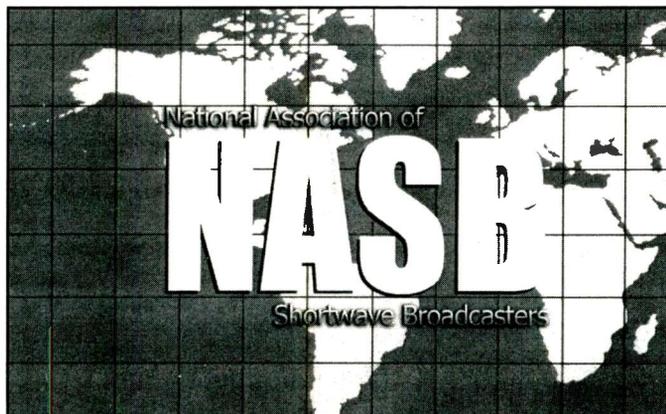


CQ Communications, Inc.



25 Newbridge Road, Hicksville, NY 11801





This (US) National Association of Shortwave Broadcasters QSL went to Rich D'Angelo (PA).

at 1622. (Barton, AZ) 11710 at 1500 with ID, IS, news. (Paradis, ME) 11735 at 0103 and 15245 in FF at 1037. (Charlton, ON) KCBS 11680 in KK heard at 1302. (Brossell, WI)

NORTHERN MARIANAS—VOA Relay, 9705 in presumed Cantonese at 1302. (Strawman, IA) 11805 in CC at 1310. (Brossell, WI) 13620 at 0930. (Foss, Philippines)

PAKISTAN—Radio Pakistan, 11570 with news in EE at 1602. Off at 1615. (Burrow, WA) 1804 with domestic music. (Foss, Philippines)

PAPUA NEW GUINEA—NBC, 4890 in EE and pidgin at 1130. (Linonis, PA) 9675 in EE at 2252. (Charlton, ON)

PERU—NOTE: All broadcasts in SS and feature local (OA) music. Radio Cora, Lima, 4915 with music, man/woman anners at 0237. (Jeffery, NY) La Voz de la Selva, Iquitos, 4825 at 1044. (DeGennaro, NY) Radio Union, Lima, 6115 strong at 0957 but blocked by sign on of Radio Japan via Sackville at 1000. (DeGennaro, NY) 1030 with anthem at 1058, ID, anmts. (Alexander, PA) Radio del Pacifico, Lima, 4975 with possible religious talks at 1030. (DeGennaro, NY) Radio Oriente, Yurimaguas, 6188 at 0952 with OA music, lots of DJ chatter. (Alexander, PA) 1035 with man hosting OA vocals, shouting over music, IDs, and TCs. (D'Angelo, PA) 1050 with IDs, music. (Wilkner, FL) Radio Imperio, Chiclayo, 4386.6 at 0245 with religious programming. Also noted at 0830. (Alexander, PA) 1015 with talk, ID, vocals, long prayer with audience. (Paszkiwicz, WI) Radio La Hora, Cusco, 4856 at 2320 with fast-talk, "Happy Birthday" song. (D'Angelo, PA) 2330 with talk, phone call. (Alexander, PA) Radio Huanta 2000, 4746.9 at 0917 with rustic vocals, fast-talking male anncr, ID, TC. (D'Angelo, PA) 1005. (Alexander, PA) Radio Illucan, Cutervo, 5678, at 0055 with lively Andes-style music, heavy reverb on anmts, into ads at 0103. (Strawman, IA) 0132 with talk to rustic vocals at 0200. Off at 0208. (D'Angelo, PA) Radio Cielo, Chiclayo, 5628.1 with OA music and IDs. Up to 5629.1 by 1135. (Alexander, PA) Voz del Campesino, Huamarca, 6956.9 at 2310 weak, with ballads and anmts. (Strawman, IA) Radio Norandina, Celendin, 4661 at 1000 with "flauta Andina Linda" and IDs. (Wilkner, FL) Radio Melodia, Arequipa, 5906.5 with OA music, talk, ID, anmts, ads, jingles at 0940. (Alexander, PA) Radio Victoria, Lima, 6020 with preaching and IDs, music at 0220, another ID, more preaching. (D'Angelo, PA)

PHILIPPINES—Radio Veritas Asia, 9520 in CC at 1017. (DeGennaro, NY) FEBC, 9405 in CC at 1224. (Jeffery, NY) 9500 in Mandarin service at 1317. (Strawman, IA) Radio Pilipinas, 11720 in unid language at 1936. (Charlton, ON) 15190 in Tagalog with talk, ID, and news at 1800. (Burrow, WA) VOA Relay, 7215 at 2316. (Foss, Philippines) 9760 with EE lessons at 1512. (Newbury, NE) 11825//15160 in CC heard at 1310. (Brossell, WI)

PORTUGAL—RDP Int., 11655 with anthem heard at 2259, ID, website, frequencies and into presumed news in PP. (Brossell, WI) 0123 in PP. (Newbury, NE) 15540 in PP at 2051 and 17680 in PP at 2052. (Charlton, ON)

PUERTO RICO—Armed Forces Network, 7507 with various features at 0505. (Newbury, NE)

RUSSIA—VOA relay, 11990 in CC at 1317. (Brossell, WI) TDP Radio, 7560 at 2040 with techno, vocal, partial ID, and off at 2059. (Paszkiwicz, WI; D'Angelo, PA) Voice of Russia, 5945 via Armavir in SS to South America at 0247. 6155 via Armavir in EE at 0308. 7240 via Ukraine in RR at 0314. (DeGennaro, NY) 6205 from Chita in VV at 1245. Also 9900 via Samara in Pashsto/Dari at 1405. (Strawman, IA) 7180 at 0209 and 9480 in SS at 0126. (Charlton, ON) 7300 (from Kaliningrad) with "Moscow Mailbag" at 2100. (Paradis, ME)

RWANDA—Deutsche Welle relay, 11945 in GG at 2100. (Brossell, WI) 15410 with "News Link For Africa" at 2100. (Paradis, ME) 2120. (Newbury, NE) 21560 in FF at 1545. (Barton, AZ)

SAO TOME—VOA Relay, 4960 at 0427 with frequency anmt, ID and into "News Now" format. (D'Angelo, PA) 7290 at 0338. (Newbury, NE) 11775 in FF at 2054 with severe QRM from Caribbean Beacon. (Brossell, WI) 11875 to Africa at 2049. (DeGennaro, NY)

SAUDI ARABIA—BSKSA, 9555 in AA at 2042. (DeGennaro, NY) 11820 in AA at 11800 and 15435 in AA at 1518. 21500 at 1455 and 21600 at 1508, both in AA. (Charlton, ON) 15380 in AA at 1310. (Brossell, WI)

SEYCHELLES—BBC Relay 5980 to East Africa at 2001 and 9605 at 2211. (DeGennaro, NY)

SINGAPORE—BBC Relay, 6195 at 1530. (Barton, AZ) 9740 at 1041. (DeGennaro, NY) 1102. (D'Angelo, PA) 1218. (Jeffery, NY) 1337. (Newbury, NE) Radio Singapore, 9665 at 1333 with Indonesian service. (Strawman, IA) Radio Australia via Singapore, 12010 in CC at 1354. (Brossell, WI) Swiss Radio Int., via Singapore, 11905 at 2200 in FF. (Quinby, PA)

SLOVAKIA—Radio Slovakia Int., 5930 with QRM from WWCR at 0105 and 7230 at 0106. (Charlton, ON)

SOUTH AFRICA—Channel Africa, 9770 at 0335 to abrupt close at 0359. (Burrow, WA) 11710 at 0500 with news, ID. (Newbury, NE) 15265 at 1800 to 1900. (Paradis, ME) 1807 with sports, economics. (Burrow, WA) 1850 to 1900 about solar flares and their effects. (Linonis, PA) 1257 with IS and ID. Also 17770 at 1522. (Charlton, ON) Radio Ecclesia relay, 7205 at 1940 with PP talks, IDs to 2000 close. (Paszkiwicz, WI) Adventist World Radio relay, 15365 at 2020 in FF with ID, music, man/woman anners. (Jeffery, NY)

SOUTH KOREA—Radio Korea Int., 9560 via Canada heard at 0201 after VOA close. (Jeffery, NY) 0206. Also 9570 at 1344 and 9650 at 1214. (Charlton, ON) 9760 via Canada in SS heard at 1051. (DeGennaro, NY)

SPAIN—Radio Exterior de Espana, 6055 in SS at 0101, 9540 in SS at 2333, 15110 in SS at 1937, 17595 in RR at 1437, 17850 via Costa Rica in SS at 1910, 21570 in SS at 1506, 21610 in SS at 1509 and 21700 in SS at 1516. (Charlton, ON) 5970 via Costa Rica in SS at 1141, 6055 in SS at 0500, 9595 in EE at 2048, 9540 in SS at 0014, 9620 in SS at 0027, 15170 in SS at 1151. (DeGennaro, NY) 11815 in SS at 1140. (Barton, AZ)

SRI LANKA—SLBC, 9770 in EE at 0131 but poor audio. (Charlton, ON) VOA Relay, 12115 with call-in program to abrupt close at 1659. (Brossell, WI) 15690 at 0128. (Newbury, NE) Deutsche Welle Relay, 11890 in AA at 2058, ID 2100. (Brossell, WI) 17820 in unid language at 1230. (Jeffery, NY)

SUDAN—Sudan Radio Service, 17630 via England with EE ID at 1516. (Charlton, ON)

SWAZILAND—Trans World Radio, 4775 at 0345 to 0355 close and 0400 return with long talks in vernacular. German segment at 0400. 7225 at 0336 with preaching in listed Swahili, woman with ID, and several contact addresses at 0343. (D'Angelo, PA)

SWEDEN—Radio Sweden, 9495 via Canada at 0148 and 17840 in Swedish at 1445. (Charlton, ON) 18960 with news, local weather and features at 1430. (Paradis, ME)

SWITZERLAND—SRI, 9885 at 2337, 11660 at 2352, 13795 at 2022, 15220 via Germany at 1934, 15550 in FF at 1811, 17776 via French Guiana at 1934. (Charlton, ON)

TAIWAN—Radio Taiwan Int., 5950 via Florida in CC at 2318, 9680 at 0212, 15130 via Florida to 2157 close and 15600 via Florida at 2227. (Charlton, ON) 9280 in CC at 2316 and 11605 in CC at 1255. At 1257 the music jammer began to cause severe QRM. (Brossell, WI)

11550 with language lesson at 1650 UTC. (Burrow, WA)

TAJIKISTAN—Voice of Russia relay, 11500 in listed Hindi at 1315. (Brossell, WI)

THAILAND—Radio Thailand (t), 7285 in presumed Thai at 1030. (DeGennaro, NY) 9535 at 2035 with tentative EE ID at 2044. (Burrow, WA) 9560 with EE news at 1403. (Strawman, IA) 9680 at 0000 but poor and mixing with an unid station. (Alexander, PA) 15395 but poor at 0034. (Charlton, ON) VOA relay, 11875 in CC at 1307 with music jammer underneath. (Brossell, WI)

TUNISIA—RTV Tunisienne, 7190 in AA at 2217 and 17735 in AA at 1556. (Charlton, ON) 7275 in AA at 0513. (Newbury, NE) 12005 in AA at 1910. And 15450 at 1310. (Brossell, WI) 15450 in AA at 1203. (DeGennaro, NY) 17735 at 1550. (Barton, AZ)

TURKEY—Voice of Turkey, 5980 with news at 2007, 9460 in TT at 2024. (DeGennaro, NY) In TT at 2153. (Newbury, NE) 9460 in TT at 0118 and 9830 in EE at 2221. (Charlton, ON) 9655 with news at 2300. (Paradis, ME) 2332. (Burrow, WA) 17860 heard at 1127. (Foss, Philippines)

UKRAINE—Radio Ukraine Int., 5905 at 0129. (Charlton, ON) 0441. (DeGennaro, NY)

UNITED ARAB EMIRATES—UAE Radio, Dubai, 13630 with EE talks at 1343. (Newbury, NE) Tentative, in EE at 1605. Into AA at 1615. (Burrow, WA) 21605 in EE at 1330, //15395. (Alexander, PA) Adventist World Radio relay, 9810 at 0019, poor audio.

(Charlton, ON) 15385 with IS, ID and into CC. (Paszkievicz, WI)

UNITED STATES—Armed Forces Network, Key West, 12133 with sports at 2108. (Newbury, NY)

URUGUAY—Radio Oriental, 11735 with SS songs and instrumentals heard at 0132. (Charlton, ON) (ID on this rare one?—gld)

UZBEKISTAN—Radio Tashkent, 6025 with woman and commentary at 1410. (Barton, AZ) 9715 with headlines in EE at 1334. (Strawman, IA) 0110 in Uzbek or RR. (Charlton, ON) Radio Netherlands relay, 12065 at 1327 with bells IS and into unid Asian language. (Brossell, WI)

VATICAN—Vatican Radio, 7305 in SS at 0317, 11625 in EE at 2015. (DeGennaro, NY) 7305 at 0301, 9605 at 0153, 13765 at 1740, 15570 at 1739 and 17515 at 1740, all in EE. (Charlton, ON) 9605 in FF heard at 0243. (Newbury, NE)

VENEZUELA—Radio Amazonas, Puerto Ayacucho, 4940 in SS with vocals at 1019. (DeGennaro, NY) 1030 with LA music, ID, anmts. (Alexander, PA) Radio Tachira, San Cristobal, 4830 heard at 2330 with SS anmts, IDs, LA music, SS talk. Off at 2312. (Alexander, PA) 0320 to 0357 close with woman and only "YVOB" call letters as an ID. Off with choral and orchestral anthem versions. (D'Angelo, PA)

VIETNAM—Voice of Vietnam, 6165 with vocals at 1243. (Strawman, IA) 2253 with vocals and presumed VV talk. (Foss,

Philippines) 6175 via Canada at 0300 to 0400 when into VV. (Linonis, PA) 0105 with talks. (Charlton, ON) 9725 at 1714. Off at 1729. (Burrow, WA)

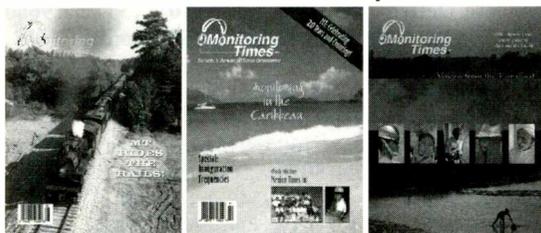
YEMEN—Republic of Yemen Radio, 9780 in AA at 1804. (Burrow, WA) 1915. (Brossell, WI)

ZAMBIA—Radio Zambia, 4910 at 0345 with music and unid language. (Paradis, ME) 0400 in presumed Swahili with local music. (Linonis, PA)

And that's a "30." A mountain of thanks go out to the following good souls who showed up for the run this time: Jerry Strawman, Des Moines, IA; Ed Newbury, Kimball, NE; Bruce R. Burrow, Snoqualmie, WA; Jack Linonis, Hermitage, PA; Samuel Quinby, Sharon, PA; Sheryl Paszkievicz, Manitowoc, WI; Marty Foss, Guinayangan, Philippines; Robert Wilkner, Pompano Beach, FL; Dave Jeffery, Niagara Falls, NY; Cero DeGennaro, Feura Bush, NY; Robert Brossell, Pewaukee, WI; Richard D'Angelo, Wyomissing, PA; Mark Northrup, Gladstone, MO; Brian Alexander, Mechanicsburg, PA; Rick Barton, Phoenix, AZ; Bob Charlton, Windsor, ON; and Ray Paradis, Pittsfield, ME. Thanks to each one of you.

Until next month—good listening! ■

If it's on the air, it's in



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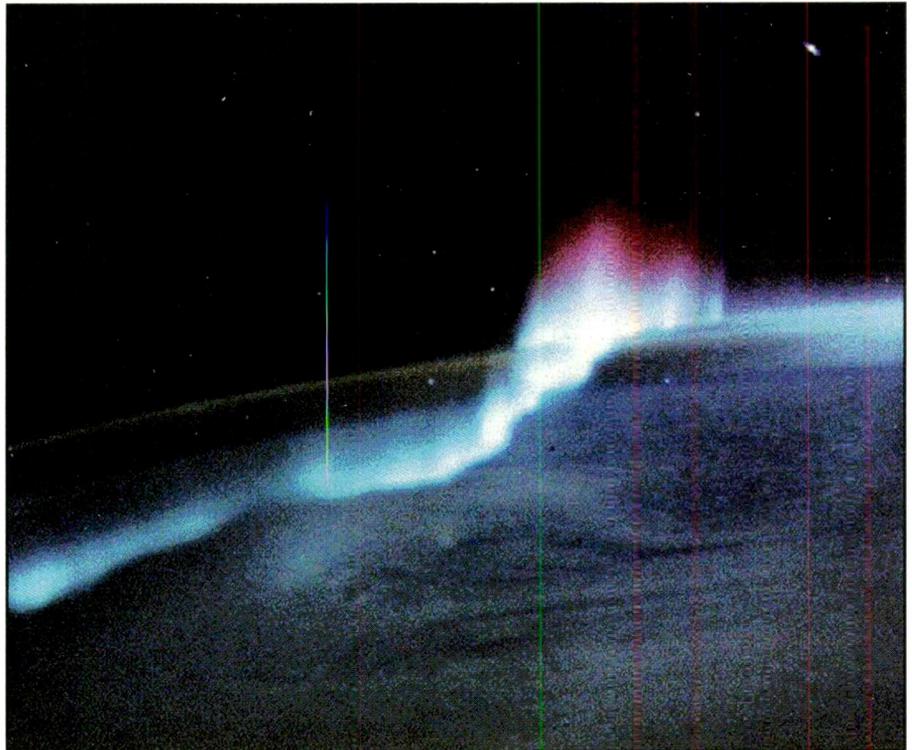


The Season Of Lights

One man's garbage is another's treasure. Space weather and the state of earth's geomagnetic field might be thought of in the same way. That which degrades HF radio propagation might create conditions for useful VHF radio propagation. During times of minor to severe geomagnetic storm activity, the ionosphere loses its ability to refract HF. At the same time, however, high geomagnetic activity causes auroral substorms that create areas of ionization capable of reflecting VHF signals.

Auroral observations over the last 100 years reveal that peak periods of radio aurora occur close to the equinoxes; that is, during the months of March and April, and again in September and October. Of the two yearly peaks, the greater peak, in terms of the number of contacts reported, occurs during October. However, some of the strongest levels of solar geomagnetic storms are in the spring. The minimum activity yearly occurs during June and July, with a lesser minimum during December.

Aurora is a direct result of solar plasma interacting with gasses in the upper atmosphere. Geomagnetic storms develop when strong gusts of solar wind or coronal mass ejections (CMEs) hit the magnetic field around the earth (the magnetosphere) in just the right way. The magnetosphere is filled with electrons and protons that are normally trapped by lines of magnetic force that prevent them from escaping to space or descending to the planet below. The impact of a CME breaks loose some of those trapped particles, causing them to rain down on the atmosphere. Gasses in the atmosphere start to glow under the impact of these particles. Different gasses give out various colors (think of a neon sign and how the plasma inside the glass tube, when excited, glows with a bright color). These precipitating particles mostly follow the magnetic field lines that run from the earth's magnetic poles and are concentrated in circular regions, called "auroral ovals," around the magnetic poles. These bands expand away from the poles during magnetic storms, and the stronger the



Space Shuttle photo of red tipped arcs over the South Pole. The colors of the aurora are caused by photons released when space particles collide with gas molecules. (Photo courtesy NASA)

storm, the more these ovals will expand. Sometimes they grow so large that people at middle latitudes, like California, can see these "Northern Lights."

When active aurora is seen in the auroral zone, a strong magnetic disturbance is usually also observed there. These disturbed magnetic fields often are much stronger than those of a geomagnetic storm but are strictly local, fading away quickly as one moves toward the equator. This suggests that the currents that disturb the magnetic fields flow somewhere nearby—probably near the auroral arcs. The Norwegian physicist Kristian Birkeland (whose portrait appears on Norwegian currency) carefully observed auroral disturbances and concluded that the currents flow parallel to the ground, along the auroral formation. Because electrical currents must flow in a closed circuit, and because these magnetic disturbances seemed to be caused by

processes taking place in distant space, Birkeland theorized that the currents came down from space at one end of an arc and returned to space at another end.

In 1910 Birkeland performed a series of experiments to reproduce many of the characteristics of the aurora that he observed during his expeditions. He placed an electromagnetic sphere, coated with fluorescent paint, inside a vacuum chamber and projected a beam of electrons at the sphere. This enabled him to view the trajectories of streaming electrons. Birkeland was able to accurately reproduce how solar wind would make its way into the earth's magnetic poles, and was able to simulate the auroral ovals near the Earth's magnetic poles.

It was not until 1954 that auroral electrons were actually observed by sensors aboard a rocket launched into an aurora by Meredith, Gottlieb, and Van Allen, of Van Allen's team at the University of

Optimum Working Frequencies (MHz) - For April 2004 - Flux = 98, SSN = 43 - Created by NW7US

UTC	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
TO/FROM US WEST COAST																								
CARIBBEAN	24	24	23	22	20	18	16	15	14	13	12	12	14	17	19	20	21	22	23	24	24	24	24	24
NORTHERN SOUTH AMERICA	30	30	30	27	25	23	21	19	18	17	16	15	15	16	20	23	24	26	27	28	29	30	30	30
CENTRAL SOUTH AMERICA	31	28	25	23	21	20	18	17	16	15	15	16	15	18	22	25	28	29	31	31	32	32	32	31
SOUTHERN SOUTH AMERICA	29	26	23	21	20	18	17	16	15	15	14	14	15	16	19	22	25	27	28	30	31	32	32	31
WESTERN EUROPE	15	13	10	10	13	16	11	11	10	10	12	16	17	19	19	20	20	20	20	19	19	18	17	17
EASTERN EUROPE	10	10	9	9	13	16	16	14	10	10	14	16	17	18	18	19	19	19	18	17	16	15	11	10
EASTERN NORTH AMERICA	27	26	25	23	21	19	18	16	15	14	14	13	15	19	22	24	25	26	27	28	28	28	28	28
CENTRAL NORTH AMERICA	15	15	14	14	13	11	10	10	9	8	8	7	7	9	11	13	13	14	15	15	15	15	15	15
WESTERN NORTH AMERICA	8	8	8	7	7	6	6	5	5	4	4	4	4	3	5	6	7	7	8	8	8	8	8	8
SOUTHERN NORTH AMERICA	25	25	24	23	22	20	18	17	16	14	14	13	12	13	16	19	21	22	23	24	25	25	25	25
NORTHERN AFRICA	14	13	12	12	11	10	11	11	10	10	10	15	17	19	20	20	21	21	22	21	20	19	17	15
CENTRAL AFRICA	17	16	15	14	13	14	11	10	10	10	11	15	17	19	20	20	21	21	21	22	22	22	20	19
SOUTH AFRICA	19	18	17	16	15	15	15	14	14	13	12	12	18	21	23	24	25	26	26	27	27	25	23	21
MIDDLE EAST	12	11	10	11	16	17	15	12	10	10	13	16	17	18	19	20	20	19	18	15	14	13	12	12
JAPAN	22	22	22	21	21	20	19	17	14	13	12	11	11	10	10	12	11	11	10	14	17	19	20	21
CENTRAL ASIA	22	22	22	21	21	20	19	17	13	12	12	11	11	10	10	15	17	16	15	14	13	14	18	21
INDIA	17	18	18	18	18	18	17	16	14	11	10	13	13	10	10	9	9	9	9	11	14	15	16	17
THAILAND	18	21	21	21	20	20	18	17	14	12	11	11	10	10	13	17	18	17	15	15	14	13	15	15
AUSTRALIA	29	30	32	32	32	31	30	27	25	23	21	19	18	17	16	15	17	16	15	15	17	21	24	27
CHINA	21	21	21	21	20	19	18	17	14	11	11	10	10	10	14	13	12	11	11	10	10	15	18	19
SOUTH PACIFIC	33	33	33	32	32	31	29	26	23	21	19	18	17	16	15	15	14	14	14	22	26	29	31	32
TO/FROM US MIDWEST																								
CARIBBEAN	27	27	26	24	22	20	18	17	16	15	14	13	14	18	20	22	23	25	26	26	27	27	27	27
NORTHERN SOUTH AMERICA	28	28	27	24	22	20	19	17	16	15	14	14	13	17	19	21	23	24	25	26	27	27	28	28
CENTRAL SOUTH AMERICA	30	28	25	23	21	20	18	17	16	15	15	16	17	21	24	26	28	29	30	31	32	32	32	31
SOUTHERN SOUTH AMERICA	29	26	23	21	20	18	17	16	15	15	14	14	15	18	21	24	26	28	29	30	31	32	32	31
WESTERN EUROPE	14	11	10	10	9	12	11	10	10	10	15	17	19	20	20	21	21	21	20	20	19	18	17	17
EASTERN EUROPE	10	10	10	9	11	11	11	10	10	9	15	17	19	19	20	20	20	20	19	19	18	17	15	11
EASTERN NORTH AMERICA	19	19	18	17	15	14	13	12	11	10	10	9	12	14	16	17	18	19	20	20	20	20	20	20
CENTRAL NORTH AMERICA	9	9	8	8	7	7	6	5	5	5	4	4	6	7	8	8	9	9	9	9	9	9	9	9
WESTERN NORTH AMERICA	15	15	15	14	13	12	11	10	9	9	8	8	7	9	11	12	13	14	15	15	15	16	16	16
SOUTHERN NORTH AMERICA	18	17	17	16	15	14	13	12	11	10	9	9	8	10	12	14	15	16	17	17	18	18	18	18
NORTHERN AFRICA	18	17	16	14	13	12	12	11	11	10	13	17	19	20	21	22	22	22	23	23	22	22	22	20
CENTRAL AFRICA	18	16	15	14	13	12	12	11	10	10	14	17	19	20	21	22	22	23	23	22	22	22	21	19
SOUTH AFRICA	19	18	17	16	15	15	15	18	17	16	15	18	22	26	28	30	31	32	31	29	27	24	22	21
MIDDLE EAST	12	12	11	10	12	12	11	10	10	10	15	17	19	20	21	21	22	21	20	19	17	15	14	13
JAPAN	22	21	21	20	19	17	14	13	12	11	11	10	10	13	13	12	11	11	10	14	17	19	20	21
CENTRAL ASIA	22	21	21	20	19	17	14	12	11	11	10	10	11	16	18	19	17	16	15	14	13	14	18	21
INDIA	12	14	15	16	16	15	11	10	10	10	13	16	17	16	15	14	12	10	10	9	9	9	9	9
THAILAND	18	20	20	19	18	17	14	11	11	10	10	10	15	17	19	20	20	18	17	16	15	14	13	15
AUSTRALIA	30	31	32	32	30	29	26	24	22	20	19	18	17	16	17	18	17	16	15	15	17	22	25	28
CHINA	20	21	20	19	18	17	14	11	11	10	10	9	15	17	14	13	12	11	11	10	10	15	18	19
SOUTH PACIFIC	33	33	32	32	31	29	26	23	21	19	18	17	16	15	15	14	14	13	17	24	28	30	31	32
TO/FROM US EAST COAST																								
CARIBBEAN	22	21	20	18	17	15	14	13	12	12	11	11	13	15	17	18	19	20	21	21	22	22	22	22
NORTHERN SOUTH AMERICA	25	24	23	21	19	17	16	15	14	13	13	12	14	16	18	20	21	22	23	24	24	25	25	25
CENTRAL SOUTH AMERICA	29	27	24	22	21	19	18	17	16	15	15	16	20	22	24	26	28	29	30	31	31	31	31	31
SOUTHERN SOUTH AMERICA	28	25	23	21	20	18	17	16	15	15	14	14	18	21	23	25	27	28	29	30	31	31	31	30
WESTERN EUROPE	12	11	11	10	10	9	11	10	10	13	16	18	19	20	20	21	21	21	20	20	19	18	17	15
EASTERN EUROPE	13	10	10	11	12	11	11	10	10	14	17	19	20	20	20	20	20	20	19	19	18	17	15	15
EASTERN NORTH AMERICA	9	9	8	8	7	6	6	5	5	5	4	5	6	7	8	8	9	9	9	10	10	10	10	9
CENTRAL NORTH AMERICA	20	20	19	17	16	14	13	12	12	11	10	10	13	15	17	18	19	20	21	21	21	21	21	21
WESTERN NORTH AMERICA	27	26	25	24	21	20	18	17	16	15	14	13	15	19	22	24	25	26	27	28	28	28	28	28
SOUTHERN NORTH AMERICA	22	21	21	19	18	16	15	14	13	12	11	11	12	14	16	18	19	20	21	21	22	22	22	22
NORTHERN AFRICA	19	18	17	15	14	14	13	14	13	14	19	21	24	25	26	27	28	28	28	27	26	25	23	21
CENTRAL AFRICA	18	17	16	15	14	13	15	14	13	14	19	21	23	25	26	27	27	27	27	27	26	24	21	20
SOUTH AFRICA	19	18	17	16	15	15	15	17	16	16	17	20	23	26	28	29	30	31	31	29	27	24	22	21
MIDDLE EAST	16	15	14	13	13	12	11	11	10	13	16	19	20	21	22	22	23	23	23	23	22	20	19	17
JAPAN	21	20	19	17	14	13	12	11	11	10	10	14	14	13	12	12	11	10	10	14	17	19	20	21
CENTRAL ASIA	20	20	18	16	13	12	11	11	10	10	12	16	18	19	20	19	17	16	15	14	13	13	18	21
INDIA	9	9	9	9	12	11	11	10	10	12	16	18	19	19	18	18	17	17	16	14	12	10	10	10
THAILAND	17	19	17	14	12	11	11	10	10	10	16	18	19	20	21	21	21	19	18	16	15	14	14	13
AUSTRALIA	30	32	31	30	28	25	23	21	20	18	17	16	16	19	19	17	16	15	14	18	23	26	28	28
CHINA	20	19	18	15	12	12	11	11	10	10	15	17	19	18	15	13	12	11	11	10	10	14	17	19
SOUTH PACIFIC	32	32	31	30	27	25	23	20	18	17	16	15	15	14	14	13	13	13	21	26	29	30	31	32

Iowa. The Van Allen team discovered earth's radiation belts, now called the Van Allen Belts.

Research Continues Today

Continual research has revealed that aurora is caused by the large-scale interaction between the earth's magnetic field and the solar wind. The magnetosphere is distorted by a flow of charged particles, mainly protons and electrons, which flow away from the sun. This flow, or "solar wind," also contains magnetic field lines. On the windward side, the side mostly facing the sun, a bow shock is formed, while on the leeward, opposite side, the magnetosphere is dragged out into a long tail.

This magnetosphere acts as a giant shield around the earth, blocking the solar wind particles. However, there are distinct regions in the magnetosphere where solar wind particles may enter the earth's upper atmosphere. Solar wind particles can enter directly via the dayside cusps or, having been trapped in the plasma sheet around the earth, they can enter via the enclosed magnetic field lines at the polar auroral oval on the night side.

In 1961, Dr. Jim Dungey of the Imperial College, United Kingdom, predicted that cracks might form in the magnetosphere when the solar wind contained a magnetic field that was oriented in the opposite direction to a portion of the earth's field. He postulated that the two magnetic fields would interconnect through a process known as "magnetic reconnection" and form a crack in the shield through which the electrically charged particles of the solar wind could flow. In 1979, Dr. Goetz Paschmann, of the Max Planck Institute for Extraterrestrial Physics, Germany, detected these cracks using the International Sun Earth Explorer (ISEE) spacecraft. Recently, the Imager for Magnetopause to Aurora Global Exploration (IMAGE) satellite, along with the four-satellite Cluster constellation that flies far above IMAGE, revealed the direct correlation between a proton aurora (non-visible) and the flow of ions through these cracks.

All of this takes place within an area known as the "auroral oval." These are rings of a radius roughly 1,500 miles, centered on the earth's geomagnetic poles (not on the geographical pole, nor even magnetic poles). The geographic North Pole is located at 90 degrees North latitude and is the point where the lines of

longitude converge. The magnetic North Pole is located at roughly 73.5 degrees North latitude and 100 degrees West longitude, near Resolute Bay, Canada. This is the point where magnetic medians converge. The geomagnetic pole, however, which is the center of the auroral oval, is located at the northwest tip of Greenland at 78.5 degrees North latitude and 69 degrees West longitude. It is the northern axis of the mathematical field of closest fit to the actual magnetic field of the earth. Using this geomagnetic pole, we define a set of latitude and longitude coordinates, known as the geomagnetic coordinates.

The auroral oval during average solar activity lies in a ring between about 70 and 75 degrees North geomagnetic latitude. It can grow during geomagnetic storms and shrink during very quiet geomagnetic activity periods and extends farther south on the nightside than on the dayside. That means that, as the earth rotates beneath the aurora, a given location will be nearer the oval at night than during the day.

In the early 1970s scientists recognized a connection between the component of the interplanetary magnetic field (IMF) that lies along earth's magnetic axis (known as "B sub z (Bz)") and earth's changing seasons: the average size of Bz is greatest each year in early spring and autumn. So why do these storms increase in strength and number during spring and autumn?

As the sun rotates (one full rotation occurs about every 27 days), the plasma spewing out from the sun forms into a spiral shape known as the "Parker Spiral" (named after the scientist who first described it). This solar wind carries with it an interplanetary magnetic field, which ever expands away from the sun in this spiral. Think of one of those rotating lawn sprinklers with jets of water shooting away from the center. You can see a bending or curving of the water lines. As the earth moves around the sun, these spiraling solar winds sweep into earth's magnetosphere. How the magnetic field lines in the solar wind interact with those of the magnetosphere is the key to geomagnetic storms and aurora.

At the magnetopause, the part of our planet's magnetosphere that fends off the solar wind, earth's magnetic field points north. If the IMF tilts south (i.e., Bz becomes large and negative), it can partially cancel earth's magnetic field at the point of contact. This causes the two magnetic fields (earth's and the IMF) to link

(think of how two magnets link with one magnet's south pole connecting with the other's north pole), creating a magnetic field line from earth directly into the solar wind. A south-pointing Bz opens a window, through which plasma from the solar wind and CME can reach earth's inner magnetosphere, bombarding the gasses of the upper atmosphere.

Earth's magnetic dipole axis is most closely aligned with the Parker spiral in April and October. As a result, southward (and northward) excursions of Bz are greatest then. This is why aurora is most likely and strongest during the equinoctial months. When we are in the peak of a solar cycle and in the year or so after a peak, solar activity is very high. The amount of solar wind and plasma is large at this point in the cycle, causing very dramatic and spectacular auroral light shows.

When the molecules and atoms are struck by solar wind particles the stripping of one or more of their electrons ionizes them to such an extent that the ionized area is capable of reflecting radio signals at very high frequencies. This ionization occurs at an altitude of about 70 miles, very near the E layer of the ionosphere. The level of ionization depends on the energy and amount of solar wind particles able to enter the atmosphere.

While correlations exist between visible and radio aurora, radio aurora could exist without visual aurora. Statistically, a diurnal variation of the frequency of radio aurora contacts has been identified that suggests two strong peaks, one near 6 p.m. and the second around midnight, local time.

VHF auroral echoes, or reflections, are most effective when the angle of incidence of the signal from the transmitter, with the geomagnetic field line, equals the angle of reflection from the field line to the receiver. Radio aurora is observed almost exclusively in a sector centered on magnetic north. The strength of signals reflected from the aurora is dependent on the wavelength when equivalent power levels are employed. Six-meter reflections can be expected to be much stronger than 2-meter reflections for the same transmitter output power. The polarization of the reflected signals is nearly the same as that of the transmitted signal.

A Good Indicator

The K index is a good indicator of the expansion of the auroral oval, and the pos-

sible intensity of the aurora. When the K index is higher than 5, most readers in the northern states and in Canada can expect favorable aurora conditions. If the K index reaches 8 or 9, it is highly possible for radio aurora to be observed by stations as far south as California and Florida.

Look for aurora-mode propagation when the planetary K (Kp) index rises above 4, and look for visual aurora after dark when the Kp rises above 5. The higher the Kp, the more likely you are to see the visual lights. But, you don't have to see them to hear their influence on propagation. Listen for stations from over the poles that sound raspy or fluttery on frequencies above 28 MHz, possibly up as high as 440 MHz. Sometimes aurora will enhance a path at certain frequencies, other times it will degrade the signals. Sometimes signals will fade quickly then come back with great strength. The reason for this is that the radio signal is being refracted off the more highly ionized areas that are lit up. These ionized areas

ebb and flow, so the ability to refract changes, sometimes quickly. I've observed the effect of aurora and associated geomagnetic storminess even on lower HF frequencies.

Expect an increase in geomagnetic storms, and auroral activity, as we move through March into April. I have a wealth of links at <http://prop.hfradio.org/> that provide up-to-the-minute aurora information and data. On my webpage, you can watch the Bz as it changes from positive (northward) to negative (southward) during the earth's passage through the solar wind stream. I also have links to useful aurora resources, one being <http://aurora.n1bug.net/>, the "Aurora Sentry."

Current Solar Cycle 23 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for December 2003 is 47, down from November's 67. The 12-

month running smoothed sunspot number centered on June 2003 is 65, down a bit from May. The lowest daily sunspot value during December 2003 was recorded on both December 9 and 31 with a count of 16. The highest daily sunspot count for December was 98 on December 1. A smoothed sunspot count of 38 is expected for April 2004.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 115 for December 2003, down significantly from November's 153. The 12-month smoothed 10.7-centimeter flux centered on June 2003 is 133, just a couple of points down from May. The predicted smoothed 10.7-centimeter solar flux for April 2004 is about 98, give or take about 18 points.

The observed monthly mean planetary A (Ap) index for December 2003 is 17, much quieter than November's 31. The 12-month smoothed Ap index centered

The Ap Index And Understanding Propagation Terminology

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

Classification of A-indices is as follows:

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

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

Ionosphere: A collection of ionized particles and electrons in the uppermost portion of the earth's atmosphere, which is formed by the interaction of the solar wind with the very thin air particles that have escaped earth's gravity. These ions are responsible for the reflection or bending of radio waves occurring between certain critical frequencies with these critical frequencies varying with the degree of

ionization. As a result, radio waves having frequencies higher than the Lowest Usable Frequency (LUF) but lower than the Maximum Usable Frequency (MUF) are propagated over large distances.

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

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

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

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

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

on June 2003 is 22, up a point from May. Expect the overall geomagnetic activity to be active to disturbed during April.

HF Propagation

As we move into spring in the Northern Hemisphere we experience great DX openings from around the world on HF. This is because the sun is mostly overhead over the equator, creating equal day and night periods in both hemispheres. The Vernal Equinox, which will occur at about 0641 UTC on March 20, 2004, marks the day when the hours of daylight and darkness are about equal around the world. This creates an ionosphere of similar characteristics throughout more of the world than is possible during other times when it is summer in one hemisphere and winter in the other, and there are extreme differences in the ionosphere.

This equalization of the ionosphere, which takes place during the equinoctial periods (autumn and spring), is responsible for optimum DX conditions, and starts late in February and lasts through late April. The improvement in propagation is most noticeable on long circuits between the Northern and Southern Hemispheres. During this season, conditions are also optimum for long-path as well as short-path openings, and during gray line twilight periods associated with sunrise and sunset.

Expect fewer openings on the higher shortwave frequencies compared to the openings seen during the winter months. However, with the sunspot cycle still in a high stage (ranging from a smoothed sunspot number of 60 to just over 100), the frequencies from 15 to 11 meters should provide occasional openings through the end of April. If openings occur on these higher bands, expect good DX openings from most areas of the world during the hours of daylight. While normal seasonal changes in propagation will result in fewer east-west openings, conditions towards southern and tropical areas are expected to hold up very well. Look for peak signal levels to most areas of the world during the late afternoon hours.

Expect 16 and 19 meters (15 MHz to 18 MHz) to be the best bands for daylight DX during April. These bands should be reasonably active with DX signals from just after sunrise to well beyond sunset. Signals should be strongest to most areas of the world during the afternoon hours, but look for good, solid openings towards the southern and tropical areas well into the early evening hours.

Thirty-one, 25, and 22 meters are expected to be 24-hour DX bands for most of the month. Strongest signals, with DX openings to just about every area of the world, should occur during a two-hour window after local sunrise and again during the late afternoon and through the evening hours to as late as midnight.

Shorter hours of darkness and increasing static levels in the Northern Hemisphere will result in somewhat poorer DX conditions on the mid to low shortwave bands as we move closer to summer. Nevertheless, strong, stable signals should be possible to many areas of the world on 31, 41, and 40 meters during the hours of darkness. Signals should peak from an easterly direction about an hour or two before midnight and from most other directions about an hour or so before local sunrise at the U.S. end of the path.

Some fairly good DX should also be possible on 49, 60, and 75 meters during the hours of darkness. Propagation patterns on 75 meters should be similar to those observed on 41 meters, but openings will be weaker and noisier. There is a chance for

some DX openings on 90 and 120 meters during the hours of darkness, but expect to encounter increasingly high static levels. Thunderstorm activity is expected to increase during April in the Northern Hemisphere, and this should add to the static levels on all HF bands, but especially on 41 through 120 meters.

Check both long- and short-path openings during the sunrise and sunset periods on all bands between 11 and 90 meters for all paths between the Northern and Southern Hemispheres.

For short-skip openings up to approximately 250 miles, check 75 meters during the day and 120 meters at night. For distances between 250 and 750 miles, 31 and 41 meters should be the best during the day, 41 and 75 meters from sundown to midnight, and 75 meters from midnight to sunrise. For openings between distances of 750 and 1,300 miles, try 22 meters during the day, with 31, 41, 49, 60, and 75 meters being best during the hours of darkness. Between 1,300 and 2,300 miles check 15, 16, 19, and 22 meters during the day; 22, 25, 31, and 41 meters from sundown to midnight; and 41 and 49 meters from midnight to sunrise. Short-skip openings beyond 1,300 miles may also be possible on 11 and 13 meters during most of the afternoon hours.

A seasonal increase in sporadic-E ionization usually begins during April and continues through the spring and summer months. Expect an increase in short-skip openings from 15 to 11 meters during April, as well as a possible occasional opening on 6 meters. While sporadic-E openings may occur at any time, they tend to peak between 8 a.m. and noon and again between 5 and 9 p.m. local time.

VHF Ionospheric Openings— And A Meteor Shower!

Lyrids, a major meteor shower, should take place from April 16 to 25. Expect it to peak April 22 at about 0400 UTC (9 p.m., April 21 Pacific Daylight Time). The unpredictability of the shower in any given year always makes the Lyrids worth watching, since we can't say when the next unusual return may occur. If this year's event is average or better (30 to 60 good-sized meteors entering the atmosphere every hour), this should make possible meteor-scatter type openings on the VHF bands.

Widespread auroral displays can occur during April, bringing with them unusual ionospheric short-skip openings on the VHF bands. The best times for these to occur are during periods of radio storminess on the HF bands. Look for days with high Kp and Ap figures.

I'd Like To Hear From You

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. Finally, you can join in with others in discussing space weather, propagation, and shortwave or VHF listening, at <http://hfradio.org/forums/>.

Write me! I am looking forward to hearing your stories on your aurora DX experiences and how this column is helping you. Is there something you would like to learn more about? Let me know. Until next month, 73! ■

Thinking Outside The Black Box

The long nights of winter always gets me thinking about spring, and also about modifications, tweaks, and adjustments I want to make to my communications equipment. Until warm weather returns I'll have to leave my antennas alone, but black boxes and cables on the inside are fair game for tinkering with.

You see, I'm a born tinkerer, never leaving things well enough alone. I'm sure when I was in mother's womb I was playing with the umbilical cord and thinking, "I wonder if I could replace this with a better grade of coax?"

My mom told me that when I was five I took apart the vacuum cleaner to see how it worked. Luckily I was able to put it back together again and it worked even better, despite having a few excess parts and screws left over after reassembly.

Most UTE monitors are like that. Not many are content to accept what we're given. No sooner have we thrown away the foam packing and are powering up that cool new HF receiver when our minds turn to thinking about how we can get the thing to really, *really* pull in those weak signals.

But, before you take one screw out of the back of that radio and void the warranty, before you begin snipping wires and replacing diodes, ask yourself that one important question, "Do I really know what I'm doing?"

I have poked, prodded, taken apart, and dinked with dozens of radios over the span of my monitoring experience. Some I've made better, others I've ruined. I have a closet filled with trashed radios that someday I'll try to fix—most of them made into expensive paperweights by my "modifications."

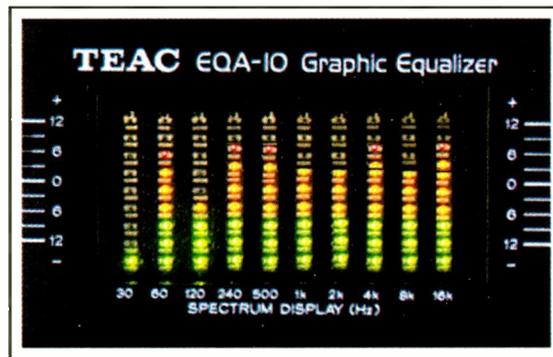
Although my tinkering has resulted in a few radios being DOA, each time I tinkered with the innards of old radios, I learned more about what makes them work. Because in my early years I had ruined a few good radios, these days I tend to mess with only old, garage-sale leftovers that are no big-loss if I turn them into instant boat anchors.

In light of that—and if you are as insecure as I am about your radio-electronics skills and know just enough about electronics to make yourself dangerous—read on. The following are some receiver add-ons and soup-ups that aren't destructive and may enhance your listening post in ways you never imagined.

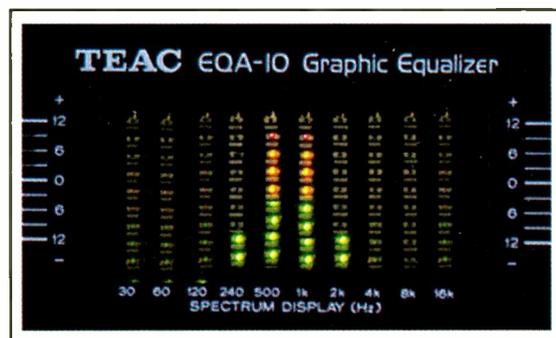
On All Things Being Equal

Are your ears tired from straining to hear that weak signal buried in the static? Here's a simple and inexpensive solution that may help your tired old ears drums out.

I have connected both my low-tech Panasonic RF-4900 and my gee-whiz WINRADIO WR-1550e receivers to an inexpensive (I think it cost me \$19.95) TEAC 12-band graphic equalizer, and my ears have never been better. Running the audio through the equalizer and an old Pioneer SA5500 amplifier and a pair of cheap RadioShack bookshelf speakers not only boosted the radio's volume but gave me more control over the audio. Most HF radios on the market only give you basic bass and treble controls and you're limited by how much you



HF noise level before equalization



HF noise level after equalization

can affect the tone, but a 12-band equalizer can really help you adjust the radio's audio output (just like those expensive noise-limiting speaker filters) at a fraction of the cost. You can find inexpensive equalizers and stereo amplifiers at pawnshops or flea markets.

On HF SSB voice channels, by adjusting both the high and low frequencies to almost nothing and boosting the mid-range tone frequencies (where most human voices fall) I can increase readability by leaps and bounds! Not only that, I can reduce natural noise (from the sun and lightning crashes) and man-made electronic interference to almost nothing! Try it. Your ears will thank you for it.

Also, by running your receiver through an equalizer and amplifier you'll have more output options, such as for recording onto a cassette or similar device. You'll also gain a high-quality stereo headphone output, more inputs for other receivers (switchable), and many speaker outputs. I run one receiver through the *left* TAPE IN input and another through the *right* TAPE IN input and can listen to either at the same time or switch between the two by using the BALANCE control.

Capture Your Audio On Video

Recently Joe Cooper had in his "Computer-Assisted Radio Monitoring" column some excellent information regarding

using your computer to record digital radio audio. But let's say you don't want to fill up your precious hard drive space with hours of what could turn out to be static, but still want to be able to record what's happening on your receivers and scanners while you're at work or asleep. Here's a low-tech solution that's inexpensive and works like a charm.

With the advent of DVDs, VHS video recorders have taken a drastic price dive. It's now possible to get a high-fidelity stereo VCR for less than \$50. Good used ones can be found at pawnshops for under \$20! So, I got to thinking: Why not use a VCR as a long-duration audio recorder?

It's simple. First make sure the VCR you're using has both RCA audio and video inputs. It's then just a matter of running the audio output from your scanner or receiver into the audio input on the VCR.

Now if you've already decided to run your audio through an amplifier like I suggested above, then you're ahead of the curve. If so, you'll have additional ways of running audio into the VCR with the amplifier and equalizer now functioning like a switcher. This way you won't have to listen to the audio through a TV set. Also by using the amplifier as an audio selector, you can switch between the receivers you want to record.

By setting your VCR to record on the LINE IN input, you can now (with the proper length of video tape) record for up to 12 hours. However (*and this is important*), to get a proper high-fidelity recording and playback, you may have to also provide a video source so noise won't bleed over into the audio track! If you have a video camera or cable TV, this isn't a problem and, in effect, it can aid immensely in your search and retrieval of certain signals on the tape. If you have one of the newer cable boxes with line-level (RCA type) video outputs, you can input a *video only* signal into the *video input* on the VCR, providing a clean video signal to record on the video portion of the tape.

Although the audio recorded on the tape will be from your receivers, the video signal will be from your cable box. When recording, I suggest you set the cable box to a channel with a constant time display. Many local cable companies have a local weather conditions channel that does this, as do certain cable news networks.

Why do this? So when you rewind your tape looking for a certain recorded audio (recorded at a certain time) it's easy to use the time stamp on the video as a reference. This way you won't have to search through an entire eight-hour tape looking for communications involving (as an example) that plane crash that you know occurred at 1:30 a.m.!

Scanner To Video?

We can take our video/audio recorder a step further by adding a cheap video camera. You'll find inexpensive video cams that have video-line-level output from \$30 to \$60 on eBay. I found a wireless (2.4-GHz) set for \$60 and it works great.

I've set up the camera on a little tripod aimed at my UHF MILCOM only scanner and run the video into my VCR (which is also connected to the audio coming out of the scanner) with the camera focused on the frequency display (on my Uniden BC780 XLT) and a tiny stick-on digital clock used as a time reference.

Now I not only have the audio being recorded, but also a real-time video of the scanner display showing the important frequency readout! Since I'm also using a 2.4-GHz wireless camera, I can view and hear the scanner on my big screen TV in the other room, with just the flick of a switch!



The author's compact but well equipped radio room.

I'm sure that by thinking outside the box you can come up with some pretty interesting solutions as well. If so, I want to hear about them, and so do your fellow UTE hobbyists. Send in your ideas and photos to me at the e-mail address listed above.

Reader's Logs

Before we get on with our HF logs I want to remind you that you can send in your MILCOM loggings above 30 MHz, including UHF aero band catches. Just do so in the format below. Many thanks to our ever-faithful UTE monitors who dutifully submit their logs every month. Maybe you'd like to be one of them?

0000 (Frequency MHz), STATION, Anytown, USA, summary of traffic heard in MODE at 0000Z. (monitor/ sometimes location)

2414.0: PE1TE (Petersborough NH EOC), 0959 USB/ALE sounding. Keene NH EOC also sounding on this freq. (RP)

2670.0: USCG Group Charleston with Marine Information Broadcast at 1108. (MC)

4739.0: CARDFILE 712 (P-3C) wkg FIDDLE (TSC Jacksonville) at 0503. (MC)

4270.0: CFH (CANFORCE METEO HALIFAX NS), 2250 RTTY 75/bd/850Hz w/ WX. Also noted on 06495.0. (RP)

4296.0: FUE (Fr Navy Brest), 0353 RTTY 75bd/850Hz w/ testing. Also noted testing RTTY on 2790.0. (RP)

4316.0: NMG (CG New Orleans), 2245 USB w/ "Perfect Paul" WX. (RP)

5135.0: NA1SH (Nashua NH EOC), 1954 USB/ALE sounding. (RP)

5450: Unid stn @ 0200Z w/ aviation WX rpts for African and Middle Eastern airport locations, i.e. Cairo, Nairobi, Johannesburg, Amman, Kabul. QRN made it hard to cpy. (DS2 WI)

5493: Unid stn @ 0205Z wrking aircraft w/ pos rpts, SELCALs, freq changes. QRN made it hard to cpy. (DS2 WI)

5505: Shannonspaulling at 0215Z w/ aviation WX rpts for London, Amsterdam, Copenhagen, Stockholm, and others. (DS2 WI)

5696.0: CG 1706 requesting CAMSLANT relay position of DMB drop to Group Key West at 1235. (MC)

5696.0: CG 1703 enroute from Sacramento to ARSC requests CAMSLANT pass ETA to Elizabeth City at 0051. (MC)

5732.0: CG 1712 with ops and position report to CAMSPAC heard at 0104. (MC)

5860.0: FAAZNY (New York ARTCC), 1400 USB/ALE sounding. (RP)

6628: New York Radio and Santa Maria Radio at 0245Z wrking aircraft with pos rpts, SELCALs, freq changes. (DS2 WI)

6712: Unid stns w/ loud encrypted signals. (DS2 WI)

6721.0: REACH 0177 ALE initiated call to Charleston AFB CP with inbound message at 1517. (MC)

6754: Trenton Military at 0230Z w/ aviation WX rpts for Canadian locations. (DS2 WI)

6761.0: PALM 91 (C-17A) wkg STEEL 72 (KC-135, PA-ANG) to attempt to arrange an AR for later at 2353. (MC)

7348.0: DE3 (Unidentified, possible SHARES station), 1432 USB/ALE sounding. (RP)

7475.0: FREDGAS (Wash Gas & Light, Frederick MD), 2151 LSB/ALE sounding. Also sounding on 04700.0 LSB & 04655.0 LSB. (RP)

7475.0: GRASSY (Wash Gas & Light, Grassey Lick, Kirby, WV), 2209 LSB/ALE sounding. Also sounding on 05509.0 LSB. (RP)

7527.0: HAMMER wkg OMAHA 297 to report they hold them on radar at 1224. (MC)

7633.5: REACH 6307 morale p/p to San Antonio at 2300. (MC)

7637.0: QIT (Colombian Army), 2307 USB/ALE TO FACA2E (Colombian Army, Facatativa). (RP)

7778.5: CL1 (FBI Cleveland OH), 1738 USB/ALE TO OM2 (FBI Omaha NE). (RP)

7778.5: NF1 (FBI, Norfolk VA), 1658 USB/ALE TO RH1 (FBI, Richmond VA). (RP)

7805.0: CE1NT (Centreville NH EOC), 1752 USB/ALE sounding. Also noted sounding on 05192.0. (RP)

7792.5: Unid, 2344 RTTY 75bd/850Hz w/ RYs then into encrypted trfc. (RP)

8337.6: SHARK 13 passing info on Haitian migrant vessel near BATCAVE to 17C at 2351. (MC)

8337.6: USCGC HARRIET LANE wkg 17C and SHARK 11 at 0016. (MC)

8451.0: FUG (FR Navy La regine), 2215 RTTY 75bd/850Hz testing. (RP)

8550.0: CTP (Portuguese Navy), 02116 RTTY 75bd/850Hz w/ NAWs NAWs DE CTP CTP J 04 06 08 12 M HZAR. (RP)

8682.0: NMC (CG Point Reyes CA), 0223 Fax w/ Tropical WX Prediction. (RP)

8912.0: CG 1717 with ops and position report to PREDATOR 1 (Customs DIOC, Puerto Rico) at 1333. (MC)

8912.0: CG 1720 p/p to Group Key West who requests they overfly Dry Tortugas at 1637. (MC)

8983.0: CG 2102 is diverted at the request of District 7 to search for a 20 foot Bayliner adrift. CAMSLANT reports USNS Pomeroy is on scene at 1954. (MC)

8906.0: New York (MWARA NAT-A), 2225 USB w/ Canforce 4280 w/ position report. (RP)

8992.0: REACH 9011 p/p via Andrews HF-GCS to Norfolk with inbound message and WX request for Norfolk, Westover, and Dover at 1521. (MC)

9007.0: CANFORCE 2395 wkg TRENTON MILITARY for WX at Shannon, Prestwick, and Keflavik at 2333. (MC)

9025.0: CG 1717 ALE initiated p/p to Clearwater Air reporting they are on scene and conducting search in the Mona Pass at 1254. (MC)

9081.5: T1Z147 (1/147th Avn Bn, WING Truax Field, Madison WI), 1841 USB/ALE TO R20467 (UH-60A helo). (RP)

9106.0: 0004SCCAP (South Carolina CAP), 1510 USB/ALE sounding. (RP)

9106.0: AAR1DDMARS (Army MARS SHARES Regional Control), 1725 USB/ALE TO NNN0STE (Navy/Marine MARS SHARES station). NNN0STE then w/ NNN0FJK. (RP)

9183.5: CL1 (FBI, Cleveland OH), 1622 USB/ALE TO CO1 (FBI, Columbia SC). (RP)

10242.0: OMAHA 3SA wkg HAMMER with position of TOI near West Palm Beach and arranging for a marine unit to intercept it heard at 2008. (MC)

10946.0: CFH (Canforces Meteo, Halifax NS), 1955 RTTY 75bd/850Hz. NAWs DE CFH ZKR F1 2822 3394 4158 6254 8303 12380 16576 22182 AR. (RP)

10993.6: HERK 20 establishes guard with USCG Group Key West and requests they notify SHARK unit of their search area at 2058. (MC)

11220.0: NAVY 515 calling Puerto Rico HF-GCS at 2348. (MC)

11220.0: FISH POND and Andrews HF-GCS trouble shooting data transmissions at 2105. (MC)

11232.0: CANFORCE 4478 p/p via TRENTON MILITARY to WING OPS at 2255. (MC)

11232.0: Trenton Military: 2009 USB w/ Canforce 2762 (ID as CC-130 # 130314) in pp w/ Wing Ops, Trenton w/ arrival message. Wing Ops advises that the aircraft from Thule, ID as Canforce 3924, has departed and is on its way home. Then Canforce 2762 in pp w/ Trenton RCC who advises them that Montreal Center wants CF 2762 to contact on 132.1 MHz and if no contact then on 308.3. (RP)

11457.0: PUB (unidentified, possible NG), 2102 USB/ALE sounding. (RP)

11494.0: 17C with ops and position report to PANTHER heard at 1843. (MC)

12191.0: SCLC501 (Communications Logistics Center, 501st Jungle Infantry Btn, Venezuelan Army), 2312 USB/ALE TO PCRC5 (Communications Command Post, Military Region 5). (RP)

13200.0: BOLT 21 p/p via Puerto Rico HF-GCS to LIGHTNING OPS at MacDill AFB at 2248. (MC)

13110.0: WLO (Mobile AL), heard at 1504 USB w/ voice announcement. (RP)

13927.0: TEAL 40 (WC-130) morale p/p via AFA3HS. Reports they are RTB to Keesler returning from Homestead after tracking a Caribbean storm at 2054. (MC)

13927.0: REACH 8053 p/p via AFA4DD to HILDA. Reports AR with ETHYL 35 completed, passes inbound message for Charleston AFB and requests WX at 1947. (MC)

14396.5: AFA3HY (MARS station-NCS), 1615 USB w/ net check-ins: AAR3QL (Virginia); AAR3DS (Virginia); WGY933; WGY937; WGY9416 (Ohio); AAR4FH (Georgia); AAR4KH (Tenn). WWJ850 acting as relay. RP

14408.0: REACH 883Y over Cape Cod with morale patches to Boston area via AFA1EN

14493.5: ME1 (FBI Memphis TN), 2214 USB/ALE TO AT1 (FBI Atlanta). Also noted on 09183.5. (RP)

14670.0: CHU (Ottawa Canada), 2108 USB w/ automated voice (FF/EE) time hacks & unid FSK signal. (RP)

14776.0: FC8FEM (Communications manager, FEMA Region 8, Denver CO), 1801 USB/ALE TO MT8FEM (Montana State EOC, Helena). Also noted on 10588.0. (RP)

15094.0: KSZ78 (SHARES station), 1931 USB/ALE TO 23KNZ (SHARES station). (RP)

15918.0: CFH (Canforce, Halifax NS), 1433 RTTY 75bd/850Hz w/ NAWs 2822 3394 4158 6254 8303 12380 16576 22182 AR. (RP)

15953.5: KC1 (FBI Kansas City), 1538 USB/ALE TO BF1 (FBI, Buffalo NY). RP at 1917. (MC)

15010.0: HALIFAX MILITARY calling NE4V at 1237. (MC)

15851.0: FAAZJX (Jacksonville ARTCC), 1622 USB/ALE sounding. (RP)

16480.0: O/M (RR), 1314 USB w/ unheard station. Caught at end of exchange. (RP)

16832.0: SVA (Olympia Radio), 1321 SITOR/FEC w/ Greek message then sign off DE SVA SVA SVA. (RP)

16987.4: CTP (Portuguese Navy), 1337 RTTY 75bd/850Hz w/ NAWs. (RP)

16799.0: Unid: 1345 SITOR/FEC w/ news in EE. News all local Philippine items. (RP)

16985.2: CTP (Portuguese Navy), 1405 RTTY 75bd/850Hz w/ NAWs. NAW DE TP ITP CTP QSX 04 08 12 16 M HZAR. (RP)

17118.0: PBC (Dutch Navy Goeree), 1411 RTTY 75bd/850Hz w/ CARBS. 02 8@04B 06A 08A 12B 17A 22X PBC. (RP)

17181.5: FUG (FR Navy, La Regine), 1348 RTTY 75bd/850Hz testing. (RP)

17206.0: IAR (Rome Radio), 1308 CW w/ bulletins in IT & EE. (RP)

17487.0: KGD34NCC (US SHARES Nat'l Coordinating Center, Virginia), 1726 USB/ALE TO KNY77 (unidentified SHARES station). (RP)

17982.0: Aircraft 511 (O/M Portuguese-Brazilian Air Force), 2034 USB calling Tamoio (Brazilian Navy submarine) w/ no response. (RP)

18314.0: LBO (unidentified, possible NG), 2002 USB/ALE TO SNY (unidentified, possible NG). (RP)

20992.5: TAHOE 81 near Denver with p/p via AFA1RE Maine and AFA2MH Georgia at 2039. (MC)

20945.5: 8BY (FR Intell, Paris), 1450 CW/8BY 8B631 6E6 99 / 033 / 06 / 23 V VVV. (RP)

22401.0: UIW (Kaliningrad Radio), 1409 SITOR/FEC w/ mariner information bulletins in transliterated Russian. Then series of holiday telegrams. Sign off ZCZC KALININGRAD 262242/04 30/12 2000. (RP)

22720.0: Olympia Radio: 1420 USB w/ voice announcements in Greek & EE. (RP)

22744.0: Y/L (Greek), 1522 USB w/ O/M (Greek) in R/T link. Probably Olympia Radio. (RP)

22744.0: Y/L (RR), 1453 USB setting up R/T link. (RP)

This month's UTE log contributors are Ron Perron (RP), Mark Cleary (MC), and Dwight Simpson (DS2 WI). Thanks to all of you for your submissions. Each and every one of your contributions is greatly appreciated.

Final Thoughts

The response to the series on black aircraft projects was amazing. Thanks to everyone who sent in their own stories of close encounters with things that go whoosh in the night.

Many of you asked if there has been any recent news about covert military projects. Interesting enough, while I was writing this column I intercepted a curious set of communications on my UHF military aero-band scanner. It was a significant enough intercept that when I notified Bill Scott (an editor and friend at the prestigious *Aviation Week & Space Technology* magazine) he decided to write a short piece on it for the January 12, issue. Bill and I go way back and share a deep interest in covert military technology.

Bill wrote:

SECRET FAST-MOVER? On the morning of Jan. 7, an aircraft using call sign "Lockheed Test 2334" told the FAA's Albuquerque Center it would be "going supersonic somewhere above Flight Level 60 [60,000 ft.]" for about 10 sec. It was flying over the Pecos Military Operating Area in eastern New Mexico at the time, transmitting on 350.350 MHz. When a center controller queried, "Say aircraft type," the unidentified vehicle's pilot responded: "We are a classified type and can't reveal our true altitude."

About 15 min. later, the same pilot—on a different frequency (351.700 MHz)—requested permission for a descent to 30,000 ft. and flight-following to "Las Vegas with final destination somewhere in the Nellis Range" complex. The U.S. Air Force's super-secret Groom Lake test facility is located in the northwest portion of the Nellis AFB, Nev, ranges.

The Albuquerque Center controller quipped, "Trip home a bit slower, eh?" There was no response from the classified aircraft. The radio interchanges were recorded by Steve Douglass, a "military radio monitor" hobbyist in Amarillo, Texas.

It is also interesting to note that the "skyquakes" have returned and are rocking the West Coast. The San Diego area was rocked by a sonic boom just one day before my intercept (January 6). When queried, the military said they had no aircraft up at the time to account for the boom. You can look at the USGS report on the skyquake at http://pasadena.wr.usgs.gov/shake/ca/STORE/X1006/ciim_stats_1.html.

So, it just goes to show you, you can't become complacent in your monitoring. You never know when you'll intercept something *they* don't want you to hear...then again maybe they *do* want you to hear it! ■

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Tuning In (from page 4)

na or super-duper roof-mounted Yagi to capture all those elusive signals. Interestingly, though, your survey cards tell a different story. While about 35 percent of you reportedly use a wideband discone mounted outdoors, about eight percent of you have a wideband discone mounted in the attic. Yet another 32 percent report using a simple pull-up whip antenna on your base installation.

How many of you report using a Yagi? Five percent said you use a fixed-position Yagi, while slightly fewer (about four percent) reported using an outdoor Yagi with a rotor.

About 14 percent of you said your base scanner antenna is your multiband ham antenna. A few of you (about five percent) even reported using a simple window-mount antenna at home.

On the road, many of you (almost 38 percent) use a magnetic-mount antenna. The least popular mobile antennas are the on-glass and trunk-lip mount, each used by only about six percent of you. A simple rubber duck clipped to the window is only used by seven percent of those responding to our survey. About 17 percent of you report using a dual-band ham antenna on your vehicle.

Stay Tuned

Next month we'll continue reporting on your survey results. Topics will include using a scanner in public, preamps and attenuators, and surge protection. This month's winners of a free one-year subscription to *Pop'Comm* are Ms. M.F. Merrifield of New York and Bruce Burrow of Washington. Have YOU sent in your survey card? Your answers help shape your radio magazine, so please do your part! ■

UTC	Language	Frequency (kHz)
0530-0600	English	13780
1000-1100	Thai	7285
1100-1115	Vietnamese	7305
1115-1130	Khmer	7305
1130-1145	Lao	6040
1145-1200	Burmese	6040
1200-1215	Malaysian	11805
1215-1230	Indonesian	11805
1230-1300	English	9810
1300-1315	Japanese	7160
1315-1330	Mandarin	7160
1330-1400	Thai	7160
1400-1430	English	9560
1800-1900	Thai	11855
1900-2000	English	9535
2000-2015	German	9535
2015-2030	French	9535
2030-2045	English	9535
2045-2115	Thai	9635

Contact Radio Thailand for QSL and program information at Radio Thailand, 236 Vibhavadi Rangsit Road, Din Daeng, BKK 10400, Thailand or via the web at www.prd.go.th.

AIR To Make Waves With Digital Audio Broadcasting

A technology that has been experimented with in many parts of the world is about to reach India. All India Radio (AIR) is planning to announce a tender for buying digital audio broadcasting (DAB) equipment, perhaps even as we go to press. This transmitter would be capable of carrying six-digital channels on the platform. Interestingly, AIR's DAB project would have more to do with video than plain-vanilla audio.

The content of the channels has not been finalized yet, but may be targeted at people on the move. As of now, AIR officials are happy calling it just a "technology demonstration." It would begin as a pilot project in Delhi. The feasibility of carrying the system to other metro areas is under study. The pilot project is expected to take off sometime in 2004.

According to AIR officials, three to four foreign firms, including R&S (Germany) and Harris (United States), are expected to bid. DAB receivers have to be imported, and the starting range would be around \$150. For additional features, the price would go up further. And that may pose a problem for consumers in India. In the UK too, digital radio hasn't caught on much even seven years after its introduction, with its price being the main barrier.

Besides price, another tricky issue is that of the clash of channels/stations on the frequency band of a digital radio. AIR is planning to launch its digital service on the upper VHF band, but there are TV channels also on the same band. A shift may be required to another band once the number of radio stations increases on the platform.

Meanwhile, various digital systems are being tried out in different parts of the world. Europe is working on the Eureka 147 terrestrial digital audio broadcasting system, the United States is focused on the IBOC (in-band on-channel) system. Digital Radio Mondiale (DRM) is yet another technology that Europe is experimenting with. Shortwave radio, it is understood, would become a powerful medium with DRM. While terrestrial digi-

tal transmission would be a new concept for India, satellite digital is already available there through WorldSpace, a U.S.-headquartered satellite radio service.

U.S.-based Shortwave Stations To Use DRM

Twenty U.S.-based shortwave stations began DRM transmissions in October. The stations are doing so with the help of the National Association of Shortwave Broadcasters program "Voice of the NASB." DRM is a new digital technology for shortwave, mediumwave/AM and longwave frequencies, and provides near-FM quality sound, offering a dramatic improvement over analog AM.

This line-up includes DRM member HCJB Ecuador, which is based in Colorado Springs. "Voice of the NASB" also includes content provided by DRM member VT Merlin Communications, which will relay the program from its Rampisham, UK relay site. The program will include content from DRM members of the International Broadcast Bureau/Voice of America, and Belgium's TDP Radio.

"Voice of the NASB" is transmitted to Europe on Sundays, from 1330 to 1400 UTC on 9785 kHz.

New Relay Transmission Of Radio Australia's English Language Service To Asia

A new relay transmission of Radio Australia's English language service to Asia recently began. It airs at 1400 to 1600 UTC daily, on 11750 kHz. It is directed to central and west Indonesia and part of India.

The signal comes from a 250-kW transmitter at the former Radio Australia transmitting site at Cox Peninsula, Darwin, and uses a bearing of 290 degrees which takes the signal through Java, Sumatra, and southern India.

Radio Australia leases transmission capacity from the owners of the Darwin transmitters, Christian Voice International, a non-profit charitable company broadcasting around the globe via stations in London, the United States, Chile, Zambia, Mozambique, Angola, East Timor, and Australia.

AIR Launches Program For The Blind

Taking its duties of a public service broadcaster seriously, AIR has launched programs for the visually impaired. "With more than half the world's visually impaired people living in India, and with no programs for them, we decided to focus on special programs for this segment of the population," AIR officials said.

AIR's half-hour program, broadcast twice on Indraprastha Channel Drishti in magazine format, is interactive. "The listeners can send in stories and plays in Braille and we will produce these for them," said officials.

Current affairs, safety tips, employment and health are some issues discussed in the half-hour program. AIR is looking at even reading aloud plays and book reviews that are out in Braille. Other mediumwave and regional shortwave stations of AIR will broadcast the programs aired by Delhi AIR soon.

SWL Freeware RxWings Version 2 Released

RxWings is a freeware program to support SWLing and DXing with the HF receivers AR7030 from AOR, the NRD-

535(D) and NRD-545 from JRC and the RX320 from Ten-Tec. It supports many SWL/DX activities, such as,

- Use of different types of frequency databases, for both querying and tracking
- Logging of received transmissions
- Analysis of received signal
- Programming for unattended reception
- Full direct control of your receiver

In the newly released Version 2, a number of new functions have been added. These include hotkeys to control the main radio functions from the keyboard only; early warning on propagation improvements with the scan-frequency list option; querying and tracking functions with the aerolist files of Risto Hirvonen; easy scanning of bands using different frequencies for transmitting and receiving; and printing option for the propagation impressions.

This freeware can be found in an ftp at <ftp://ftp.funet.fi/pub/ham/rigctrl/>. After downloading the archives RxWings2A.ZIP (3.3 MB) and RxWings2B.ZIP (3 MB), unzip both (the classic way) in a temporary directory and then run the setup program from this directory to install all necessary directories and files.

For more info visit <http://home.wxs.nl/~jarkest/home.html>.

Clandestine Radio Sedaye Kashmir

The present schedule of clandestine Radio Sedaye Kashmir (from Pakistan-occupied Kashmir) is 6100 kHz from 0230 to 0330 UTC and 1430 to 1530, and 9890 kHz from 0730 to 0830 UTC. The first 40 minutes of programs are in Urdu and the rest in some local dialects. The first broadcast is at 0230 and is repeated at 0730 and 1430.

Indian Help For Afghan Radio Expansion

The Indian government decided to help war-torn Afghanistan rebuild and expand its radio and TV network through its Basil Broadcast Engineering Consultants India Limited (BBECIL). Afghanistan had its first FM radio channel launch a few months ago. The BBECIL is now constructing a 100-kW shortwave radio transmitter in Kabul with uplink facilities to expand its reach beyond the mountain ranges. For this, it has signed a contract with Indian Space Research Organization which will provide bandwidth on the INSAT-3A satellite.

New Schedule For Voice International Via Darwin, Australia

The station airs English from 0900 to 1100 on 11955, from 1000 to 1400 on 13685, from 1400 to 1800 on 13635, and from 1800 to 2100 on 11685.

Hindi is aired from 1100 to 1400 on 13635, and Indonesian from 0030 to 0100 on 21680, from 0430 to 0500 on 21680, from 0530 to 0600 on 21680, from 0600 to 1000 on 17820, from 1000 to 1300 on 15365, from 1300 to 1800 on 7245, and from 2330 to 2400 on 9630.

Myanmar—Democratic Voice of Burma Shortwave Schedule

Democratic Voice of Burma has planned to change the broadcasting frequencies of its morning transmission. The new frequencies are 5945 kHz and 12055 kHz at 2330 to 0030 UTC. ■

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clandestine communiqué

by Gerry L. Dexter

tuning in to anti-government radio

U.S. Army's Afghanistan Psyops Station Changes Name, Frequency

There was quite a period when it seemed a hot new clandestine broadcaster was popping on at the rate of one or two per month. Lately things have been quiet, even though we haven't been with you in a while. No new entries in the clandestine club have been noted of late. Still, there are a lot of interesting things to check.

The **Voice of Freedom and Renewal/Voice of the New Sudan**, beaming to the Sudan from transmitters in Eritrea, is currently using **6985**, coming on the air with pre-programming around 0320, with an "official" sign-on at 0330 with Arabic programming. This one is the mouthpiece of the Sudan Alliance Forces, affiliated with the National Democratic Alliance. Reception reports go to the groups' Culture and Information Office, P.O. Box 9257, Asmara, Eritrea.

Meantime, the **Voice of Democratic Eritrea**, of the Eritrean Liberation Front's Revolutionary Council is scheduled Saturdays at 1500-1600 on **5925** and 1700 - 1800 Mondays and Thursdays on **9820**, all via DTK transmitters in Julich, Germany. The group's address is Postfach 1946, Russelsheim, Germany.

The **Voice of the Eritrean People** is using **9990** (and supposedly **7130** and **13690**) via Norway on Sundays from 1730 for a broadcast in Tigrigan. It is supported by the Eritrean National Alliance.

The U.S. Army's "psyops" station programming for Afghanistan has changed its name to **Peace Radio**, and its frequency to smack on **9000**. No longer on around the clock, it's now scheduled from 0030 to 1830.

Kurdish clandestine **Denge Mezopotamia** is heard fairly often in North America around 1230 on **11530**, possibly via transmitters in Moldova.

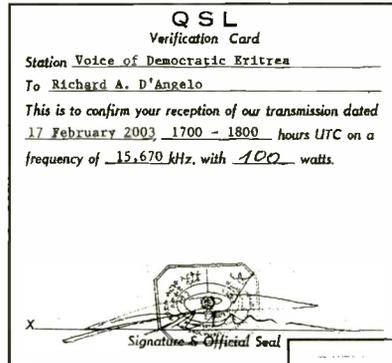
Rich D'Angelo (PA) has heard the **Voice of Ethiopian Medhin** at 1641 to 1659 close on **15670**, via Julich, Germany. The program consisted of various "Horn of Africa" vocals and a long talk in the Amharic language. The program went off at 1659 in mid-song. The Ethiopian Medhin Democratic Party, P.O. BOX 7968, WASHINGTON, D.C., 20044, programs this one.

The **Voice of Ethiopian Unity** (also known as the Voice of Democracy was heard by Mike Miller (WA) on **15565** via Julich at 1844 in an unidentified African language with mentions of democracy. Off at 1919. Address: Finote Democracy, P.O. Box 88675, Los Angeles, CA 90009,

Sagalee Bilisummaa Oromoo (Voice of Oromo liberation), on **15670** also via Julich, was noted by D'Angelo from 1700 sign-on with a musical opening, ID and a long talk (presumably in the Oromo language). Sheryl Paszkiewicz (WI) has also caught this one from 1700 sign on with instrumental music, ID, news, flutes and singing. This one is operated by the Oromo Liberation Front of Ethiopia, which has a U.S. office in Washington, D.C. (P.O. Box 73247. Zip: 20056)

Radio Rhino International, via Julich, noted by D'Angelo on **17555** from 1520 to 1559 close. Talks in English about massacres in Uganda, ID as "You are listening to Radio Rhino International, Africa and encouraged listener contact via email, although they gave no e-mail address, (listed elsewhere as mail@radiorhino.org - gld), calls to their office in Germany (049 162 885 4486) and a web URL of www.radiorhino.org, then more talk about troubles in Uganda. This one may also be contacted via regular mail at: Allerweltshaus Koernerstrasse 77-79, D-50823, Koln, Germany.

Jerry Strawman (IA) picked up the **Voice of Peace** and



The Voice of Democratic Eritrea issued this QSL to Richard D'Angelo.

Kurdish clandestine Denge Mesopotamia can sometimes be heard quite well on 11530. Bob Brossell (WI) got this reply from them.

Democracy on 5500 at 0342 via the Voice of the Tigray Revolution.

Jerry also landed Korean clandestine the **Voice of the People** (South Korea beaming to the North) on **6600** at 1220.

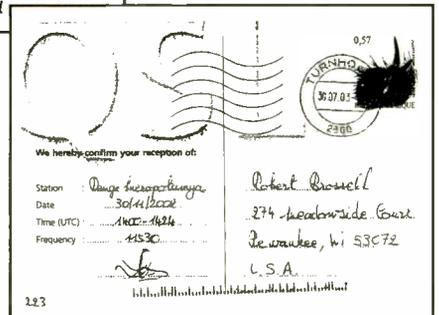
The **Voice of the Iraqi People** was logged by

Brian Alexander (PA) on at 0305 to 0311 close airing the Koran. Not only did he hear them on **9563**, **9570** and **11710** he heard a weak spurious outlet on **4785** as well! This station is operated by the Iraqi Communist Party.

With the extensive schedule the government's **Radio Free Asia** runs it's no wonder this one is heard both frequently and widely. Bob Brossell (WI) had it in Chinese at 2120 on **11700** and 1635 on **11795** both via the Northern Marianas. Martin Foss (Philippines) had them in Chinese on **11945** at 1642 and David Jeffery (NY) found them on **15430** at 2333.

That winds things up for this time. Please continue to favor us with your clandestine loggings, as well as any other related information you may acquire. That includes QSLs, contact information and background material on these broadcasters and the people behind them. Thank you for your continued support and, until next time, good hunting!

Editor's Note: Yes, we're missing The Loose Connection this month, but we're also missing Bill Price! He'll be back next month.



Solution to Puzzle on page 21

AOR ARD9900 Multimode and Digital Voice Interface

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- **Automatic digital receive**
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