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POPULAR COMMUNICATIONS

NOVEMBER 2006

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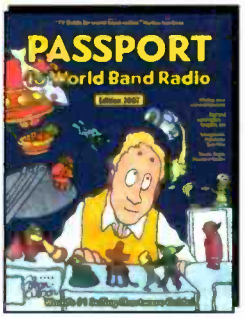

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On The Cover

If you're like most CB radio enthusiasts, you long for the days when getting a meter, antenna, or mobile mic was as easy as walking down to your favorite electronic retailer.

Although times have changed and those CB accessories aren't down the street any longer, they are closer than you think. Be sure to read Alan Dixon's article on page 8, "CB Radio Accessories: Where To Buy Them," and then have fun with all your new radio goodies! (Photo by Larry Mulvehill)

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by Harold Ort, N2RLL

Carry On

Just when you think life for the flying public can't get any stranger, along comes more sweeping changes for passengers. It's all over the news: dump the liquids—no bottled water, mouthwash, toothpaste, hair spray, makeup, soda, hair gel, tiny bottles of liquor, lotion, bubble bath, nail polish, shampoos and suntan lotion, etc. It's okay to put them in your checked baggage (because checked baggage doesn't contain contraband that can blow up a plane).

I don't know about you, but most hams and radio enthusiasts I know (yes, myself included!) returning from a hamfest or weekend or family get-away could certainly use a dose of that mouthwash after all those greasy burgers and hot dogs. Please Mr. TSA bend the rules just once in a while! They've also banned those cans of pressurized squirting cheese. What's next, mandatory extraction of the Boston creme in donuts?

How many of you remember a time when flights were regularly hijacked to Cuba? Those now seem like the good old days, with the 20-pound HTs, Castro's antics, Khrushchev shaking his fist at the height of the Communist "threat" (whatever that meant), rotary-dial phones (and dialing 0 for an emergency!), and "news bulletins." Most of those hijackings, as I recall, were accomplished by a knife or gun-wielding person, which really makes one wonder about airline security during those past 36 or so years, and why adequate security measures weren't in place throughout all those decades. Can't blame that glaring lapse on any single politician, Democrat or Republican, can we?

This whole security issue has me puzzled. Am I one of just a handful of folks in the Western Hemisphere asking tough questions about these issues? Or is the security plan really going to be banning iPods, laptops, and scanners because next time the feds will "discover" how terrorists might be planning to use a radio and cassette recorder to blow up a plane?

But, like they say on TV, "wait, there's more!" We've already gone down that road many years ago when Pan Am 103 was bombed out of the sky. Parts of a radio cassette recorder circuit board reportedly played a role in the explosion—in the forward cargo hold!

I read a paper written by a fellow at Indiana University that discussed how the media, during the late '60s and early '70s when hijackings were at their peak, played a role in those hijackings. The theory says that hijackers would often try to outdo the previous hijacker, obviously after media reports of a hijacking. Blasted media—like Rummy says, they only report the negative, never anything positive. Yeah, right, Don.

Hijackings and acts of terror aboard aircraft go back to the early '30s—that's right about 70 years, so I suppose you could say we've been engaged in a "war on terra" with knee-jerk security measures for seven decades or more. Pretty amazing. It's really just the sheer number of people who died on 9/11 that boggles the mind, and suddenly our collective belts were pulled a lot tighter.

I assure you that despite all the passenger screening measures put into place after 9/11 nothing will prevent anyone from using a plane as a weapon. The TSA could insist everyone board a plane wearing nothing but a beach towel and flip-flops and sure enough some terrorist will improvise a way to make either, or both, a weapon.

". . . I get this nagging gut feeling that tomorrow, or not too far down the runway we will indeed be banned from bringing scanners, frequency counters, and ham HTs on aircraft— or even in checked baggage."

As you might expect, I've got a few questions for Kip Hawley, the assistant secretary of the Transportation Security Administration, questions I haven't heard asked of our Feds with any fervor or expectation of reasonable response. Here are a few:

- What's different historically and currently about security in the Western Hemisphere and other parts of the world?
- What specifically is being done and how much is being spent on screening every piece of cargo and luggage? (After all, it would seem that if someone was considering taking a plane out of the air, a large piece of cargo on a pallet would be high on the list.)
- What specifically is the screening process for the cargo handlers, food delivery (and food preparation!), and other service personnel?
- What's the federal screening process for the aircraft mechanics and ground workers?
- What percentage of aircraft cargo is actually checked thoroughly, at least as thoroughly as people? (This, of course, would require the TSA to demonstrate—without divulging state secrets to the public!— that their words match their actions.)

I once worked in a public affairs capacity while on active duty in the Army in Berlin. One training scenario, complete with role playing, was an aircraft "hijacking." I recall the general answering the "media's" question about the "weapon" used to gain control of the aircraft. The scenario hadn't yet given him that detail, so he said something like, "we don't know at this time," but said that (as you might expect) security was tight at the military air facility (Tempelhof AB), so the person could have used a simple bracelet or even belt buckle.

Of course the general was correct; tons of items, including long necklaces, broken glasses, pens/pencils, parts of a laptop, power cords, belts, shoestrings, toothbrushes, hairclips, watches, your scanner or HT battery, or even a cut credit card, are all potentially a dangerous object in the hands of a terrorist. Add to that the "lethal" hands and feet of martial arts folks and trained military fighting personnel. If all these things and people are prohibited from aircraft, the net result will be no one flying except the crew. But thankfully we're not at that stage of security (yet), so just remove your shoes, bring your scanner or ham

HT on board, but be sure to pack away your bottled water in your luggage and carry on.

Yes, we're right smack in the middle of a "war" that will undoubtedly go on indefinitely, much like the War on Drugs or War on Money Laundering, but those are different "wars." While the Feds are spending billions of dollars trying to keep terrorists off aircraft, I get this nagging gut feeling that tomorrow, or not too far down the runway, we'll indeed be banned from bringing scanners, frequency counters, and ham HTs on aircraft—or even in checked baggage. All it'll take is a box of scanners showing up on a purported terrorist's doorstep or a couple of frequency counters in someone's trunk parked in the wrong place.

But today, the official word from the FAA is as follows:

> In general, you may not use any electronic device on any aircraft that is being operated under instrument flight rules (IFR), or on any commercial flight. However, the following are permitted: portable voice recorders, hearing aids, heart pacemakers and electronic shavers. Radios and other portable electronic devices, such as computers and headphones (regular or noise canceling), are permitted if the operator of the aircraft determines they will not cause interference with the navigation or communication system. The pilot-in-command has final authority on electronic devices operated onboard any aircraft at any time.

It seems to me that since we're at war for the long-haul, and since our nation's reserves (both personnel and financial) are stretched beyond the limit, it's prudent that as citizens we defend ourselves. Like I've said before, when the numbers crunch down to the lowest common denominator, it's the people who must—and, frankly, always do—take action, say, observing and reporting unusual behavior, packages, or activity, whether it's in the airport, on the plane, on the perimeter of the facility, or anywhere else common sense dictates that something smells like a skunk. I just hope that if you call, the security folks aren't too busy checking out Uncle Bob's jar of Burt's Bees lotion or bath oil.

And just where do all those little "travel" bottles of confiscated booze end up? I have a few good guesses, but then again I don't want to report on something negative. Carry on, Mr. Hawley. ■

by Harold Ort, N2RLL, Editor, and D. Prabakaran

News, Trends, And Short Takes

Zimbabweans Jam VOA Radio Signal

The Zimbabwe government using technology acquired from China has been able to partially jam signals from the Voice of America's (VOA) Studio 7 radio station, which broadcasts into the crisis-hit southern African country. Studio 7 is one of three radio stations operated by exiled Zimbabweans and broadcasting into the country from outside its borders after President Robert Mugabe in the last six years shut down all independent broadcasting stations.

The country's Central Intelligence Organization and engineers from the Ministry of Information were working to try to completely jam Studio 7 broadcasts into Zimbabwe. The equipment to block Studio 7 broadcasts was imported from China last year, and the government has been quick to use the same equipment to jam broadcasts from another foreign-based radio station that targets Zimbabwe, the London-based SW Radio.

FCC Approves Intelsat/PanAmSat Merger

The FCC has approved the merger of Intelsat Holdings, Ltd., with PanAmSat Holding Corporation. Upon completion of the transaction, PanAmSat will become an indirect, wholly owned subsidiary of Intelsat. Post-merger, PanAmSat and its subsidiaries will continue as separate corporate entities. The transaction involves the transfer of control, to Intelsat, of Commission-issued licenses and authorizations held by PanAmSat Licensee Corp and PanAmSat H-2 Licensee Corp, two subsidiaries of PanAmSat. The two licensees are authorized to operate non-common carrier Fixed-Satellite Service (FSS) satellites using the C- and Ku-bands, as well as numerous non-common carrier earth stations that transmit and/or receive signals in those frequency bands.

The transaction was unopposed, but the Commission predicated its approval on Intelsat's compliance with certain national security and law enforcement commitments and undertakings Intelsat made to the U.S. Department of Justice, including the Federal Bureau of Investigation, and the U.S. Department of Homeland Security.

PanAmSat Successfully Launches Galaxy 16

PanAmSat has also announced that its Galaxy 16 satellite has successfully soared into space. Launched into orbit by Sea Launch, Galaxy 16 is the 24th satellite in PanAmSat's fleet and its 11th over the United States. The satellite, to be located at 99 degrees west longitude, will replace Galaxy 4R. This is PanAmSat's 43rd satellite since the launch of Galaxy 1 in 1983.

Galaxy 16, a Space Systems/Loral 1300 series satellite, took off into space from the Odyssey Launch Platform on a Zenit-3SL rocket, leaving Earth for its final destination 22,300 miles over the United States. With its 24 C-band and 24 Ku-band payloads, the satellite will be home to some leading names in television, such as ABC, Comcast, FOX Broadcasting, Warner Bros., Buena Vista and Televisa, as well as other customers like National Public Radio (NPR) and Hughes Network Systems (HNS).

Help For Indonesian Earthquake Victims

Radio Netherlands Worldwide (RNW) is making a thousand radios available to the victims of the earthquake in Yogyakarta, Indonesia. Radio is—certainly in this situation—a very important source of information for the population. The Dutch ambassador to Indonesia, Dr. Nikolaos van Dam, handed over the first radios to three radio stations with which RNW cooperates. The three partner stations will distribute the radios among the local population. Using the radios, people in Yogyakarta and the surrounding area can listen directly to the Indonesian-language shortwave transmissions of RNW.

DRM Expands Into FM Band

Digital Radio Mondiale (DRM) plans to move beyond mediumwave/AM and shortwave. Members of the DRM Consortium intend to extend their system to operate on frequencies of up to 120 MHz, including FM broadcast frequencies in VHF band II, 87.5 to 108 MHz. The decision follows rumors that individual DRM member companies were investigating the possibility of an enhanced specification.

The DRM Consortium has already begun work on its band extension project. The various design, development, and testing phases needed to finalize the revised specification are expected to take from three to five years, meaning a launch date for the new standard of sometime around 2008 to 2010, according to DRM proponents.

The move brings DRM into direct competition with the more established Eureka-147 DAB (digital audio broadcasting) system, operational since the 1990s. More than 1.5 million DAB-capable receivers have been sold in the United Kingdom, and more than 150 DAB receiver models are on the market according to the Digital Radio Development Bureau, a marketing group in the United Kingdom. DAB is system-endorsed by the ITU and was developed to work in the broadcast bands between 30 MHz and 3 GHz and in VHF band II. ■

Each month, we select representative reader letters for "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, Editor, Popular Communications, *25 Newbridge Road, Hicksville, NY 11801-2909, or send e-mail via the Internet to popularcom@aol.com.*

FOUO

Dear Editor:

I wanted to thank you for a fine piece in the June 2006 *Popular Communica-tions* about Civil Air Patrol. It was precise, accurate, and informative. I wanted to comment on the portion of the article that addressed CAP's recent move to make certain parts of CAP's communications program "FOUO," or "For Official Use Only."

I don't think that I am over or understating anything when I say that the events of September 11, 2001, completely revamped how we as Americans should re-think how we use, and sometimes abuse, some of our freedoms.

The simple fact of the matter is that while we as Americans do enjoy the freedom to listen to the business of our government, I do NOT believe that we have some "right" to make it easier for those who would seek to destroy or harm us to find information about those tasks and to use them against us.

One might jump in and say that the "business" of organizations like CAP and its sister agency, the U.S. Coast Guard Auxiliary, is not "strategic" or "tactical" in the classical sense, but the fact is that those organizations are called upon to do "Missions for America," and those missions sometimes support the ultimate war fighting capabilities of the United States.

Any person involved in the gathering of intelligence will quickly tell you that it's the "bits and pieces" that make up the big picture. As an example, one of CAP's occasional tasks is to help with the surveying of low-level jet training routes for the Department of Defense. Do we really want to have certain parties knowing any particulars of those routes? Is it not easy to see how a comment about some incongruity of a route might be used to cause harm to one of our assets?

These recent moves are not exclusive to CAP, by the way. Federal communications users across the entire spectrum have been directed to tighten their belts as far as COMSEC goes. The Communications Act of 1934 and its subsequent amendments have always allowed us to "listen but not disclose" what we hear on our radios. That's always been construed as meaning not being able to divulge the content of what we hear, but not limiting us to where in the spectrum we heard it, modes used, etc. But does it not follow that by disclosing those "bits and pieces" we are doing as much harm as if we repeated what we heard?

I'll be the first to admit that there will always be a delicate and very sensitive balance between how we as Americans interpret our "rights" to do certain things and our "national security." In the post-9/11 era there have been many debates about the perceived abuse of the "excuse" of national security to enact certain security safeguards, but the truth is Americans should have been more responsible about our own security for decades. It took this slap in the face to make us realize that we've been lax.

What's the answer? Darned if I know. But I do know that there is a more than a reasonable expectation that, if we as radio hobbyists aren't a bit more discreet and responsible in how we pursue our activities, those very activities may be legislated out of our realm of "rights." Remember the "Great Speaker of the House Cellphone Debacle" and the subsequent push to make certain parts of monitoring illegal?

Let it come out that some terrorist cell was able to successfully attack another "WTC" and it was found they were equipped with scanners and copies of *Pop'Comm* magazine with "certain frequencies" circled in red and see how long it takes to outlaw owning a scanner, let alone use one!

Thanks again for a great piece!

Steven J Robeson, K4YZ/ KTN4GN
Via e-mail

Dear Steven:

You've brought up some very valid points. And, like you, I don't have the answer; perhaps that's part of being in America during these trying times (or any other, for that matter, I suppose). Best to sit back and think about the situation and discuss it. Where I personally have a problem with shutting the barn doors after the horse escapes is with pulling frequencies and other data that has been in the public's hands for decades in the name of "national security."

As ex-military, I certainly believe in "loose lips sink ships," but I also understand that terrorist frequency sleuths have all those published frequencies in their hands already. Remember, these are the folks who have the money to buy fake documents, driver's licenses, and ID cards, so buying and using a $500 scanner and putting it in the "search" mode or buying a frequency counter, or two dozen, is no problem.

Nevertheless, as you observed, we hobbyists are still walking a fine line when it comes to being overly brazen about what we're hearing; the fact that we can listen to our government and public safety agencies in this country is a freedom we should cherish, not abuse.

Thank you for your letter and thoughts, Steven.

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A publication of

CQ Communications, Inc.
25 Newbridge Road
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Offices: 25 Newbridge Road, Hicksville, NY 11801. Telephone (516) 681-2922. FAX (516) 681-2926. Web Site:<http://www.popular-communications.com/> Popular Communications (ISSN-0733-3315) is published monthly by CQ Communications, Inc. Periodical class postage paid at Hicksville, NY and additional offices. Subscription prices (payable in U.S. dollars): Domestic—one year $28.95, two years $51.95, three years $74.95. Canada/Mexico—one year $38.95, two years $71.95, three years $104.95. Foreign Air Post—one year $48.95, two years $91.95, three years $134.95.

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Printed in the United States of America.

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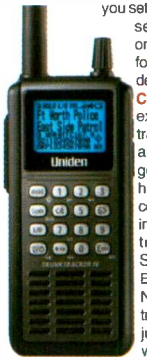

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The handheld BC246T TrunkTracker scanner has so many features, we recommend you visit our web site at www.usascan.com and download the free owner's manual. Popular features include **Close Call Radio Frequency Capture** – Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. **Dynamically Allocated Channel Memory** - Organize channels any way you want, using Uniden's exclusive dynamic memory management system. 1,600 channels are typical but **over 2,500 channels are possible** depending on the scanner features used. You can also easily determine how much memory is used. **Preprogrammed Service Search (10)** - Makes it easy to find interesting frequencies used by public safety, news media TV broadcast audio, Amateur (ham) radio, CB radio, Family Radio Service, special low power, railroad, aircraft, marine, racing and weather frequencies. **Quick Keys** - allow you to select systems and groups by pressing a single key. **Text Tagging** - Name each system, group, channel, talk group ID, custom search range, and S.A.M.E. group using 16 characters per name. **Memory Backup** - When power is lost or disconnected, your BC246T retains the frequencies that were programmed in memory. **Unique Data Skip** - Allows the BC246T to skip over unwanted data transmissions and birdies. **Attenuator** - You can set the BC246T attenuator to reduce the input strength of strong signals by about 18 dB. **Duplicate Frequency Alert** - Alerts you if you try to enter a duplicate name or frequency already stored in the scanner. **22 Bands** - with aircraft and 800 MHz. The BC246T comes with AC adapter, 2 AA 1,800 mAH nickel metal hydride batteries, belt clip, flexible rubber antenna, wrist strap, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. For more fun, order our optional deluxe racing headset part **#HF24RS** for $29.95. Order now at www.usascan.com or call 1-800-USA-SCAN.

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CB Radio Accessories: Where To Buy Them

We All Need Accessories, But Few Retailers Are Willing—Or Able—To Help

by Alan Dixon, N3HOE/WPUC72Ø/KST8678

What a dichotomy we CB Radio Service operators are faced with when it comes to finding accessories for our CB stations. On the one hand, CB transceivers are available for purchase just about anywhere. They're in "big-box" retail stores, such as Wal-Mart, in nearly every town, and of course you can find them in your local radio electronics chain stores everywhere, and sometimes even in auto supply stores.

On the other hand, finding *accessories* in stores can be quite a challenge. Seems that everyone wants to sell you a new CB radio, but other than the requisite antenna for mobile operation, few outlets are interested in marketing accessories for that new transceiver unit. Oh sure, we can find every conceivable radio and accessory for sale on the Internet, but many of us would rather experience the "look and feel" of in-person shopping. And this is no mere sensory exercise. When we can personally examine merchandise before we buy it, we feel confident that we know we're getting what we're paying for.

CB radio enthusiasts really need to check out highway truck stops to find excellent selections of accessories for CBs, cell phones, scanners, and even 10-meter ham radios. (All photos by N3HOE)

Why Are Accessories So Hard To Find?

Well, retail floor space (and shelf space) is valuable and numerous products "compete" for available space by virtue of their potential— and actual—profitability. The real irony here, in my experience, is that vendors have the opportunity for a greater markup (translated as *profit margin*) on such accessories than on the radios themselves. Perhaps other products are, or simply seem to be, more profitable than CB radio accessories. Or perhaps so many retailers feel that CB operators' personal discretionary budgets don't provide for much in the way of accessory purchases.

But then again, perhaps so many retailers have never really given us hobbyists the opportunity to validate the profitability of accessories marketing. If they don't dedicate the floor space to stock a full line of station accessories, then they will certainly never see how much money we really would be spending to build out our CB radio mobile and base stations!

For many years we all knew that we could find nearly every CB station accessory at our nearby radio electronics chain store. It appears, however, that many of these fine stores have in recent years substantially reduced their stock of CB radio-related accessories. It's difficult to be specific without printed catalogs from which to search, but some things that were at one time readily available are now no longer obtainable, even by special order. Radio electronics chain stores are in many ways *unlike* other retail chains, so I won't speculate on their reasons for moving in that direction. Suffice it to say I'm sure they have sound reasons for their business decisions. And one reality of business operations (here again, in my own experience) is that some business decisions are based more on the "bottom line" and less on customer convenience.

Just a couple of years back I bought a nice, inexpensive mobile CB transceiver from one of these radio electronics chain stores. I use it solely for REACT Channel 9 monitoring at my home base station. I already had the necessary 12-volt power supply with which to run the unit and lacked only a base station antenna.

The radio's user manual stated that the store selling this very radio carried a full line of base station antennas for CB sets. Okay, at one time they sure did have a number of these antennas available. I know this from years of being a regular customer at that particular chain. But, best I can tell, during the time this radio was marketed, they offered only one model of CB base station antenna. Hardly a "full line," I should say. And

Looking for a sign of good things very soon to come? There's an excellent truck stop just ahead.

I found this really nice Pilot Truck Stop somewhere in the Carolinas. The travel store inside has a world of CB radio accessories.

Farther down the road I found another sign of something good to come. I wheeled on in.

by the time I got around to looking for a proper outdoor antenna for my radio, these stores had discontinued this lone model, with nothing offered to replace it in their product line. Nothing.

Additionally, I couldn't find a noise-canceling mic, a power mic, or an antenna tuner for any CB transceiver at my local radio electronics chain store. And they offered an extension speaker at what I considered a less-than-competitive price.

So where can we find the CB accessories we want and need?

The Answer Is...

Turns out that CB radio base station antennas really are hard to find *in stock* anywhere, so I settled for ordering one "blind" from an amateur radio supplier website. As for the other accessories, the answer came to me while making a cross-

This Truckstops of America Travel Center in Florida has nearly two aisles of CB and other radio accessories. Really nice!

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I stopped at yet another Pilot Truck Stop in Florida to check out their excellent stock of CB radio goodies.

Actually, I bought two RoadPro speakers. These four-inch units were the least expensive extension speakers I found anywhere, yet they provide excellent speech intelligibility and tone quality!

country automobile trip. And what a pleasant surprise it turned out to be: *Be sure to check out highway truck stops!*

I'm certainly not new at making long highway trips. I've made dozens of cross-country motor trips, and I always loved taking breaks at those large, chain truck stops. They really are convenient since you can get your fuel, meals, personal and automotive needs, and use a restroom—all under one roof. These days I also enjoy browsing these truck stops' travel stores while I'm there. I always knew that these stores carried certain CB radio products, including the radios themselves, antennas, and some related goodies. But until very recently, I didn't realize the *depth of selection* of what they carry in their CB radio product lines.

Wow! Several of the truck stop chain locations I visited had two whole pegboard walls—we're talking roughly 15 to 20 linear feet each here—devoted to CB accessories, with some other CB merchandise inside a separate glass case. Now that's some serious retail floor space for our favorite goodies! (Alright, some of the snacks they offer are among my *other* favorite goodies, you must know!) Even the most moderate CB radio products display I recall seeing involved a good five linear feet of tightly packed pegboard space, with (again) some additional CB goodies locked within a separate glass case. And even this was a really good selection of accessories. I really was impressed.

During recent interstate highway road trips up and down the eastern U.S. seaboard, I decided to visit a number of individual truck stops of four particular chains: Flying J Truck Stops <www.flyingj.com>, Petro Truck Stops <www.petrotruckstops.com>, Pilot Truck Stops <www.pilotcorp.com>, and "TA" Truckstops of America <www.tatravelcenters.com>. I've got to tell you, all of these quickly became favorites, so check them out.

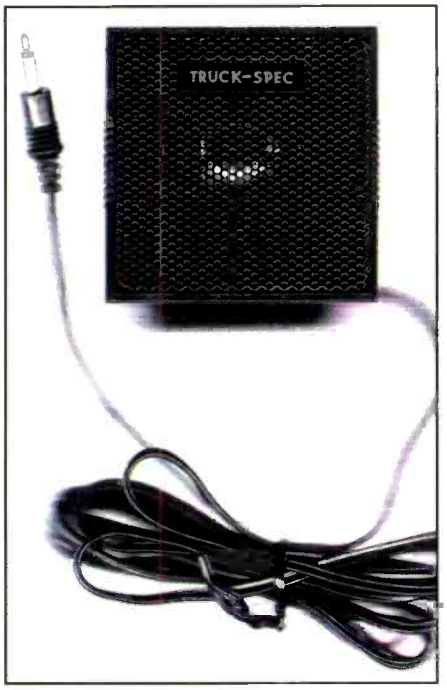
I can't recommend it enough: if you've needed some CB accessories for your station or your mobile installation, plan on visiting a few truck stops on an upcoming road trip.

While at this truck stop, I decided to take inventory of some of the excellent CB stuff I had purchased at various truck stops along the trip route. Just look at this professional-quality RoadPro noise-canceling mic, the Cobra noise-canceling mic, as well as the RoadPro antenna tuner and extension speaker. Best of all, you can see and touch the equipment!

Not Planning A Trip?

But what if you aren't planning a highway trip anytime soon? You can still go accessory shopping at a truck stop, if you do your homework. If you live anywhere near an interstate highway, you likely have one or more big truck stops within a 50-mile distance. In fact, you may find that you have one even closer than you think.

Just by cruising up two local exits on the interstate running through my town, I discovered that I have a Pilot Truck Stop just two towns away from my home. That's within easy travel distance any way you calculate it. And further checking around revealed another truck stop, of another chain, just over into the next county. A whole bunch of folks drive that



I bought this mini Truck-Spec 2-1/2-inch speaker to fit in a tight spot.

kind of distance just going to work each day! That's two major truck stops *locally* for me.

A recent 1,000-mile investigative journey (wait until Editor Harold gets my expenses invoice for that trip!) has shown me that these chain truck stops are spread around interstate highways essentially *everywhere*. From this I'd hazard a guess that a great many folks living anywhere near an Interstate have a truck stop located within their home county.

Map The Stops, Then Stop On The Rebound!

Given that most of us won't have to make a 200-mile or more trip in order to go shopping at a truck stop travel store, take the time to check these truck stop chains' websites to see what truck stops are nearby. Make a list of what CB radio accessories you're looking for and bring it along.

Here's a shopping tip: If you're planning a *round trip* on a highway of several hundred miles or more, check out numerous truck stops that you'll be passing on your first leg. On your shopping list, note what interesting products you find, where it is you find them, and what the prices are. I strongly recommend written notes because your memory (or at least mine!) can become blurred about which item was seen at what price and at

I also purchased another antenna tuner "matchbox" for a second installation. This nice, compact Barjan unit is very similar to the RoadPro antenna tuner.

what location. Then, with this information, do some comparison-shopping. See which products have the best price at given locations, and make your purchases on the *return trip*. Prices can vary by a few dollars per item. And these differences are found on individual products; so while prices of some items will be lower at one chain, prices of others will be lower at a different chain.

Given this, I can't say that any one chain has better prices overall. But by careful comparison shopping, if you're buying four or five accessory items, you can easily save 10 or 20 dollars, or even more, this way. I did!

Bring Extra Cash And Hit The Road!

Be sure to budget extra money for items you find that you maybe had not even considered. The selection of products is so great that it may surprise you, and you'll likely discover a number of desirable goodies you never thought you'd find! This also applies for scanner, amateur radio, and wireless telephone accessories. Expect to find the unexpected.

And don't wait another week. Find out where the truck stops are in your area, and start making your shopping list. And if you have a road trip coming up in the near future, make that trip more interesting by taking your shopping list along with you and going browsing.

Happy shopping! ■

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by Rich Arland, W3OSS, richard.arland@verizon.net

Interoperability: Problem Solved?

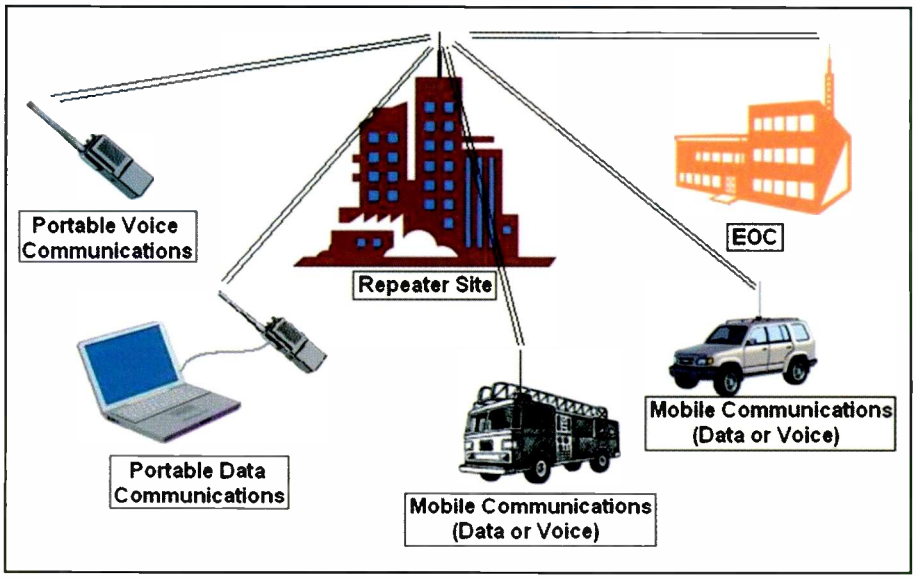
Ockham's Razor: "When faced with a complex phenomenon, the simplest explanation is often the correct one." Or, stated another way, the explanation of any complex problem or phenomenon should make as few assumptions as possible. Although often shunned by the die-hard scientific community as pseudo-scientific "mumbo-jumbo," Ockham's Razor finds its application in many areas other than theoretical science. Take for instance emergency communications and the multi-headed dragon of radio interoperability between responders and disaster mitigation professionals.

Without a doubt the largest single issue facing the disaster mitigation professional today is *interoperability*. Since September 11, 2001, very little, if anything, of great usefulness has been done to interface the multitude of dissimilar EmComm (emergency communications) radio systems to allow one service to trade information with another, despite the billions of taxpayer dollars thrown at the problem.

Why is this? If nothing else, the events of that fateful day over five years ago showed us that we lacked adequate communications between responding units, support units, disaster command and control units, and served agencies. Add to this the alleged interference caused to trunked emergency radio systems (FDNY, NYPD, Port Authority Police, etc.) in New York City from a large cellular provider and you have a basic picture of the chaos that followed the suicide mission surrounding the World Trade Center. The problems were witnessed again more recently during Hurricane Katrina. The only people who didn't have a communications problem were, of course, the amateur radio emergency communications volunteers.

Why Is It So (Apparently) Difficult?

What is so darned hard about making several dissimilar radio systems talk to each other? Literally billions of dollars gone into this "interoperability problem" with little to show for the efforts.



This is how the entire system links together to provide e-mail, voice mail, and SITREPs (situation reports) for individuals at the disaster command center or for the entire EOC.

Making matters worse is the insistence of some political hacks who have a finger in the pie, so to speak, to buy non-APCO Plan 25 standardized protocol for digital radio systems (which has been around over 18 years). The picture is actually crystal clear: it's MONEY! There's a LOT of money out there to be spent by people hoping to hack the "interoperability problem."

I'm still amazed that my state's former governor, Tom Ridge, left the state house in Harrisburg to assume the duties as head of the Department of Homeland Security, after okaying the purchase of the non-APCO Plan 25 standardized MA/Com Open Sky proprietary 800-MHz digital radio system for the entire State of Pennsylvania. Originally projected to cost $170 million to implement, at last count (and the figures I have are at least a year old) over *$400 million* has been spent on this system and it is *still* not fully operational across the entire state. Pennsylvania State Patrol (PSP) officers have privately commented on the lack of reliability of their mobile data terminals (MDTs) and are hesitant to trust their lives to a system that's unpredictable. Can't say I blame them.

The interoperability problem with Open Sky is well documented. Sure you can buy a multi-thousand dollar add-on box that will allow each township and municipality to interface with the PSP and its Open Sky system, but for most small bergs in Pennsylvania this is not only impractical, but also extremely costly. It didn't seem to matter to those in Harrisburg. The die was cast, so to speak, and damn the money, full speed ahead!

Well, several years passed deadline and way over budget, Pennsylvania's Open Sky system still isn't fully implemented and the taxpayers of the Commonwealth of Pennsylvania are still shelling out money for an inherently flawed communications system that really can't talk to anybody but itself.

The main point I'm trying to make with this history lesson is that, to date, there's been a ton of money poured into the interoperability problem by a lot of the high rollers in the communications and software industry and we still aren't in the ballgame. Hell, we aren't even in the ballpark!

The Answer Is...

Now, what if I told you that I've seen the answer to the interoperability problem and it won't cost an arm and a leg to implement. What's more, this elegant

Here's a mock-up of the system that transmits voice data at between 400 and 600 wpm between computers using RemComm's advanced voice recognition software. The system is extremely reliable, usable over any form of radio system, and can be used to link various radio systems together. Goodbye "interoperability problems."

solution reduces the problem to the least common denominator, and it's not RF.

What IS Communications, Anyway?

First let's start with a couple of questions. When we communicate with others, what are we really doing? We're transferring information. Whether it's voice traffic, text messaging, e-mailing, voice mailing, or whatever, we're trading information. It's that simple. If it's so simple, then what's the problem with interoperability?

Rather than try to interface all the RF systems that exist in the EmComm world, why not go at it from the other end; the traffic side. That's where computers come in. By designing some very innovative voice recognition software and interfacing that software with some off-the-shelf radio items, the folks at RemComm (www.remcomm-inc.com/products.html) out of Pittsburgh, Pennsylvania, have "broken the code" on interoperability. The solution has been sitting there all along; it just took someone with vision and some outside-the-box thinking to bring it all into sharp focus. That someone is Rick Johnson, AE3C, inventor of the system and founder of RemComm.

I was privy to an intense demonstration of this new system and I'm here to tell you that it's utterly fantastic! The hard part for me is putting it into words that can have anywhere near the impact on you that the demo had on me! But that's why they pay me the "big bucks." Here goes.

It's All In How You Say It

Okay, so what's the big deal? Well, for one thing, by using the actual voice or data traffic to be conveyed you don't have to worry about individual radio systems talking to each other. Essentially, Rick realized that the solution to interoperability between dissimilar radio systems cannot be attacked from the RF end of the equation. He reasoned that if you can't interface the RF side, why can't you take the information itself and message it using some innovative software, add the ubiquitous laptop PC, and feed that information into the dissimilar radio systems as you would normal voice or data traffic? In two words, "you can!"

Essentially Rick and his crew at RemComm have designed some highly sophisticated software (proprietary, of course), married it with some off-the-shelf computer equipment, added a transmission media (in this case 2-meter FM transceivers, but the RemComm package will work with *any* voice-based radio system, even HF), and *viola*, they came up with a method to transmit voice and/or data information between radios, into an EOC, onto the Internet—man, the permutations are endless!

RemComm's software system is built in modules that can be installed separately or integrated into a comprehensive emergency communications system. They've designed their products, both voice and data, to operate on narrowband modulation, providing universal compatibility with all voice-based radios and radio systems. This includes FM narrow and wideband radios and repeater systems, audio-based simplex radio frequencies, and trunked systems.

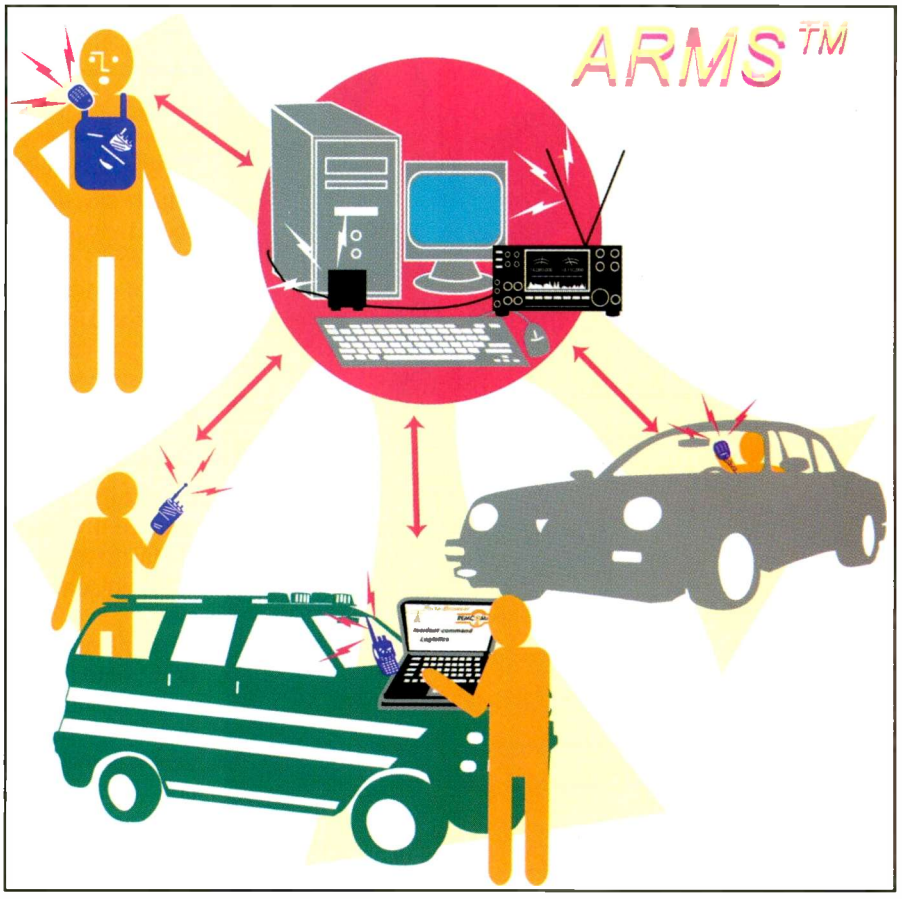
Now, I gotta tell ya, tha's a very exciting concept! Imagine, being able to push time sensitive, critical information (voice or data, or both) over virtually any voice-based radio system without having to worry about RF interfacing. This is a hot topic if there ever was one!

Emergency Data Management

Named the RemComm Porta-Browser system, it provides short- to medium-range radio-based voice and data communications in any setting that needs reliable voice and data transfer, but lacks commercial power or conventional communications. Porta-Browser uses RemComm's proprietary Tone63 modulation mode that's compatible with any audio-based radios or repeater systems, both conventional and trunked. The Porta-Browser software uses standard computer soundcards to generate data-encoded tones within a 3k bandwidth that can be efficiently transmitted over virtually any voice-based radio system.

Porta-Browser can be deployed on a radio repeater system or operated on secondary simplex frequencies. And even under extremely weak signal conditions and high radio frequency noise environments, the robust Tone63 radio transmission mode gets the data through where packet data transmissions fail. How? Glad you asked. RemComm has managed to combine 96 PSK31 channels to transmit voice and data over a 3-kHz voice path. If you do the math each PSK31 channel is around 30 Hz wide, so 96 of them will fill out a 3-kHz voice slot quite nicely.

RemComm's Porta-Browser system uses a National Incident Management System (NIMS) and the Incident Command System (ICS) compliant structure to acquire, manage, organize, process, and disseminate data at the scene of a disaster in a way



This illustration shows how the ARMS system interfaces into the disaster communications scenario. ⟶

that's easily used, controlled, and interpreted by an Incident Commander. Porta-Browser uses standard Microsoft Windows-based software and requires a minimal level of training. When deployed in a disaster environment, the system does not tax the operator's skills. Porta-Browser operates with HTML webpages structured around the NIMS and ICS standardized management protocols. In other words, if you are the least bit Internet savvy you'll feel right at home using the RemComm system.

In a major emergency, Porta-Browser provides the ability to move the majority of emergency communications from voice-based communications to a highly efficient data transfer and data management system. Information is transferred from laptop to laptop via simplex or repeated radio channels using the robust RemComm Tone63 transmission mode, freeing voice communications channels for tactical communications. Is that cool or what?

Advanced Speech Recognition Radio Messaging Service

RemComm's ARMS software, using advanced speech recognition, provides a means of recording, storing, and retrieving text and voice messages through any voice-based radio system. ARMS seamlessly integrates radio, speech, text, and e-mail. It requires no Internet connectivity and remains fully functional even during telecommunications outages. Getting excited yet?

With the ARMS voice-activated messaging and data retrieval system, outside agencies, mobile units, and first responders have access to Porta-Browser data, text/voice messages, and bulletins using nothing more than a handheld or mobile transceiver and spoken voice commands!

This was the most amazing portion of the demonstration I saw. It was utterly incredible to watch Rick speak into his 2-meter HT and then see the computer screen as his words scrolled down the CRT. Once the message is saved in the computer, the recipient of the message has the option of voice mail or e-mail to retrieve the communication. Once again, this system can be interfaced to virtually any voice-based radio system, completely circumventing the interoperability problem.

The company's ARMS-LTD system software performs three primary functions:

1. Recording: ARMS-LTD records transmitted voice messages.
2. Storage: ARMS-LTD stores the recorded messages as MP3 audio files.
3. Retrieval: ARMS-LTD provides the ability to retrieve messages on demand through spoken voice commands using any voice-based transceiver.

The ARMS-LTD system is designed to operate in the background on a voice-based radio channel. The system does not activate until it hears the specific ARMS activation command. ARMS-LTD users will find the system very easy to navigate with its spoken voice prompts and intuitive commands. Recorded voice messages can be sent to individual ARMS-LTD users, administrator-defined user groups, or distributed as general bulletins.

An additional message storage area is used for recorded reference files. Users logged into ARMS-LTD access this area through the "Reference Files" command and the files are sorted by category. Reference file examples include net schedules, local repeater frequencies, contact names and phone numbers, and any other reference information that can be recorded by voice.

This system requires a Pentium machine running MS Windows XP to operate as designed. The RemComm's ARMS system is activated by a voice prompt using RemComm's advanced voice-recognition techniques. After logging in, if a user does not respond to ARMS with a command, after a brief pause ARMS responds by reading a list of the most common commands. Users already familiar with the system commands can bypass the reading of the commands by speaking their command during the pause. Man, this is starting to sound like *Star Trek*!

Actually, voice recognition software has made tremendous strides in the last several years, which is where Prescott Wintersteen, N3YP, comes in. He's the software guru (much better than being just an engineer!) behind the voice recognition software that RemComm uses in its systems. And what a job he's done! In talking with Pres, I got the feeling I was living in the Stone Age of computers. Voice recognition software is a fantastic tool that's found applications in virtually every aspect of the computer use, from the writer doing a column for *Popular Communications* to doctors and lawyers

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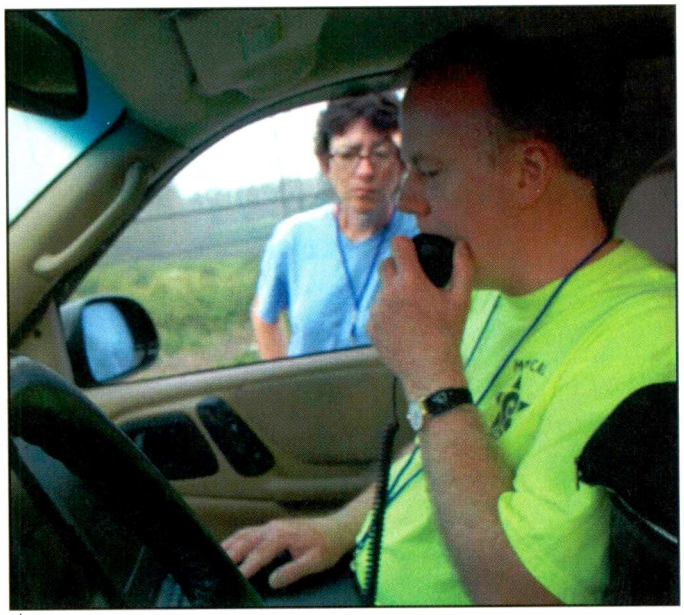
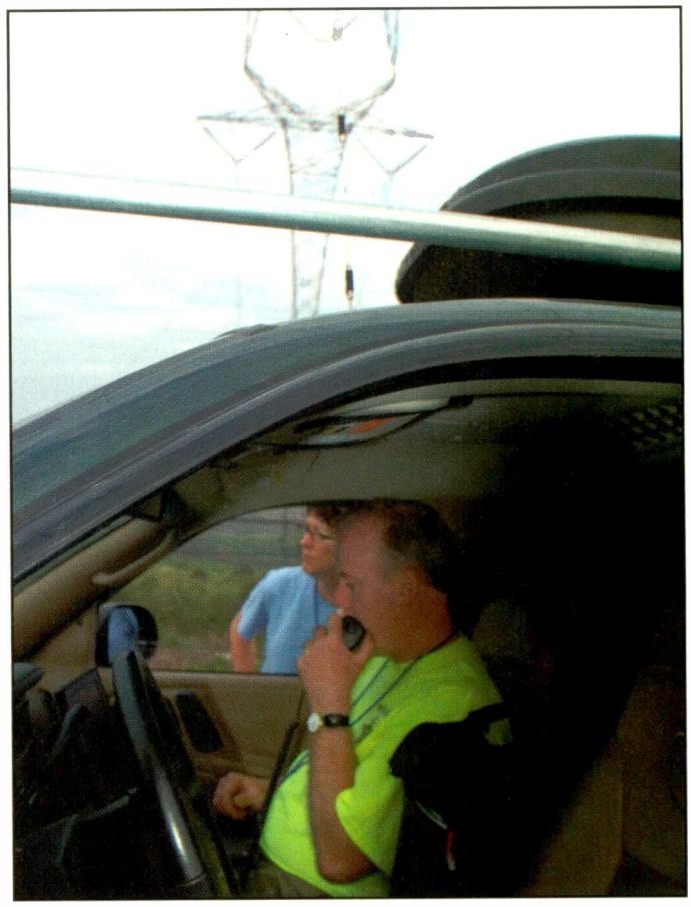


Here's a shot of Rick Johnson, AE3C, inventor of the revolutionary RemComm system at work during Hurricane Katrina.

Here Rick is communicating using the RemComm system over a simplex link. Notice the high-tension lines in the background. This actually became part of the antenna! VHF being what it is, there are times that by moving a few feet one way or another, you can secure full quieting signals. In this case Rick pulled up under the power lines and moved around a bit until he got a useable signal for his gear. Now that's thinking outside the box! →



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dictating case files and briefs, to mass data entry in the banking and finance arenas. Pres took me through the basics of how the system works, and I'm here to tell you that it's out of this world.

The really interesting thing is to listen to the computer-to-computer voice transfer at 400 wpm. Yes, I said 400 words per minute. You can actually understand what's being said by the computer, but it's very fast so you have to listen carefully. When the system is fully cranked up to 600 wpm, you just can't keep up, but the computer can! And, that's the beauty of this innovative system. This is why the system works so well: the computers are "trained" to recognize the speech and they do it very effectively at high speed.

Yeah, But Does It REALLY Work?

The RemComm folks have deployed the systems on several different training exercises in and around the Pittsburgh area. However, it was during the aftermath of Hurricane Katrina that Rick and his crew had their finest hour.

Even though they lacked "official sanction" the RemComm team, consisting of Rick Johnson, AE3C, Dave Kleber, KB3FXI, Pres Wintersteen, N3YP, Babs Carryer, KB3MYN, Grant Stapleton, KB3NVE, Rush Howe, and Tim Carryer, struck out for the hurricane-ravaged area of the Gulf Coast. After contacting the Salvation Army representative and explaining why they were there and what they could do for the Salvation Army, all members of the team were given proper identification papers and cleared to enter the devastated area.

"The really interesting thing is to listen to the computer-to-computer voice transfer at 400 wpm. Yes, I said 400 words per minute."

Pres, N3YP, and Dave, KB3FXI, operated the temporary base station (consisting of a 20-foot tower and dual-band Yagi attached to Dave's car) in Covington, Louisiana, while Rick, AE3C, and Babs operated as "rovers" from their remote location near Slidell, Louisiana. In one instance Rick had to inductively couple his mobile antenna to an overhead power line in order to establish contact with Dave and Press at the base station. Again, thinking outside the box pays off. Normally we hams tend to avoid power

lines like the plague, but in this case it served as Rick's antenna!

The system performed flawlessly and the served agency, the Salvation Army, was extremely impressed with the ability to transfer voice and data quickly and accurately during the aftermath of Hurricane Katrina.

The Bottom Line

As you can imagine, the RemComm system has some huge implications for the communications industry outside the EmComm arena. The cellular industry could benefit from this system as could paging systems. In fact, Rick Johnson and the RemComm crew have revolutionized the communications industry with their unique innovations. The possible spin-offs from the RemComm approach to voice/data over narrowband radio are mind boggling.

Looking back over this column and reviewing my notes and recordings, I realize I haven't done this unique and highly innovative communications system justice, not even close. For me, as a writer, this has been the most difficult column I have ever undertaken, simply because of the massive impact that RemComm stands to make upon the communications industry in general and the EmComm arena in particular.

To say that I was impressed with the demonstration that Rick and Pres put on for me is a colossal understatement. At the very least, the RemComm systems have provided us a method to integrate virtually any voice-based radio system with any other voice-based radio system irrespective of RF compatibility. In short, Rick and his crew have tackled the "interoperability problem" in a very simple and elegant way. Ockham's Razor in action: The simplest approach is most likely the right one! Good job, guys!

At this point I need to make the standard disclaimer: I have no monetary or personal interests in RemComm. I am not on their payroll or PR staff. My thanks to Rick Johnson, AE3C, Pres Wintersteen, N3YP, and Keith Kebler, KB3FXI, for the opportunity to break this revolutionary system to the communications industry. It was quite an honor to be contacted by RemComm and asked to be the writer to unveil this ground-breaking system to the EmComm community. I wish the RemComm folks the very best in their continued endeavors to provide much needed interoperability to disaster communications. ■

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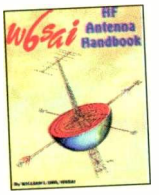

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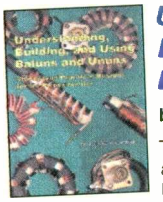

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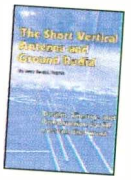

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by Gordon West, WB6NOA, WB6NOA@arrl.net

Interactive Ham "Hits" At Your Public Display

Presenting the amateur radio service to the public can be a rewarding experience with "live" equipment demos at state and county fairs that include disaster preparedness displays, simulated emergency test information stations, Field Day information stations, and public display of ham radio.

Thirty years of presenting ham radio to the public with "live" equipment reveals that not much has changed. Twenty-five years ago ham radio television was demonstrated on a robot slow scan TV (SSTV) phosphorus screen; now we show SSTV, full color on a laptop or Kenwood VC-H1. Who would have thought SSTV would remain as popular as it is after all these years!

Same thing with Morse code. As you will see in this month's photo column, straight keys and an oscillator will develop a line of kids and adults eager to begin sending their names in dots and dashes.

Newer Modes

But there are some newer modes that may be nearly a turn-off to the general public walking by your display. The equipment may be modern, but the presentation a complete bust! Say what?

Picture a solo ham working a high-frequency pile-up on a big screen transceiver, Heil boom headset firmly in place. The public would probably yawn looking at the back of a ham's head, not being able to hear the sounds of that rare foreign station coming over the headset. And unless the ham DXer has a "public spotter," there is no one there to describe all of the excitement going on.

Hands On—A Must!

The best presentation is one that is interactive.

A

You can have the best Field Day equipment and antennas in place, but if you don't have the excitement and participation of the Filed Day players, here's what you end up with—the public will not be impressed. **(Photo A)**

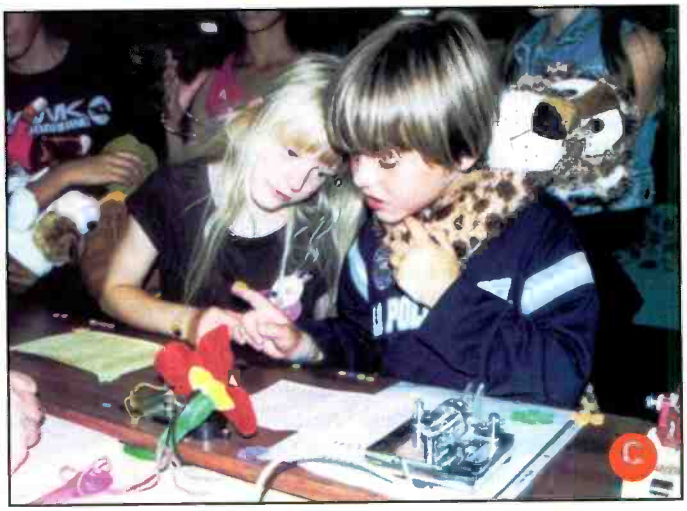
Digital modes operated with the public looking over the ham's shoulder are always a crowd pleaser. Don't forget to turn up the volume so the public can hear what PSK or packet sounds like. **(Photo B)**

Straight keys, tied in to a piezo electric oscillator, also bring in the crowds. They look up the code characters of their names and send them to the ham operator. The ham operator writes them down on a certificate, as the sounds of dots and dashes draw a line of CW enthusiasts! Also notice the electronic keyer at the end of the CW board. This is where accomplished CW operators can try their hands at dots and dashes. **(Photo C)**

Kids especially like the CW board. Flashing lights will assist the ham copying the CW over the noise of the crowd.**(Photo D)**

Chip Margelli, K7JA, displays his CW typing skills while listening to incoming code on the worldwide radio. He would draw a crowd by faithfully typing the CW he was hearing over the radio on his right, processed by a Heil DSP speaker.**(Photo E)**

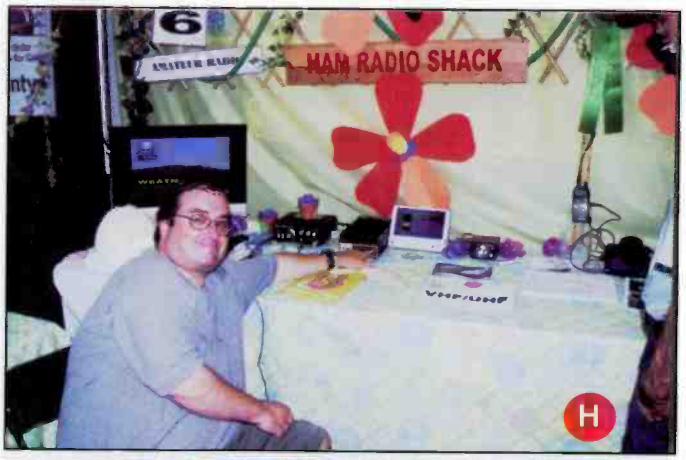
B

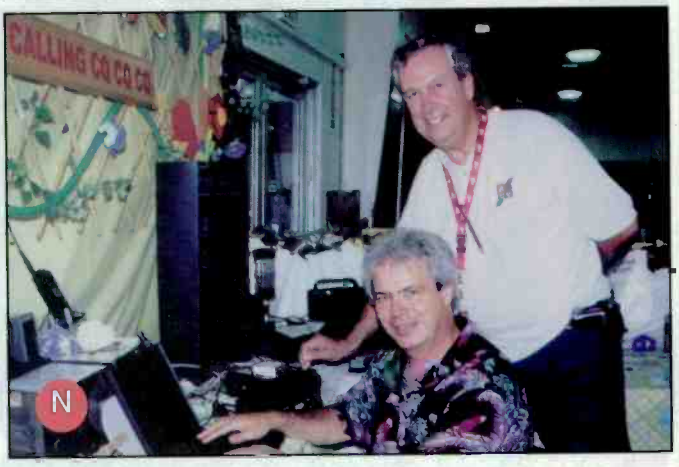

C

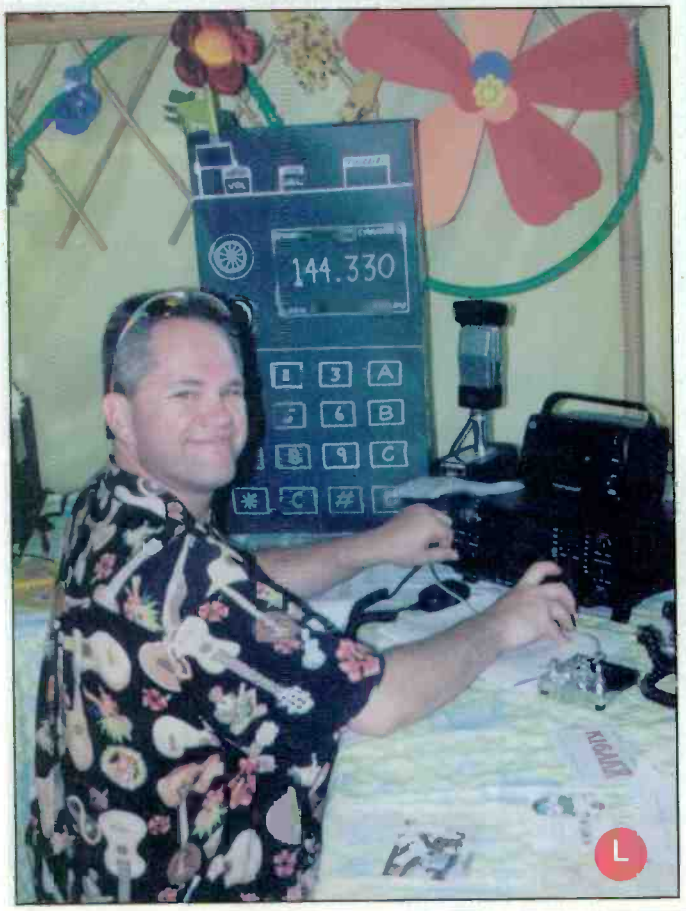
Internet Radio Linking Project (IRLP) and Echolink can be displayed with a tiny handheld that may be removed from the charger. The external speaker will allow you to move around the booth, letting third party traffic talk over the IRLP or Echolink circuit to someone across the country. **(Photo F)**

It's a good idea to offer a working display of other types of wireless equipment, such as a 40-channel CB radio, a 55-channel marine FM radio, older cell phones, a programmable scanner, cordless phone, even QSL cards, and an example of a ham radio kit. **(Photo G)**

Everyone loves fast scan amateur television! If you're fortunate to have a fast scan repeater in your area, invite the public to come in and be on television. The camera is just beyond view above the TV, tuned in to the amateur television network (ATN) in southern California. That's Rich, N6UZS, switching on the amp to improve signal clarity. **(Photo H)**







Demonstrate 2-meter FM voice contacts, and let the ladies handle the mic to show the public that ham radio is no longer just a "guy's sport." Here's Janet Margelli, KL7MF, making a contact, while Chip Margelli, K7JA, illustrates electronic logging. **(Photo I)**

If there's a young peoples' net on 2 meters or 440 MHz, get them on the microphone at your local public event. This really draws the kids. Here's Karen Schwandt, newly licensed as KI6EYG. **(Photo J)**

An old receiver with an operational "green eye" is always a crowd pleaser. Because this equipment has high voltage, double check that it's well grounded. Note to the right of the receiver the spare 12-volt Anderson Power Plug and coax with an SMA adapter. This is the "guest station" hook-up where hams can bring in their own equipment and get on the air with 12 volts and an outside antenna connection. **(Photo K)**

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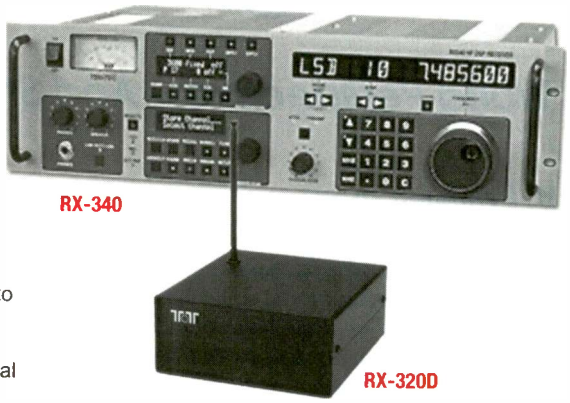

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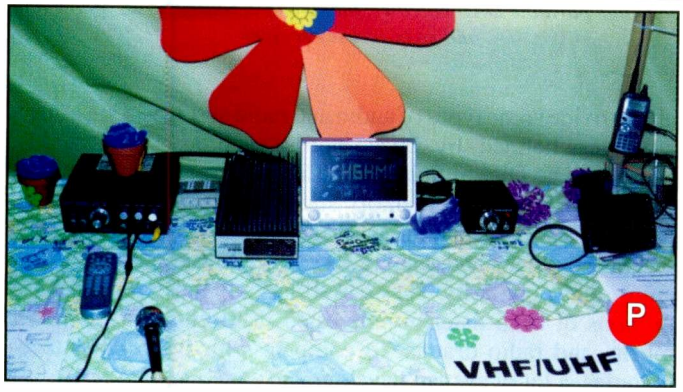

Dan Dankert, N6PEQ, demonstrates how to work an HF radio and talk to the public at the same time. Dan catches the reflection of someone approaching from behind him in the Heil microphone in the background! **(Photo L)**

A demo television, capable of playing both DVDs and VCRs, is a great way to keep ham radio videos rolling. Just make sure you don't let the program run out, leaving a dead screen. Notice the ICOM IC-910 VHF/UHF radio to the right of the TV—it worked tropospheric ducting from Orange County, California to Hawaii, 2,500 miles away! Big antenna? Nope! Nothing more than a single loop up at 30 feet on the side of the building. **(Photo M)**

Friendly faces! The personnel working the ham radio booth need to be outgoing and eager to talk to visitors. **(Photo N)**

The theme of this ham radio booth at the County Fair was "Flower Power," so naturally ham radio brochures went into flower pots! Study materials were also on display, including the first edition of the ARRL Handbook. Missing among all of this welcome literature is an updated handout that explains what ham radio is all about. While the ARRL "Hello" brochure was part of the handout, we still needed a multipage "hard sell" brochure to give out to those who showed a strong interest in learning how to become ham radio operators. **(Photo O)**

At the right of this picture is the Kenwood D-7, tied into the AvMap GeoSat 4T color screen navigator/GPS. Hams in the area could be seen squawking their positions on the APRS mapping screen. **(Photo P)**

More Great Tips To Showcase Radio!

There you have it. There's no major outside antenna system required, and all the equipment works off a single 12-volt battery, charged by a nearby AC socket and an automobile "Smarty Charger." An Anderson Power Pole distribution panel provides multiple outlets for the DC extension cords. This further promotes the emergency communicators' Anderson connection for interoperability.

Remember, you want to spend as much time as possible with visitors showing off ham radio, as opposed to setting up a contest station to work the world. Certainly use whatever equipment you need to provide solid contacts, but your public display is meant to sell ham radio, not serve as a contest station.

Rotate hams in four-hour shifts, giving them enough time to stick around and see the rest of the activities besides the ham radio display. You should have plenty of volunteers who will take the four-hour assignments. Help our service grow by participating in an upcoming ham radio public event! See you there! ■

Digital Audio Broadcasting: Looking To The Future

A World Perspective—And Status In The USA

by D. Prabakaran

Digital Audio Broadcasting (DAB) has the potential to transform the traditional audio-based radio medium into a full fledged *multimedia* system, particularly suited to bringing digital information to the general public, anywhere and anytime. Digital radio has already become a reality in many European countries. It's now possible to enjoy digital radio via various platforms, including DAB.

It's vital for the success of DAB to work in harmony and synergy with some other systems, particularly those in the communication and Internet sectors. And it's clear that DAB has to *share* the market and compete with other digital radio delivery systems like Wi-Fi, telematics devices, and the Internet.

DAB technology was developed by the Eureka-147 DAB Project, which was set up in 1987. The Project ended in 1999 as a stand-alone organization and merged with the WorldDAB Forum. Since 2000, the WorldDAB Forum has been responsible for the technical maintenance of the EU-147 standard. The Forum, comprised of 90 countries and several manufacturers, is now a central body for ensuring international promotion and marketing of the DAB system worldwide as well as lobbying international bodies such as the European Commission, European Parliament, and the CEPT (Committee Europeene des Postes et Telecommunications) for frequency spectrum management issues.

Better Sound Quality—And More

Whereas international cooperation is ensured by the WorldDAB Forum, the actual rollout of DAB services is in the hands of national broadcasters and national governments. Now that all major broadcasters and consumer electronics manufacturers have adopted it, DAB seems to have begun moving beyond the early stages. From the technology perspective, the value of DAB lies in better sound quality, more efficient use of the frequency spectrum, and the ability to carry additional data (non-audio) services, either associated with the main radio program, or not.

The real-world implementation of DAB has been affected by the increasingly difficult political and economic situation in many countries. Many radio broadcasters have been facing financial problems and have had insufficient funding available to invest in the DAB transmitter network infrastructure, new production facilities, and multimedia programming.

The public's attention recently has been more focused on the auctioning of telecom spectrum and the bursting of the Internet bubble than on DAB rollout. Today, DAB has to face competition from other digital broadcasting systems, along with new communications, Internet, and storage technologies that can also provide some types of audio and radio services. Consumers are overwhelmed by buzz words such as DVD, ADSL (Asymmetric Digital Subscriber Line, a form of DSL), Wi-Fi, digital music players, memory sticks, digital video and photo cameras, advanced mobile phones, and PDAs.

In Europe, PURE Digital (a division of Imagination Technologies) sells this portable DAB receiver, the Evoke 2, touted as an affordable and easy-to-use receiver.

On the other hand, analog FM and AM radio services still enjoy huge popularity. They can still satisfy the expectations of millions of keen listeners interested in listening to the news, music, and radio drama. To compete with these other technologies, a lot of system developments are *added* to DAB.

Why DAB?

DAB was originally developed to provide enhanced mobile radio reception, but it's now also an excellent mobile *multimedia* system able to deliver data and telematics to users at home and on the move, such as emergency warnings via real-time traffic and travel information. Easy-to-use receivers and tuning by frequency name are key benefits from a safety point of view. Improved sound quality and lack of interference when mobile is a huge advantage to any car owner, as are the value-added services which can be offered via digital radio DAB receivers. These are highly complementary to existing multimedia systems and can also be fully integrated with vehicle navigation systems, allowing for a complete infotainment package.

DAB Digital Radio provides motorists with a range of benefits that meet the current and likely future demands of both dri-

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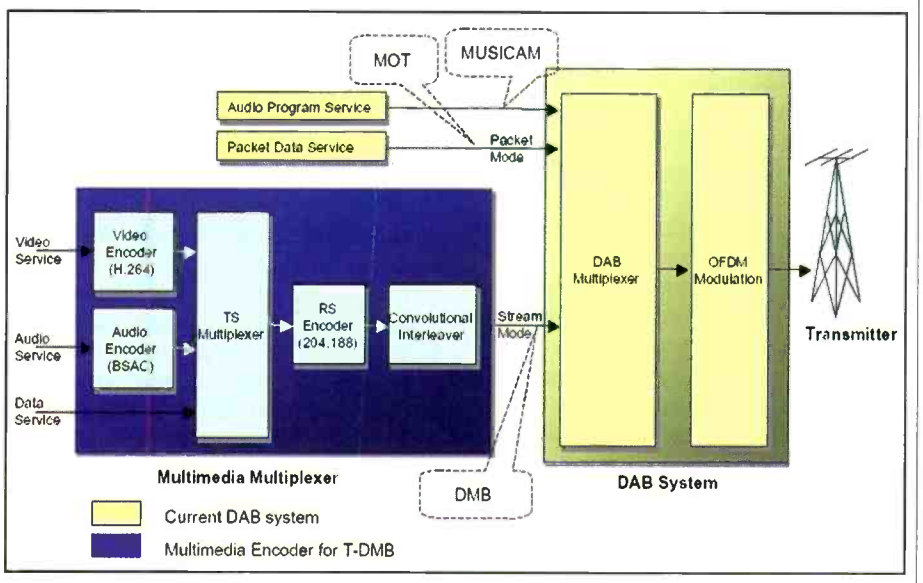

Multimedia transfer in the Eureka-147 system.

vers and passengers with the latest in in-car entertainment and services. The "Mr. Taxi-Smart" Project, currently undergoing trails in Singapore, is an *interactive* point-of-information and advertisement system specifically designed for taxis using DAB technology. An LCD screen with integrated DAB module enables passengers to access real-time information and on-demand data services including traffic reports, sports and financial news, tourism and shopping information, as well as their favorite Smart Radio station.

Data And Text Capability

Stations that have converted their transmission systems to HD Radio are capable of transmitting text messages, which will be displayed on HD Radio-compatible receivers. Initially, FM broadcasters will be able to send out what's known as program associated data (PAD), typically song title and artist name. Listeners—viewers—will soon be seeing text advertisements and station branding-program name, slogans, and other promotional messages to help build listener loyalty. In the future, broadcasters may want to add extra information such as album name and year and artists' biographies to their display broadcasts. Text feeds of breaking news, weather, sports information, traffic updates and more are all possible, completely revolutionizing radio as we know it today!

Kenwood's HD Radio Tuner, the KTC-HR100-TR, is compatible with Tomorrow Radio, Analog, and Digital FM/AM Radio with supplemental channel. It provides song title, artist, and other content information via Kenwood In-Dash receivers.

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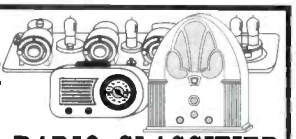

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Data services enabled by HD Radio are not limited to on-screen text displays, though. Using a feature called data tunneling, which transmits data for special non-broadcast applications, broadcasters can send their listeners the latest traffic information for their in-car navigation systems to help them avoid delays due to accidents or road construction. Future developments could include images, such as album art and other file-based services, as well as the transmission of information services as data streams or file transfer.

Digital Radio's Status In The USA

Since *Pop'Comm* most recently reported to you (in June) about digital radio, there have been significant developments.

HD Radio is iBiquity's brand of digital radio technology for transmission and reception of sound that has been digitized and compressed, and the FCC has selected it as the standard for local area broadcast of signals within the United States. It offers multiple programs on one channel and works on the same frequencies allocated to analog (FM and AM) radio stations. Supporters and avid listeners claim CD quality sound and reduced interference.

Today there are more than 750 AM and FM stations in the United States broadcasting with digital HD Radio technology, with an additional 2,000-plus stations in the process of upgrading to the HD Radio system, according to industry experts (visit www.radiosophy.com/abouthdradio/hd_radio_map.html.It for an HD Radio U.S. coverage map).

After a lackluster rollout from both radio stations and manufacturers earlier this year, digital radio is finally gaining some traction in United States. Hundreds of radio stations have gone digital in recent months, and retailers are starting to offer digital radios for homes as well as cars—slowly.

HD Radio technology remains the only digital broadcast system approved by the FCC for AM and FM radio in the United States. And it's rapidly transforming AM and FM radio stations to digital, enabling dramatically improved sound, crystal-clear reception, and advanced new applications like HD2 multicasting, a feature which allows FM stations to broadcast multiple streams of unique programming over a *single* frequency. HD receivers incorporate this advanced "secondary audio" capability and are able to receive multiple programming streams, single digital signals, as well as analog signals.

Since these channels ride on top of the analog station's licensed channel, no additional spectrum is required. This makes multicasting an appealing option for broadcasters who would like to offer new programming but, until now, were limited by the availability of licensed frequencies. Within broadcasters' existing frequency bands, stations that transmit multiple programs can allocate fewer or larger numbers of "digital bits" to each programming channel. Bandwidth may soon be dynamically modifiable during different dayparts (broadcast lingo for times of the day). Reading services for the blind and other public programming being broadcast as an FM side-channel using a separate frequency and a special receiver are prime candidates for multicasting.

Other stations are adding program channels complementary to the main program service. Examples include an oldies format station that multicasts a Beatles-only companion channel and a news station that multicasts its programming in Spanish, plus dedicates another channel to traffic updates. Another station is broadcasting two music channels of the same format, but with one for an older audience and the other for a younger demographic. Several program providers in the United States are about to launch services for stations' supplemental channels to ease the implementation of multicasting.

NPR Leads The Way With The Tomorrow Radio Project

National Public Radio is pioneering this secondary audio capability with its recently announced Tomorrow Radio Project, which will offer its member stations a selection from four new NPR HD Radio program feeds covering music and news/talk. The stations will be able to select one of these as their secondary channel. The Project is a multi-year undertaking that will test and demonstrate new digital technologies and services to operate within HD Radio system. Kenwood USA and Harris Corporation have agreed to join the first testing team under the project. A principal goal of Tomorrow Radio is to test multi-channel or "second audio" technology that could allow public radio stations to broadcast more programming and content using their existing spectrum.

Competition With Satellite Radio

Broadcasters are touting HD Radio as an alternative to satellite radio. It's different from fast growing satellite services, which currently serve about six million subscribers. XM Satellite Radio and Sirius Satellite Radio also beam their signals digitally, but do so via satellite and offer a national service of 100 or so mostly commercial-free channels for $10 to $13 a month. HD Radio and its HD2 sister technology offer many of the same features of satellite radio, including clearer sound and more varied programming, but it's *free*.

HD Radio is not a subscription service like satellite radio. It comes over the airwaves just like today's AM and FM radio. It compliments conventional radio to give listeners another important choice—at no cost. And programming options will increase greatly with the introduction of HD2, which as previously mentioned, allows for multiple broadcasting options from a single frequency.

Satellite companies aren't sitting still, however. In March, Washington, D.C-based XM Satellite Radio, Inc., introduced two channels that broadcast music in XM HD Surround, a technology similar to home-theater surround sound.

Not Without Criticisms

The HD Radio system has not been immune to criticism. Many find the claims of higher audio quality exaggerated, or even untrue when multicasting is used as individual channel rates are reduced. Some report hearing a decrease in audio quality on the analog signal of stations that have taken up the system. Another criticism is its portability. HD Radios consume much more power than portable MP3 players, making battery life a major problem. Also, if a listener is on the fringe of a station's signal, the digital signal may not be heard at all; there won't be the fading in and out that is so commonly experienced by listeners as they drive in and out of range of one FM radio station signal to the next.

The good news for listeners, though, is that all HD Radio receivers will be equipped with AM/FM receivers, too. This dual functionality will allow listeners to continue to pick up an analog FM signal when the digital signal is too weak.

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There are also various marketing-related challenges that HD must overcome. Overall, as of mid-2006 consumers have shown very little interest in HD Radio. Reasons cited have included the expense and difficulty of replacing existing radio receivers, a lack of compelling content, and no significant difference in signal quality between standard FM broadcasting and HD Radio streams. The content issue has been somewhat addressed by the increasing use of secondary ("HD2") streams, but receiver demand remains rather low.

Receiver Availability

Receivers have been available from online retailers since late 2005. Manufacturers have initially focused on making car stereos, with BMW being the first to announce HD Radio as an option for the company's 2006 7-series, 6-series, and 5-series models. More than 30 models of automobiles will ship with HD Digital Radios by the 2008 model year.

Home listening equipment is available in both home tuner and tabletop models. They're becoming less expensive, starting at around $100 to $150 (the Kenwood Tuner, for use with Kenwood stereos, is selling for as little as $98). HD digital radio receivers are currently manufactured by more than 15 companies, including Audio Design Associates, Kenwood, Alpine, Panasonic, Boston Acoustics, Polk, Day Sequerra, Radiosophy, Delphi, Rotel, DICE, Sanyo, Eclipse (Fujitsu), JVC, and Visteon. More than 20 Asia-based manufacturers have HD Digital Radio receivers in development.

"Radio is at a crucial period in its development, and needs to reposition itself to become a modern communications medium, attracting existing and new radio users, particularly young people."

The equipment is currently available from ABC Warehouse, Alamo Electronics, Audio Adviser, B&B Appliance, Bjorn's Stereo Designs, Car Toys, Crutchfield.com, eCost.com, Electronics Expo, Flanner's Audio & Video, Great Indoors (a unit of Sears Roebuck & Co.), Hammacher Schlemmer.com, Harvey's, Hi-Fi Buys, Home Entertainment, Huppins Hi Fi, J & R Music, Listen Up, Magnolia Audio Video, One Call, Ovation AV, Pyramid Audio, Rudy's Autosound, Sound Advice, Spearit Sound, Tweeter and World of Sound. Links to national retailers selling HD Digital radios are at www.hdradio.com.

Change Is Here Now!

Radio is at a crucial period in its development and needs to reposition itself to become a modern communications medium, attracting existing and new radio users, particularly young people. DAB will surely face many challenges and vigorous competition from digital television, wireless networks, and broadband. The channel coding and modulation scheme chosen for DAB has been demonstrated to provide a robust and efficient way of delivering digital information, both to in-vehicle receivers and portable or fixed receivers.

What's the future of DAB in the United States? We'll be sure to follow the developments so stay tuned. And write in to let us know what *you* think about HD Radio. This is truly a radio revolution—and you're a witness to history being made with all that DAB technology has to offer! ■

by Harold Ort, N2RLL, Editor

Tarheel Antennas' "Little Tarheel II" Continuous Coverage HF Antenna

One of the most fascinating aspects of our multi-faceted radio hobby is antennas. You can have the best radio in the world with more bells and whistles than the Pentagon switchboard, but if your antenna is the pits, your signal will be the same. Thankfully there are folks like the ones at the Tarheel Antenna company who specialize in helping you get that signal—whether you're a ham, CBer, or even mobile shortwave enthusiast—to and from the radio in good form.

I'll get right to the main point: I've used the Little Tarheel II for several months and found it to be outstanding in every respect: construction, performance, *and* appearance. (Believe me, if you don't think appearance is important, if you're like many hams just try getting virtually any screwdriver antenna past your Better Half and you'll see what I mean). Although my wife usually understands my radio cravings (that includes antennas, wires, switches, power supplies, scanners, etc.), she knows I understand that when it comes to mobile antennas, smaller is better, and the antenna shouldn't be larger than the vehicle.

Having said that, an HF mobile operator has a few choices, including single band whip antennas, multi-band trap antennas, so-called "bug catchers," and screwdriver antennas. The choices are as varied as there are operators on the road, but if you want a good all-around solid performer for HF operation (including CB!) I heartily recommend the Little Tarheel II.

The control switch mounted for easy access. Push to raise or lower the antenna.

Don't Let The Size Fool You

With the supplied 32-inch whip, the Little Tarheel II covers 3.5 to 54 MHz, but insert a 56-inch whip and you're operating from 2.9 to 38 MHz! The antenna weighs about two pounds, and from base to mounting tip for the whip, it's 16 inches tall. It comes with a 20-foot control cable and manual control box that you mount in your vehicle to change the "length" of the antenna, depending on where on HF you're operating.

Think about it for a moment: If you're tired of stopping your vehicle to change bands at the antenna in all kinds of weather and traffic conditions, or you just can't mount an outboard antenna tuner on your vehicle, the Little Tarheel II could be just what you need. The antenna is small and great looking, too. You can buy a beefier looking mobile antenna, but you'll also need a beefier mount, unless all your mobiling is done at the local park or in your driveway. What fun is that? If you're going mobile, go mobile!

I used an MFJ-348T RuffRider trunk-mounting bracket that comes with a 17-foot length of coax terminated with a PL-259. It's got four set screws that grip the mount firmly to my trunk lid and hold the Little Tarheel II securely, even at highway speed. It's the perfect mount for nearly any mobile installation, although you clearly have plenty of choices. For instance, you could make or buy a trailer hitch mount, use a strong tri or quad mag mount (not my personal choice because it won't provide a good ground and also because of the safety issue), or buy another commercially made trunk lip mount. If you opt to "drill the hole" (and honestly, it'll give you better overall performance!) you can also use the old standby ball mount. I simply chose MFJ's mount because of its reliability and reasonable cost ($42.95 from www.mfjenterprises.com).

Tarheel Antennas offers its own tried-and-true mobile mounting solutions, including a Hustler ball mount and the Diamond K-400 mount that you can order when you buy the antenna. Your call, but just be sure it'll work on your vehicle first!

Set Up And Operation

Throughout the installation and operation of the Little Tarheel II, I kept thinking, how easy can this possibly get? The manual is very well written and properly illustrated; the photos are clear and not washed out like some antenna manuals I've seen.

First order of business is to plan the installation. (Yes, I know I always say that, but all too often folks don't plan and inevitably end up with an installation that not only looks goofy, but performs just as badly). A few minutes spent planning can save hours of headaches later on down the road.

I mounted the antenna on the driver's side of the trunk, routing the coax and control cable through the same little crevices and tunnels I've used to mount other antennas, being sure to follow the explicit Tarheel directions to mount the included ferrite

The ferrite core must *be placed on the control cable to keep antenna motor noise down during tuning. It also decouples the control wire from antenna.*

core (it helps keep antenna motor noise down during tuning and decouples the control wire from antenna) on the control wire as close as possible to the antenna. Mine is mounted inside the trunk, but only inches from the base of the antenna.

Tuning the antenna is a cinch; I used an MFJ-860 meter to measure the SWR; first at 10 meters *using low power* (the instructions say to start at 6 meters, but I don't have six) where it was 1.5:1, then raising the antenna to 15 meters where it was about the same. At 20 meters, at 14.300 MHz, the SWR dipped to a respectable 1.2:1 as the antenna was raised. Keep in mind that the best place to mount the antenna would be on the top of the vehicle's roof, but since that's not an option for me, the trunk lip was a good compromise. (Remember, most antenna installations are indeed a compromise between what we really, really want and what's realistic.)

I rechecked the set screws on my MFJ antenna mount and took a few more minutes to scrape away a little more paint under the trunk lip and retightened the screws. It's also important to ground the transceiver inside the vehicle, which I did with a short copper braid. Rechecking the SWR yielded 1.2:1 across the board on my main operating bands: 10, 15, 17, and 20 meters. Using the Little Tarheel II is so easy, it's pretty intuitive after only a few minutes' use. Listen to the noise level increase as you tune the antenna, and it's very close to resonant.

A quick note on mobile antenna grounding is in order here. Remember that your vehicle is essentially the other half of your mobile antenna—but it's not a very good half. You can make yourself crazy "bonding" the various part of the vehicle to one another to try to achieve the best possible ground plane for your particular mobile antenna installation, but the fact is, most ops don't bother.

If you're able to use a copper braid to bond together a couple of parts of your vehicle, you're certainly accomplishing more than if you don't do any bonding. A simple ground strap from the base of the antenna to the vehicle isn't nearly enough; although for my installation (and, remember, I achieved pretty darned good results) the mount itself is secured to bare metal on the vehicle and worked quite well. But every mobile installation is different and your mileage, as they say, may (no, *will*) vary.

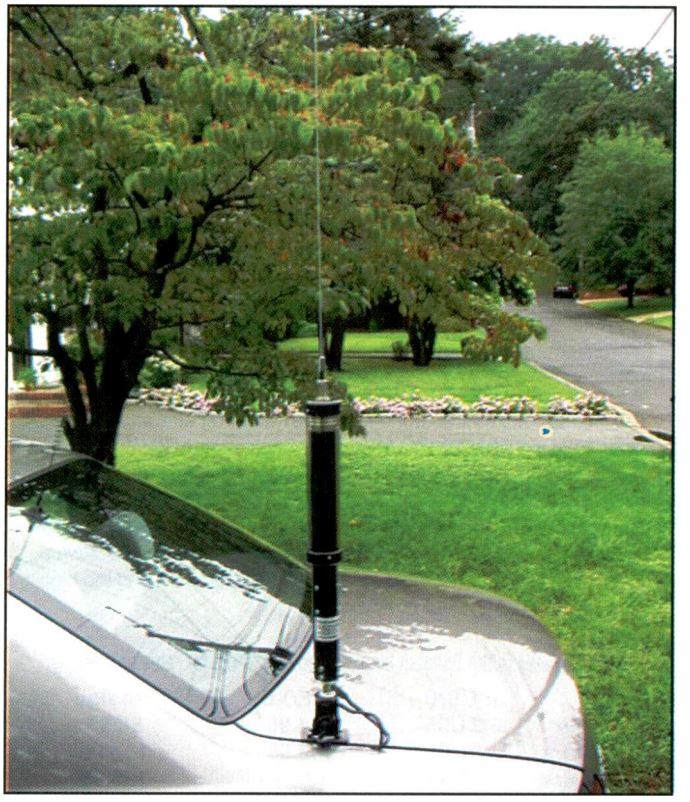
Works On CB, Too!

The Little Tarheel II antenna is also ideal for CB (basically 27 MHz, 11 meters) use and tuned up to nearly 1.1:1 on Channel 19—that meter hardly moved! This brings me to another great point about this versatile mobile antenna: It's also ideal if you're into SWLing/DXing as many of our modern high-tech transceivers receive the entire shortwave band (and then some!). And for hams it'll handle 200 watts PEP, which is more than enough RF to talk around the world.

On CB it's perfect for long-haul drivers. Simply clamp-mount the antenna on the mirror and crank up the rig (be careful with that power!) and you're in business! I've used several mobile CB antennas over the years and the Little Tarheel II certainly goes the distance on 11 meters. There was very little difference between it and large mag-mount antennas I've used; the only very noticeable difference would be using an 11-meter single-band antenna, which outshines most CB mag mounts (center- or base-loaded, take your pick) from all manufacturers.

I completed my mobile installation in about an hour, including routing the coax and control wires. The small current draw required for the antenna allowed me to use a simple cigarette lighter plug for the antenna control switch. Then all I had to do was connect the heavy-duty control cable to the switch and mount the switch in my vehicle so it's within reach while driving.

Using the Little Tarheel II is easy. Changing from one band to the other is accomplished *with the flick* of *a switch* from the comfort of your vehicle; you simply push the rocker switch to



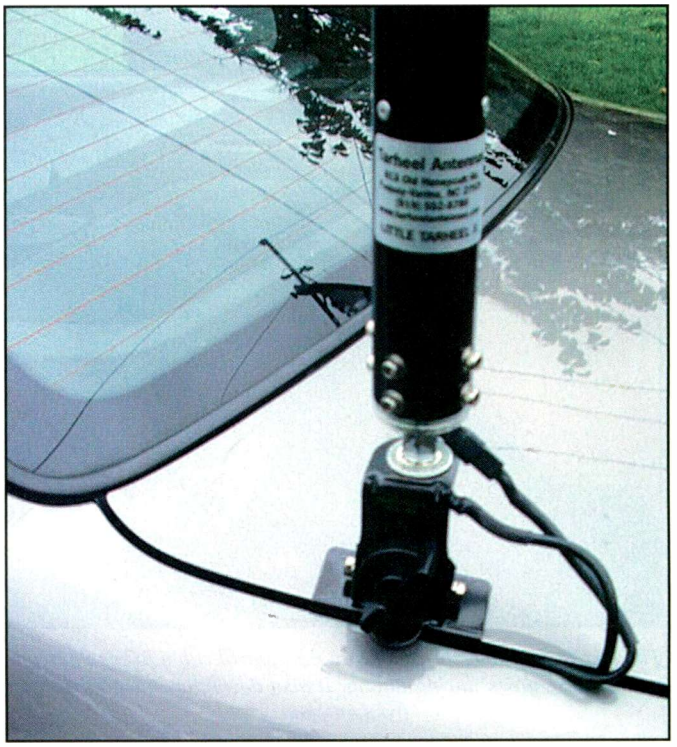
Here's the Little Tarheel II mounted on the trunk deck of our vehicle using the MFJ-348T. The antenna not only looks good, it's a great performer and ideal for mobile SWLing/DXing and even CB!

control the length of the antenna. I'd recommend keeping the SWR meter inline just as you would at your base station and tune for the lowest SWR. The motor didn't hang up and tuning was very smooth during my entire test period.

Most of my contacts were stateside, with several stations in the 14.300 Maritime Mobile Net easily heard and contacted. Parked in my driveway, I was able to run back into the house and check the same signals on a 20-meter dipole mounted 25 feet off the ground, and the mobile signals were only slightly lower (perhaps an S-unit). I was also able to use the Little Tarheel II as an SWL antenna, and the big international broadcasters came in well above any highway/suburban noise. I could even hear some utility stations; the 11175 Air Force stations in USB and Shuttle support activity on 10780 were easily audible.

Quality Shows

The quality of the Little Tarheel II appears to be outstanding (I didn't take it apart—my experience tells me that some things are best left to the folks who work on these antennas every day!). Using the MFJ trunk lip mount, it withstood New Jersey Turnpike speeds (okay, a *little* beyond the actual limit—for testing purposes, of course). But remember, as with any mobile antenna installation, the responsibility to keep the antenna securely attached to your vehicle is yours and yours alone. This antenna is far less prone to, "Holy cow, there goes the antenna!" incidents than some screwdriver antennas simply because of its smaller size; of course you do have to mount it securely and follow the instructions. And remember, please, as I said earlier, don't let the size fool you—it's a great performer across the board and will give you years of trouble-free mobile fun.



A close up of the antenna mounted to the MFJ-348T. Tarheel includes the little 3/8" x 24 stud

While I didn't test it as a base HF antenna, there's no reason why you couldn't use it in that capacity as long as it's properly grounded. Attach it securely to a balcony (ensuring the paint is scraped down to bare metal) railing, or use a counterpoise. No, it's not a big-gun Yagi, but it will get you on the air from home in an emergency when your tower is on the ground!

I did as Tarheel Antennas recommends and raised the antenna to wash and wax the shaft and Lexan tube to keep them bug-free and looking like new; after several months of use, they still do. I also used a marine-grade sealant on the MFJ antenna mount set screws and on the top of the antenna where the whip inserts into the tip to keep moisture out. Other than that, it's maintenance-free.

It's A Winner

The Little Tarheel II continuous coverage HF antenna gets our vote for quality and ease of installation and operation. It's a superb all-around mobile antenna that doesn't require a body shop guru to install on your vehicle! It comes in black, white, red, or silver and sells for $349. The shipping charge for the Little Tarheel II antenna averages $15 in the United States. The antenna carries a 30-day money back guarantee, and if there are any problems in the first year, Tarheel will fix or replace the antenna, at their discretion. The original owner has a lifetime warranty on the coil and fingerstock. If you've got a question or problem, I assure you that the Tarheel Antenna folks are there to help you with a genuine smile and great attitude.

For more information, contact Tarheel Antennas at 913 Old Honeycutt Road, Fuquay-Varina, North Carolina 27526, phone 919-552-8788, or visit them on the Web at www.tarheelantennas.com. Be sure to tell them you read about the Little Tarheel II in *Popular Communications*. ■

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by Bruce A. Conti, BAConti@aol.com

DXpedition Logs—Going The Distance To Capture Exotic Signals

The DXpedition, an expedition to a remote location for the purpose of receiving exotic broadcast signals over long distances, is like radio listening on steroids. So you can take part in the excitement, *Pop'Comm* presents the following partial accounts of just a few of the premier mediumwave DXpeditions that take place around the world, some on an annual basis. It's extreme DXing at its best!

Long Beach Island, New Jersey (39°39N' 74°11'W)

"Long Beach Island has been the site of one of the mid-Atlantic region's larger mediumwave DXpeditions for the past several years," writes Brett Saylor, a lead organizer of this annual event. Brett continues,

Each year's results have been very different, depending on atmospheric conditions and antennas used. Long Beach Island, on the southern coast of New Jersey, has been the site of a weekend mediumwave oriented DXpedition held every autumn since 2002. Started by several East Coast DXers, it has attracted attendees from Connecticut, New Jersey, Pennsylvania, and Maryland. The DXpedition is held at a beachfront motel in the town of Ship Bottom, approximately 30 miles north of Atlantic City and 50 miles east of Philadelphia.

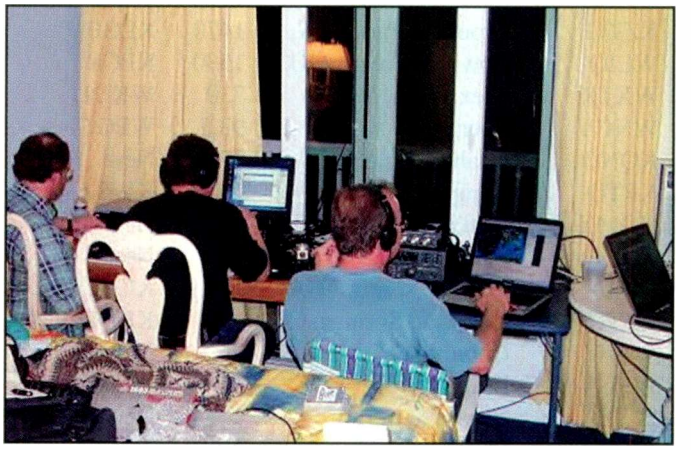
It seems that every DXpedition has its unexpected challenges, and Long Beach Island is no exception. In this day and age of heightened security, it's easy for casual observers to be suspicious of unusual activities. That was the case for DXers Bob Galerstein and Dave Hochfelder in attempting to install an antenna on the beach. Bob relates,

While stringing the north Beverage antenna, our friendly local constable from the town of Ship Bottom pulled over in his SUV, got out, and questioned our intentions. While it was tempting to say we were spies (with thoughts of the Cappahayden locals' feelings about the Newfoundland DXpeditions), we tried to explain the hobby. His response was to get permission from the town hall.

Antenna deployment was temporarily suspended while Bob and Dave scurried off to obtain a proper permit. It wasn't easy, as Bob explains,

The town supervisor, after our explanation, was befuddled at what we were doing. He never heard of such a thing! After talking about safety and insurance, despite our assurances of previous DXpeditions, the supervisor finally said to go ahead, but check in beforehand next time. Deal. We needed to get back, as it was approaching 4 p.m. and transatlantic signals were starting to roll in.

Indeed, a good DXpedition location like the Long Beach Island site has enough real estate available to experiment with wavelength antennas, or Beverage antennas, which can measure well over 1,000 feet long for mediumwave reception. (See the September 2006 "Broadcast Technology" for more about the Beverages and various wire antennas.)



Long Beach Island DXers Dave Hochfelder, Bob Galerstein, and Bruce Collier are too immersed in the ether to strike a pose.

Brett Saylor shares his particular knowledge gained through various implementations of Beverage antennas on the beach:

We have experimented with several antenna termination techniques over the years, ranging from an ill-fated attempt at driving a ground rod into the sand to the use of a single ground wire extended off the end of the Beverage (the Kaz termination). We have found the best technique to be a "fan" of three 20-foot-long radials attached to the far end of each Beverage through a 300-ohm resistor. The reception pattern of each antenna definitely favors the direction they are pointed, so the termination obviously has some effect.

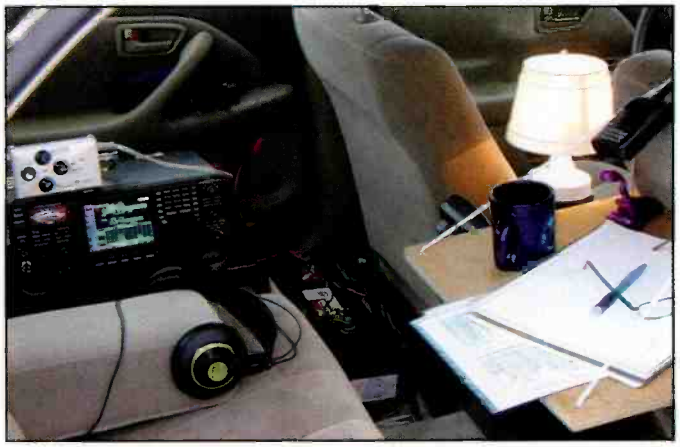
An impressive array of antennas deployed on the Granite Pier, the flag antenna is in the foreground.

FCC Callsign Changes

New Call	Location	Freq	Old Call
	Pending		
WXKU-FM	Austin, IN	92.7	WJCP-FM
WRBF	Connersville, IN	100.3	WIFE-FM
	Changes		
WPGG	Evergreen, AL	1470	WIJK
KZTG	Brooklyn Park, MN	1470	KLBB
WLIQ	Bowling Green, MO	1530	KPCR
WXTR	Alexandria, VA	730	WKDL
WNCV	Evergreen, AL	93.3	WPGG
KQNO	Coalinga, CA	97.3	New
KRTO	Lompoc, CA	105.1	KWSZ
KQMX	Lost Hills, CA	105.7	New
KZCC	McCloud, CA	95.5	New
KNTY	Shingle Springs, CA	101.9	KCCL-FM
KATC-FM	Colorado Springs, CO	95.1	KRDO-FM
WJTK	Columbia City, FL	96.5	New
WFLA-FM	Midway, FL	100.7	WBWT
WXRJ-LP	Bloomington, IL	94.9	New
KCOO	Dunkerton, IA	103.9	New
WYRX	Lexington Park, MD	97.7	WMDM-FM
WWXT	Prince Frederick, MD	92.7	WBZS-FM
WJDQ	Marion, MS	95.1	WYYW
WTPO	New Albany, MS	101.5	New
WYHL	Newton, MS	97.9	WJDQ
KZJF	Jefferson City, MO	104.1	KJMO
KJMO	Linn, MO	97.5	KZJF
KHOD	Des Moines, NM	105.3	New
KBCW-FM	McAlester, OK	91.9	KBNZ
WJHT	Johnstown, PA	92.1	WYOT
WFZY	Mount Union, PA	106.3	WSGY
WVHO-LP	Nanticoke, PA	94.5	New
WSGY	Pleasant Gap, PA	98.7	WQWK
WQWK	State College, PA	103.1	WQKK
WJDZ	Pastillo, PR	90.1	WWQS
WJGY	Jackson, TN	104.1	WTNV
KXWF-LP	Wichita Falls, TX	107.9	New
KMXD	Monroe, UT	100.5	New
WWXX	Warrenton, VA	94.3	WBPS-FM
WXXD-LP	Beloit, WI	92.9	New
KGCL	Ten Sleep, WY	105.1	New
KBBL-TV	Eureka Springs, AR	34	KWFT
WMYO	Salem, IN	58	WFTE
WQMY	Williamsport, PA	53	WILF
KMYQ	Seattle, WA	22	KTWB-TV

The combination of a clear salt-water horizon and Beverage antennas on the beach has produced phenomenal mediumwave reception, especially considering proximity to the cities of New York, Philadelphia, and the heavily populated northeast corridor. Here's just a few of the terrific catches:

549 RTA Les Trembles, Algeria
570 CMDC Santa Clara, Cuba
580 HIAF Montecristi, Dominican Republic
585 RNE1 Madrid, Spain
675 Arrow Rock, Lopik, Netherlands
720 RJR Innswood, Jamaica
780 CFDR Dartmouth, Nova Scotia
780 YVMN Coro, Venezuela
790 CMAQ Pinar del Río, Cuba



The ICOM 756 Pro II receiving station in Chris Black's car appears to have all the comforts of home.

819 ERTU Batra, Egypt
891 RTA Algiers, Algeria
1044 RTM Sebaâ-Aioun, Morocco
1134 HRT Zadar, Croatia
1377 France Info, Lille, France
1467 TWR Roumoules, France
1503 IRIB Bushehr, Iran
1521 BSKSA Duba, Saudi Arabia
1530 VOA Pinheira, São Tomé
1540 ZNS1 Nassau, Bahamas
1575 Radio Farda, United Arab Emirates

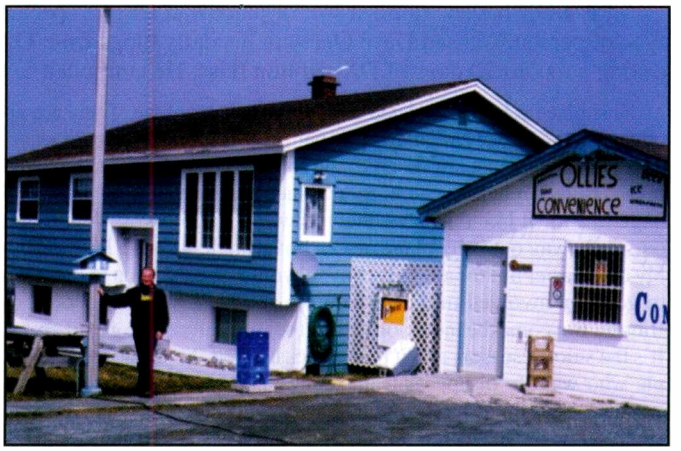
But there's more to DXpeditioning than antennas and radio, as Brett explain goes on to explain, "While the Long Beach Island event is fairly young compared to other established DXpeditions, we enjoy the camaraderie and opportunities for sharing knowledge that come from spending a weekend together each year dedicated to the hobby of mediumwave DXing, and look forward to future years."

Visit www.radiodxing.com for detailed Long Beach Island blogs and logs.

Rockport, Massachusetts (42°40'N 70°37'W)

Another annual group DXpedition takes place north of Boston, Massachusetts, and like Long Beach Island, it's a rare opportunity for DXers to share experiences and showcase tools of the trade. However, unlike most DXpeditions that extend over several days, this is a one-night stand.

First, to get primed for the expedition, members of the Boston Area DXers (BADX) radio club meet at Woodman's restaurant in Essex, proclaimed the birthplace of the fried clam, for a seafood dinner and lively conversation, thus the event has earned



That's Bruce Conti in front of the Round Cove B&B, current site of the famed Newfoundland DXpeditions.

the nickname "DX Clams." Then the group heads out to the Granite Pier in Rockport, overlooking the open Atlantic, where an impressive display of antennas and gear unfolds. Receiving stations are set up in vehicles parked on the pier, with a full complement of antennas that includes phased arrays, loops, and flag antennas. An informal contest has developed, with listening stations becoming more elaborate each year. This year's unofficial winner was Chris Black N1CP, who erected a rather ingenious full-scale flag antenna on the pier using fiberglass deep-sea fishing poles as towers.

In addition to Chris, BADX "Bad Guys" Mark Connelly, WA1ION, Paul Graveline, K1YUB, Briggs Longbothum, AB2NJ, and Gary Thorburn, KD1TE, were among the participants in the 2006 DX Clams. Gary, now a DX Clams veteran, shares some personal thoughts written after completion of his first BADX expedition years ago,

I would encourage each of you to look for an opportunity to give a mediumwave expedition a try. For me radio is ultimately an aesthetic experience. If I were able to expound on that eloquently, I think many of you would probably agree, especially if you were fascinated by radio as a child. Remember those late nights, when your parents thought you were sleeping? But alert and awake, by the warm glow of tubes and a dial lamp, you were connected to distant fading cities, enjoying favorite songs and perhaps a brownie smuggled earlier from the kitchen. Radio is still alive.

My evening ended late, behind a glowing ersatz dial, enjoying half familiar British rock from Virgin Radio on 1215 kilohertz, and the remains of an illicit sweet snack in the dark night. Still a thrill for me. I thought about the other end of my wire, invisible in a swamp, 1,000 feet but transporting me thousands of miles. It was time to go home. I shut down the radio and my ears readjusted to the quiet marsh in front of me. I stepped out into the dank air and followed the wire to the far end of my antenna...

In addition to the following logs, made with high-end communications equipment like the popular Drake R8A/B, the United Arab Emirates at 1575 kHz was received on a barefoot Degen 1103 portable—a true testament to the effect of sea-gain at a coastal location and the outstanding performance of this compact radio.

693 RDP Terceira, Azores
819 ERTU Batra, Egypt
837 RDP Pico da Barrosa, Azores
882 BBC Radio Wales, Washford, UK
954 Onda Cero, Madrid, Spain
999 RTM Tanger, Morocco
1134 HRT Zadar, Croatia
1170 Radio Sawa, United Arab Emirates
1431 Radio Sawa, Djibouti
1494 France Bleu, Corsica
1503 IRIB Bushehr, Iran
1548 Radio Sawa, Kuwait
1575 Radio Farda, United Arab Emirates

Visit the BADX website at www.naswa.net/badx.htm for complete coverage of the DX Clams expeditions.

Cappahayden, Newfoundland (46°53'N 52°57'W)

The Newfoundland DXpeditions are legendary. The brainchild of hardcore U.S. mediumwave DXers Mark Connelly and Neil Kazaross with the support of Jean Burnell in Canada, the first expedition was held in 1991, and DXers have returned to this North American DX Mecca at least 16 times since. In *The DXpedition Handbook* by Shawn Axelrod (The National Radio Club, 1994), Mark tells how it all began,

During the summer of 1991, I started making plans for a DXpedition about which I had long fantasized. The trip would be to a location near the Signal Hill site in Newfoundland from which Guglielmo Marconi had established his first transatlantic wireless communication 90 years earlier. Hearing transatlantic stations would again be the goal, this time on mediumwave. Neil Kazaross got interested in the project right from the start and said he was psyched about getting involved, despite the long journey he'd have to take from his

Pop'Comm November 2006 Survey Questions

I use a computer in my radio "shack."
Yes .....1 No 2

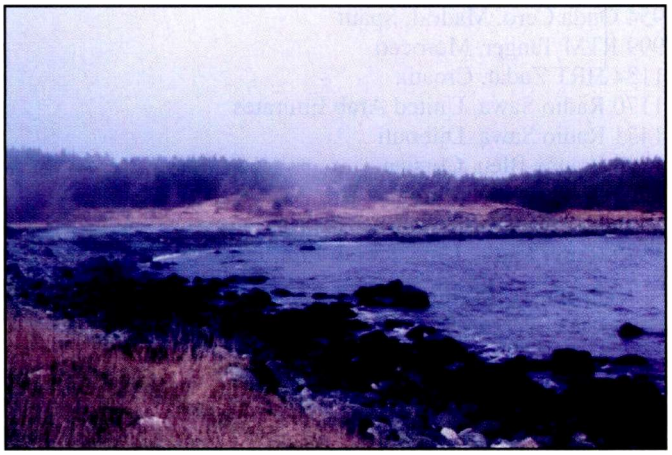
My computer is used primarily for the following (mark all that are appropriate):
Word processing and spread sheets 3
Access to the Internet 4
Games 5
Listening to radio stations on the Internet 6
Business – I work from home 7
Controlling my scanner 8
Ham radio – logging, station tracking, propagation, etc. 9
Controlling my communications receivers 10

I can't use the computer/monitor in the shack because of the interference it generates.
Yes .....11 No 12

I've tried to remedy the interference, but have been unsuccessful.
Yes .....13 No 14

I've done the following to get rid of the interference (mark all that are appropriate):
Move the computer/monitor 15
Shield the radio in a Faraday cage 16
Plug the radios in different outlets 17
Used higher quality computer cables and kept them away from the radio coax cables 18
Used ferrite cores on the cables 19
Purchased a different monitor or computer 20
Use a laptop instead of a PC/MAC 21
Contacted the computer/monitor manufacturer for a fix 22

I've accepted a reduced level of noise in order to enjoy the radio hobby.
Yes .....23 No 24



The European Beverage antenna at the Newfoundland DXpedition site follows a path along the scenic rocky shore of Round Cove.

California home. I circulated a memo among several DXers that specialize in logging foreign stations. I was informed that there was an active DXer right in St. John's, Newfoundland: Dr. Jean Burnell...Jean was contacted and he said that he was glad to participate. I knew that this local support would help the effort greatly. Dates were set for the Dxpedition... Since then, many a DXer has weathered driving rains, navigated through the Newfoundland Fog Devil, exercised patience with moose dragging Beverage antennas off course, and fueled local rumors about American spy activities, all for the capture of elusive signals from the nighttime ether.

Jean Burnell and I teamed up for the latest "Marconiland" DXpedition. It was just this past spring, and the longer daylight hours combined with semi-auroral conditions meant the emphasis was on Africa. Some logs follow:

580 HIAF Monticristi, Dominican Republic
630 RTT Tunis, Tunisia
648 Gambia Radio, Banjul
657 Radio Pulpit, Meyerton, So. Africa
790 CMAF Pinar del Río, Cuba
846 Umhlobowenene FM, Komga, So. Africa
909 VOA Sebeli-Phikwe, Botswana
909 Radio Nigeria, Abuja
1026 Jigawa Radio, Nigeria
1062 Anambra B'casting Service, Nigeria
1071 Radio Botswana, Jwaneng
1197 Family Radio, Lesotho
1350 Radio Botswana, Tshabong
1377 Radio Free Africa, Tanzania
1386 KBC Maralal, Kenya
1484.52 EP do Kuanza-Sul, Angola
1503 AFN Lajes, Azores
1530 VOA Pinheira, São Tomé

Visit BAMLog at http://members.aol.com/baconti/bamlog.htm for more photos and logs from Cappahayden, as well as links to previous Newfoundland reports.

Nhulunbuy, Australia (12°09'S 136°49'E)

Now this is extreme: Two dedicated DXers dared to share an inhospitable DX paradise with the crocodiles at the tip of the Gove Peninsula, Australia, overlooking the Pacific and Indian Oceans, for the opportunity of a lifetime.

"It is a DX haven but it's a sort of place that takes a special type of person," mused Dave Onley in his daily blogs from Oz during a record 20 days of DXpedition bliss. He continued,

This place is totally isolated. Only way in is by plane. There are no other towns or places to go. It's like being on an island in a lot of ways, except the sea is just red desert to the south and the Arafura Sea to the north. Isolation here is the biggest issue. I feel depression would be huge in a town like this, absolutely nowhere to go if you want to get out. Only way out is by plane or in a box. Single guys up here probably do it easier but for a family, boy, it would be hard. You really need to get very involved in the community and have a good network of friends. But come the monsoon and wet season and people go stir crazy. It's the suicide season, and it really does happen. This place is for people who want to disappear from society and come to the end of the earth. Nobody would ever find you here and if they did, they wouldn't care. It's Rafferty's rules, there are no rules. But DX is sensational.

Dave actually flew in from Holland, joining Australia resident Craig Edwards for this impressive down-under DX adventure. Here's just a small sample of what was heard:

531 DXGH Santos City, Philippines
549 JOAP Okinawa, Japan
630 DZMM Bulacan, Philippines
740 Voice of Vietnam, An Nhon
864 JOXR Naha, Japan
972 HLCA Dangjin, South Korea
1035 SIBC Solomon Islands
1070 KNX Los Angeles, California
1098 V7AB Marshall Islands
1100 KFAX San Francisco, California
1125 DXGM Davao City, Philippines
1190 KEX Portland, Oregon
1233 TWR Monte Carlo
1287 JOHR Sapporo, Japan
1296 Radio Afghanistan, Kabul
1520 KOKC Oklahoma City, Oklahoma
1530 VOA Pinheira, São Tomé
1580 KBLA Santa Monica, California
1590 KKZZ Ventura, California

Wish You Were There?

As demonstrated by these accounts, there's nothing like the excitement of a remote DXpedition. Getting started is easy. All you need is a good communications receiver with an external antenna and a prime location, such as the seashore to take advantage of sea-gain or an open space with enough room for Beverage antennas. If traveling a long distance, be prepared with a backup receiver just in case your primary receiver is damaged in transit. When making plans, talk with fellow DXers over the Internet or via amateur radio to generate interest in a group outing.

Having a few copies of this edition of *Popular Communications* readily available might make it easier to explain to curious passers-by, hotel managers or vacation rental agents, and public safety officials if necessary. And the latest edition of the *World Radio TV Handbook* is an indispensable reference for station identification.

Also visit www.dxing.info for more online DXpedition tips and reports. A Google search for "DXpedition" will find additional resources. Then get out there to experience the thrill of hearing exotic broadcast signals from far away on AM radio. 73 and Good DX! ■

by Richard Fisher, KI6SN

Capitol Hill And FCC Actions Affecting Communications

FBI And Radio Amateurs Explore Partnership

An initiative adopted in part to promote interaction between U.S. radio amateurs and the Federal Bureau of Investigation "concerning critical infrastructure protection issues" brought a wide range of representatives together for a summit in July. Organized by New York Metro InfraGard, the one-day "Communications Interoperability and Ham Radios" session was held at Cisco Systems' office in New York City. Keynote speaker for the session was Broadcasting & Cable Hall of Fame member and New York Public Television CEO William Baker, W1BKR.

"At its most basic level, InfraGard is a partnership between the FBI and the private sector," the organization's website explained. Described as an "association of businesses, academic institutions, state and local law enforcement agencies, and other participants" it is "dedicated to sharing information and intelligence to prevent hostile acts against the United States."

"InfraGard chapters are geographically linked with FBI Field Office territories. Each InfraGard Chapter has an FBI Special Agent Coordinator assigned to it, and the FBI Coordinator works closely with Supervisory Special Agent Program Managers in the Cyber Division at FBI Headquarters in Washington, D.C.," the site's description continued.

After the July conference, Mary Hobart, K1MMH, chief development officer for the American Radio Relay League, which represents radio amateurs nationwide, said the session was "key to opening the door to a valuable model partnership. They were very receptive. I think it was a good beginning." According to the League publication *The ARRL Letter*, Hobart said that amateur radio "came up on InfraGard's radar earlier this year and got the nonprofit organization thinking of amateur radio as a possible partner, ally and service provider in emergencies."

"They understand that ham radio has 'been there' in terms of emergencies and disasters and is working to improve its ability to respond," she said, adding that New York Metro InfraGard president Joe Concannon "expressed his deep interest in amateur radio as a partner and a desire to learn more about our capabilities." Hobart also said, "Concannon envisions a model in New York City that other InfraGard chapters across the country could emulate. I think it's an opportunity for amateur radio to align itself with a high-profile group with key federal connections."

FCC Revokes Licenses For Failure To Provide Accurate Mailing Addresses

Two U.S. radio amateurs have had their licenses suspended by the FCC for failing to maintain accurate mailing addresses in the agency's licensee database.

Larry L. Smith, KC7LJR, of Middleton, Idaho, and Larry J. Maniag, KD7JTG, of Payson, Arizona, were issued notices by Riley Hollingsworth, special counsel in the FCC Spectrum Enforcement Division, in June informing them of their Technician license suspensions for the remainder of their license term or until they provide the FCC with a correct mailing address.

The FCC notification to Smith said that on three occasions in late 2005 the commission had been unable to deliver warning notices alleging deliberate interference to a 2-meter repeater system.

The notification to Maniag noted that the U.S. Postal Service earlier in 2006 had returned two warning notices—alleging deliberate interference with several repeaters—as undeliverable.

"Hollingsworth cited §97.23 of the Commission's Amateur Radio Service rules that requires each license grant to show the licensee's correct name and mailing address," a statement from the American Radio Relay League noted. "The rule provides that 'revocation of the station license or suspension of the operator license may result when correspondence from the FCC is returned as undeliverable because the grantee failed to provide the correct mailing address.'"

Public Safety Organizations Call For Senate Funding

Three public safety organizations have voiced their support of the Congressional E9-1-1 Caucus on Capitol Hill, urging Senate approval to fund Enhance 9-1-1 (E9-1-1) grants. The Association of Public-Safety Communications Officials (APCO) International, the National Emergency Number Association (NENA), and the E9-1-1 Institute made their plea in a joint news conference.

In 2004, "Congress passed the ENHANCE 9-1-1 Act. One of the key provisions of this legislation authorized federal matching grants to state and local governments to deploy technology necessary to provide wireless Phase II E9-1-1 services. Currently, there are no funds available for these grants," APCO reported on its website.

"We, the nation's public safety and emergency support personnel, need additional resources to meet the changing needs of our culture," APCO International Executive Director George S. Rice, Jr. said. "We encourage the Senate to support the public safety community in fulfilling its mission of protecting the citizens of this country by fully funding the Enhance 9-1-1 grants."

NENA President Dr. Bill Munn, ENP, said, "Our goal must be to equip the nation's 9-1-1 network and call centers with the best technology available, enabling them to provide the service that citizens have come to expect when they dial 9-1-1. We applaud the leadership of the Congressional E9-1-1 Caucus and ask Congress to give us the opportunity to improve our nation's 9-1-1 system by funding this vital legislation today."

APCO reported that Sen. Conrad Burns (R-MT), a co-chairman of the Congressional E9-1-1 Caucus, said that,

> ...in an emergency, time is the most critical element in saving lives. E9-1-1 technology saves time and, therefore saves lives. I, and my fellow co-chairs of the E9-1-1 Caucus, know this and will work tirelessly until all emergency phone calls, regardless of whether they come from a land line in Manhattan, New York, or a cell phone in Manhattan, Montana, are treated equally. Lives will be saved from this funding and we're going to do all we can to make sure it happens.

by Tomas Hood, NW7US, pc-prop-man@hfradio.org

Looking Forward With A Backward Sign

Since the start of 2006 we've been seeing a steady decline in the activity level of our solar system's sun. Sunspots occur less frequently; there are periods now where we don't see any sunspots for days. This signals the end of the Solar Cycle 23, but how will we know when Cycle 24 is starting up?

On July 31 the anticipated sign that Cycle 24 is beginning was observed. The sign? A short-lived tiny sunspot that formed up from the sun's interior, floated around a bit, and vanished again in a few hours. This particular sunspot was special: it was backward.

"We've been waiting for this," says David Hathaway, a solar physicist at the Marshall Space Flight in Huntsville, Alabama. "A backward sunspot is a sign that the next solar cycle is beginning."

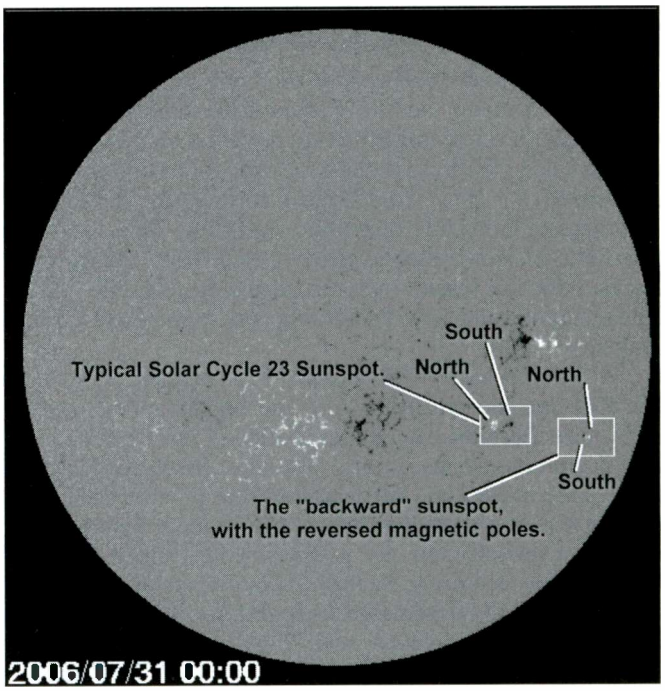
"Backward" means magnetically backward. Sunspots are magnetic regions on the sun with magnetic field strengths thousands of times stronger than the Earth's magnetic field. Plasma flows in these magnetic field lines of the sun. Sunspots appear as dark spots on the surface of the sun. Temperatures in the dark centers of sunspots (the "umbra") drop to about 3700 K, compared to 5700 K for the surrounding photosphere. This difference in temperatures makes the spots appear darker than the rest of the surface. They are seen to rotate around the sun, since they are on the surface (the sun rotates fully every 27.5 days).

Sunspots usually form in groups containing two sets of spots. One set will have a positive or north magnetic field while the other set will have a negative or south magnetic field. The magnetic field is strongest in the darker parts of the sunspot. The field is weaker and more horizontal in the lighter part (the "penumbra").

During the course of a solar cycle, sunspots are magnetically oriented much the same way, sunspot after sunspot. However, when the sunspot of July 31 popped up at solar longitude 65 degrees west, latitude 13 degrees south, it was opposite of the normal orientation for sunspots in that region of the sun. Sunspots in that area are normally oriented N-S. This sunspot was oriented S-N.

During the course of the average 11 years of a solar cycle, where solar activity rises and falls, swinging back and forth between times of quiet and storminess, the magnetic structure of the sun reverses itself. Right now the sun is quiet. During the peak of the solar cycle, the sun is very active and stormy. Right after the peak, the sun's magnetic poles actually flip. At the end of a cycle, or at the start of a new cycle, sunspot magnetic poles flip.

So, when will Solar Cycle 24 actually *begin*? Since the first sunspot of a new solar cycle is always backwards, solar physicists look at July 31, 2006, as a very likely start of the new cycle. However, this does not mean that solar activity is going to immediately do an about-face. It can take up to five years for the next solar cycle peak to arrive.



A view of the sun that reveals the magnetic orientation of several sunspots occurring on July 31, 2006. The darker areas indicate a south magnetic "pole," while the lighter areas indicate a north magnetic "pole." The sunspot that has a backward-oriented polarity is the likely signal that a new solar cycle is starting. (Source: NASA/SOHO)

Good News For Top Band And MW DXers

This is welcome news for Top Band (160 meters) and mediumwave DXing enthusiasts, who look for low solar activity with low geomagnetic disturbances and a quiet winter season. This year we should see a vast improvement on the low HF and mediumwave bands.

This backward sunspot lasted only three hours. Typically, sunspots last days, weeks or even months. Three hours is fleeting in the extreme. "It came and went so fast, it was not given an official sunspot number," says Hathaway. Additionally, the location where the sunspot appeared is suspicious. New-cycle sunspots almost always pop up at mid-latitudes. This one did not. So, scientists are cautious about putting *too* much weight on this one sunspot as the official start of Cycle 24. However, it does signal the arrival of the new 11-year cycle. And, as reported in past months, the new cycle may well be the strongest since the 1950s.

HF Propagation

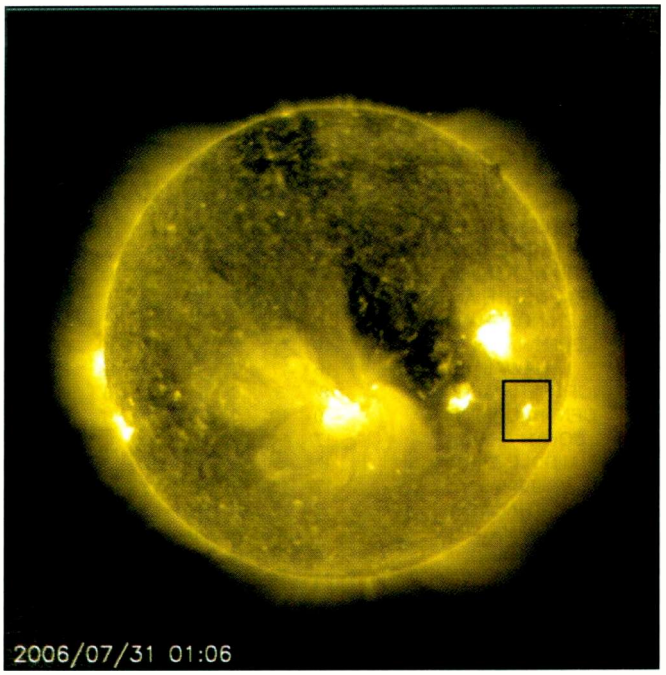
Paths on 31 through 19 meters are becoming ever more reliable between North America and Europe in the morning and between North America and Asia during the late afternoon hours. The strongest openings occur for a few hours after sunrise and during the sunset hours. Thirty-one and 25 meters will often remain open into many areas late into the night and will open early in the morning, especially when part of the propa-

gation path moves through sunlit regions. Twenty-two and 19 may still offer nighttime paths, though these will become less reliable later in November.

Nineteen, 22, and 25 meters compete with 16 for the good daytime DX during November. They will open for DX just before sunrise and should remain open from all directions throughout the day, with a peak in the afternoon. Nighttime conditions will favor openings from the south and tropical areas. Since the Southern Hemisphere has long daylight hours, DX paths on these bands from stations in the south will be common.

The all-season bands, 31 and 25 meters, are crowded and signals are usually very strong and steady. Twenty-five meters is expected to be an excellent band for medium-distance (500 to 1,500 miles) reception during the daylight hours. Longer-distance reception (2,000 to 3,000 miles) should be possible for an hour or two after local sunrise, and again during the late afternoon and early evening. Heavy congestion will occur here since many international and domestic broadcasters make use of 25 meters.

Thirty-one meters, the backbone of worldwide shortwave broadcasting, will provide medium-distance daytime reception ranging between 400 and 1,200 miles. During November, reception of up to 2,500 miles is possible during the hours of darkness, and until two to three hours after local sunrise. Thirty-one meters, too, is highly congested, making reception of weak exotic signals a bit more of a challenge.



This view of the sun shows the small sunspot, indicated by the box, that had a backward magnetic polarity. It did not last long enough to be numbered in the official record, but it did alert solar scientists that a new solar cycle may have begun (see text). (Source: NASA/SOHO)

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) mean stormy conditions with an active geomagnetic field. The more active, the more unstable propagation is, with possible periods of total propagation fade-out. Especially around the higher latitudes and especially at the Polar Regions, where the geomagnetic field is weak, propagation may disappear completely. Extreme high indices may result in aurora propagation, with strongly degraded long distance propagation at all latitudes. Low indices result in relatively good propagation, especially noticeable around the higher latitudes, when transpolar paths may open up. Maximum K-index is 9, and the A-index can exceed well over 100 during very severe storm conditions, with no maximum.

Classification of A-indices is as follows:

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

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

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

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

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

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

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

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

Optimum Working Frequencies (MHz) - For November 2006 - Flux = 72, Created by NW7US

UTC TO/FROM US WEST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	17	14	11	11	10	10	9	9	9	9	9	8	8	8	15	17	19	20	20	20	20	20	20	19
NORTHERN SOUTH AMERICA	24	22	17	14	14	13	13	12	12	12	11	11	11	11	18	23	25	26	27	27	28	27	27	26
CENTRAL SOUTH AMERICA	24	21	15	14	14	13	13	12	12	12	11	11	11	11	20	23	25	26	27	28	28	27	27	26
SOUTHERN SOUTH AMERICA	26	24	21	15	14	14	13	13	12	12	12	12	11	11	16	22	24	25	26	27	27	28	28	27
WESTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	8	8	9	12	13	13	12	11	9	9	8	8
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	10	12	11	9	9	8	8	8	8
EASTERN NORTH AMERICA	19	16	12	12	11	11	10	10	10	10	10	9	9	9	16	19	20	21	22	22	22	22	21	20
CENTRAL NORTH AMERICA	11	10	8	7	6	6	6	6	5	5	5	5	5	5	5	9	11	11	12	12	12	12	12	12
WESTERN NORTH AMERICA	6	6	5	4	3	3	3	3	3	3	2	2	2			3	5	6	6	6	6	6	6	6
SOUTHERN NORTH AMERICA	19	17	14	11	11	10	10	9	9	9	9	9	9	9	12	16	18	20	20	21	21	21	21	20
HAWAII	18	17	17	15	13	10	9	9	8	8	8	8	8	7	7	7	7	14	16	17	18	18	18	18
NORTHERN AFRICA	8	8	8	8	8	8	8	8	8	8	8	8	8	8	11	13	14	15	15	12	10	9	9	9
CENTRAL AFRICA	10	10	9	9	9	8	8	8	8	8	8	8	8	8	10	13	14	15	15	12	12	11	11	10
SOUTH AFRICA	17	14	11	11	10	10	10	10	9	9	9	9	9	9	16	18	19	20	21	21	21	20	20	19
MIDDLE EAST	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	11	12	10	10	9	9	9	8	8
JAPAN	17	16	16	15	13	10	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	13	15	16
CENTRAL ASIA	17	16	16	15	13	10	9	9	9	8	8	8	8	8	8	8	8	10	10	10	10	9	15	17
INDIA	7	12	11	9	8	8	8	8	8	8	8	8	7	7	7	7	8	8	7	7	7	7	7	7
THAILAND	16	16	15	14	12	9	9	9	8	8	8	8	8	8	8	8	8	10	10	10	10	10	10	13
AUSTRALIA	24	25	25	23	20	15	14	13	13	12	12	12	12	11	11	11	11	15	14	14	16	19	21	22
CHINA	15	15	15	13	11	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	13
SOUTH PACIFIC	26	27	25	23	19	15	14	13	13	12	12	12	12	11	11	11	15	15	17	19	21	23	24	25

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

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

Thirteen and 16 meters will be open during a fair number of days through November when flux levels remain above 100. Paths from Europe and the South Pacific as well as from Asia, at least during days of higher solar flux levels, are common, especially on 16 meters. Look for best conditions from Europe and the northeast before noon and from the rest of the world during the afternoon hours. Reception from the South Pacific, Australia, New Zealand, and the Far East should be possible well into the early evening. At this stage in the solar cycle where the end is in site (probably in this middle of 2007), the 10.7-centimeter flux levels are too low to sustain band openings at these frequencies for long, if at all.

Seventy-five through 120 meters are coming alive now. Throughout November, expect an improvement in nighttime DX conditions. Since the night is longer, and there is the seasonal decrease in the static levels, expect long-range DX on the low bands, starting close in right after sunset and extending farther as the night develops, with Europe possible in the late evening. DX paths will move farther west through the night. By morning openings from Asia should be common.

Signals below 120 meters have improved, with the night-paths growing longer in the Northern Hemisphere. Seasonal static, which makes it difficult to hear weak DX signals, is still decreasing as we move into the depth of winter.

VHF Conditions— Meteor Showers This Month!

One of the largest yearly meteor showers occurs during November. Appearing to radiate out of the constellation of Leo on the night of November 19, the Leonids are known to create intense meteor bursts.

Since the source of the Leonids, the Temple-Tuttle comet, passed closest to the sun in February of 1998, the years following produced very strong displays. The greatest display since 1998 was the peak of 3,700 per hour in 1999. Every year since has been significantly less spectacular. However, a few forecasters think that we still might have a meteor storm with an hourly rate of thousands, sometime in the next several years. If this year is more typical of the last few, we'll see a rate of several hundred per hour. The large, spectacular visuals might only be 10 to 20 per hour, but when we're talking about meteor scatter radio propagation, we count any meteor-formed plasma clouds that will support VHF radio signals.

The best time to work meteor scatter off the Leonids is around 11:30 p.m., local time, in the Northern Hemisphere. The shower should increase in rate the closer you get to midnight.

Working Meteor Scatter

Meteors are particles (debris from a passing comet) ranging in size from a spec of dust to a small pebble, and some move slowly while some move fast. When you view a meteor, you typically see a streak that persists for a little while after the meteor vanishes. This streak is known as the "train" and is basically a trail of glowing plasma left in the wake of the meteor. Meteors enter Earth's atmosphere traveling at speeds of over 158,000 miles per hour. Besides being fast, the Leonids usually contain a large number of very bright meteors. The trains of these bright meteors can last from several seconds to several minutes. It's typical for these trains to be created in the *E* layer of the ionosphere.

Meteor scatter propagation refers to the phenomenon of radio signals being refracted off these trains of ionized plasma. Because the altitude of the plasma trains is in the *E* layer of the ionosphere, the range of a meteor scatter contact is between 500 and 1,300 miles. The frequencies that are best refracted are between 30 and 100 MHz. However, with the development of new software and techniques, frequencies up to 440 MHz have been used to make successful radio contacts off meteor trains.

Lower VHF frequencies are more stable, and last longer, off these ionized trails. A 6-meter contact may last from a second to well over a minute. The lower the frequency, the longer the specific "opening" made by a single meteor train. Conversely, a meteor's ionized train that supports a 60-second refraction on 6 meters might only support a one-second refraction of a 2-meter signal. Special high-speed digital modulation modes, like high-speed CW (in the neighborhood of hundreds of words per minute), are used on these higher frequencies to take advantage of the limited available time.

Current Cycle 23 Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 75.8 for July 2006. The 12-month smoothed 10.7-centimeter flux centered on January 2006 is 84.0, just down from 85.4 of December 2005. The predicted smoothed 10.7-centimeter solar flux for November 2006 is 71, give or take about 14 points.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for July 2006 is 12.2, while for June it is 13.9. The lowest daily sunspot value recorded was zero (0), on July 13 and July 21. The highest daily sunspot count was 21 on July 1. The 12-month running smoothed sunspot number centered on January 2006 is 20.8. A smoothed sunspot count of 8, give or take about 12 points, is expected for November 2006.

The observed monthly mean planetary A-Index (Ap) for July 2006 is 7, and the adjusted Ap for June is 9. The 12-month smoothed Ap index centered on January 2006 is 9.9. Expect the overall geomagnetic activity to be varying greatly between quiet to active during most days in November.

Where's Your Letter?

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

Please don't hesitate to write and let me know about any interesting propagation you've noticed. Do you have questions about propagation? I look forward to hearing from you.

Happy signal hunting! ■

World News, Commentary, Music, Sports, And Drama At Your Fingertips

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

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

UTC	Freq.	Station/Country	Notes
0000	9695	Deutsche Welle, Germany	
0000	7205	Radio Republica, via England	SS
0000	15720	Radio New Zealand Int.	
0000	4845	Radio Mauritanie, Mauritania	AA
0000	15385	Radio Exterior de Espana, Spain	SS
0000	9770	Radio Budapest, Hungary	
0030	9600	Radio Havana Cuba	SS
0030	6020	China Radio Int., via Albania	
0030	9420	Voice of Greece	GG
0030	11690	Radio Vilnius, Lithuania	
0030	9410	BBC Relay, Cyprus	
0030	9735	Radio Cairo, Egypt	AA
0030	10330	All India Radio	Hindi
0030	5890	Radio Thailand, via Greenville	
0030	4409	Radio Eco, Bolivia	SS
0030	6798	Ondas del Rio Mayo, Peru	SS
0100	9870	Radio Austria Int.	
0100	9760	Radio Sultanate of Oman	AA
0100	11955	BBC relay, Oman	
0100	9690	Radio Romania Int.	
0100	12020	HCJB, Ecuador	PP
0100	11800	RAI Int., Italy	
0100	9715	RDP Int., Portugal	PP
0100	4775	Radio Tarma, Peru	SS
0100	7450	RS Makadonias, Greece	Greek
0130	15585	Voz Cristiana, Chile	SS
0130	11935	Radio Japan/NHK World via Bonaire	
0130	15295	RDP Int., Portugal	PP
0130	9665	Voice of Russia, via Moldova	
0130	6010	Radio Sweden Int., via Canada	Swedish
0130	9560	KBS World Radio, South Korea	
0130	6973u	Galei Zahal, Israel	HH
0130	9935	VOIRI, Iran	AA
0130	9470	All India Radio (FM Gold)	EE/HH
0130	4781	Radio Oriental, Ecuador	SS
0130	3340	Radio Misiones Int., Honduras	SS/EE
0200	11925	Radio Bandeirantes, Brazil	PP
0200	4052.5	Radio Verdad, Guatemala	SS
0200	4985	Radio Brazil Central	PP
0200	4915	Radio Nacional Macapa, Brazil	PP
0200	9860	Voice of Russia, via Vatican	
0200	11710	Radiodifusion Argentina al Exterior	
0200	7305	Vatican Radio	SS
0200	12005	RT Tunisienne, Tunisia	AA
0200	4800	Radio Buenas Nuevas, Guatemala	SS
0200	9495	Voice of Justice, Iran	
0200	4780	Radio Cultural Coatan, Guatemala	SS
0200	12055	Vatican Radio	various
0230	7270	Radio Cairo, Egypt	
0230	6115	Radio Tirana, Albania	
0230	15075	All India Radio	Hindi
0230	4790	Radio Vision, Peru	SS
0230	5910	Marfil Estereo, Colombia	SS
0230	6175	Voice of Vietnam, via Canada	
0230	6209	Radio Baluarte, Argentina	SS
0300	9970	RTBF, Belgium	FF
0300	11805	Sudan Radio Service, via England	
0300	9865	Radio Farda, via Morocco	Farsi
0300	5010	Radio Madagasikara, Madagascar	vern
0300	9750	BBC relay, South Africa	
0300	11975	Adventist World Radio, via UAE	EE, others
0300	3240	Trans World Radio, Swaziland	
0300	4780	Radio Djibouti	FF
0300	5446.5	AFN/AFRTS, Florida	usb
0300	9780	Republic of Yemen Radio	AA
0300	7110	Radio Ethiopia	Amharic
0330	4930	Voice of America relay, Botswana	
0330	7200	Republic of Sudan Radio	AA
0330	6940	Radio Fana, Ethiopia	Amharic
0330	4965	The Voice - Africa, Zambia	
0400	7260	Radio Algerienne, Algeria, via England	AA
0400	5500	Voice of the Tigray Revolution, Ethiopia	vern
0400	3965	Radio France Int.	FF
0430	5960	Radio Japan/NHK World, via Canada	JJ
0430	4770	Radio Nigeria	
0430	6185	Radio Educacion, Mexico	SS
0430	4775	Trans World Radio, Swaziland	
0430	7275	RET Tunisienne, Tunisia	AA
0430	5985	RTV Congolaise, Congo Rep.	FF
0500	4777	Radio Gabon	FF
0500	9685	Channel Africa, South Africa	
0500	4950	Radio Nacional, Angola	PP
0500	6250	Radio Nacional, Equatorial Guinea	SS
0530	5045	Faro del Caribe, Costa Rica	SS
0600	4835	Rdf. Malienne, Mali	FF
0600	7125	RTV Guineenne, Guinea	FF

UTC	Freq.	Station/Country	Notes
0630	5025	Radio Rebelde, Cuba	SS
0630	4991	Radio Apinte, Suriname	SS
0700	6070	CFRX, Canada	
0800	4810	Radio Transcontinental de America, Mexico	SS
0830	12065	Radio Tikhy Okean, Russia	RR
0830	3291	Voice of Guyana	
0830	7260	Radio Vanuatu	
0900	6010	La Voz de tu Concencia, Colombia	SS
0900	4915	Radio Anhanguera, Brazil	PP
0900	6180	Radio Nacional da Amazonia, Brazil	PP
0900	6030	Radio Marti, United States	SS
0900	7145	Radio New Zealand Int.	
0900	6060	Radio Nacional, Argentina	SS
0930	4885	Radio Clube do Para, Brazil	PP
1000	13665	Radio Rossii, Russia	RR
1000	9930	KWHR/World Harvest Radio, Hawaii	CC
1030	9580	Radio Australia	
1030	3250	Radio Luz y Vida, Honduras	SS
1030	4975	Radio del Pacifico, Peru	SS
1100	4460	China Peoples Broadcasting Station	CC
1100	15690	Radio Farda, via Sri Lanka	Farsi
1100	4819	Voz Evangelica, Honduras	SS
1100	13635	CVC- Voice International, Australia	
1100	15180	Voice of Korea, North Korea	EE/FF
1130	6120	Radio Singapore Int.	Indonesian
1130	6020	Radio Australia	
1130	4890	NBC, Papua New Guinea	
1130	5040	Fujian PBS, China	CC
1130	7285	Radio Polonia, Poland	unid
1200	5075	Voice of Pujiang, China	CC
1200	6285	Korean Central Broadcasting Station, N. Korea	KK
1200	12040	Voice of America relay, Philippines	CC
1200	15285	BBC relay, Singapore	CC
1200	9280	Family Radio/WYFR, via Taiwan	CC
1200	4605	Radio Republik Indonesia-Serui	II
1200	4900	Voice of the Strait, China	CC
1200	7350	KNLS, Alaska	RR/EE
1230	11600	Radio France Int., via China	unid
1230	17630	Africa Number One, Gabon	FF
1230	9595	Radio Nikkei, Japan	JJ
1230	9455	Radio Free Asia, via Sri Lanka	unid
1230	9885	Radio New Zealand Int	
1230	13775	Voice International, Australia	CC
1230	11865	BBC via French Guiana	
1230	9525	Voice of Indonesia	II
1230	9430	FEBC Int., Philippines	CC
1230	15450	Voice of Turkey	
1230	9975	Trans World Radio, Guam	unid
1230	4500	Xinjiang PBS, China	CC
1300	9570	China Radio Int., via Cuba	
1300	9485	Shiokaze, Japan, via Taiwan	various
1330	15410	Deutsche Welle relay, Rwanda	
1400	11775	Caribbean Beacon, Anguilla	
1430	9550	Radio Havana Cuba	SS
1430	15760	Kol Israel	HH
1500	6150	Radio Singapore	
1530	13755	Radio Austria Int./, via Canada	
1600	15160	Radio France Int., via South Africa	
1600	15150	Voice of Indonesia	
1700	15140	Radio Sultanate of Oman	AA
1700	15400	BBC relay, Ascension	
1730	13675	Kol Israel	
1730	11720	Radio Pilipinas	Tagalog
1730	15235	Channel Africa, South Africa	
1800	15630	Voice of Greece	GG
1800	15345	RTV Marocaine, Morocco	AA
1830	17765	Radio Canada Int.	FF
1830	15355	Radio Japan NHK World, via Gabon	JJ
1830	15120	Voice of Nigeria	
1830	15380	RAI Int., Italy	II
1830	15085	VOIRI, Iran	FF
1830	15475	Africa Number One, Gabon	FF
1830	15675	Radio Reveil, Switzerland, via Germany	FF
1900	17680	Voz Cristiana, Chile	SS
1900	15505	Radio Kuwait	AA
1900	17810	Radio Nederland relay, Bonaire	
1900	12070	Voice of Russia	
1900	17850	Radio Exterior de Espana, Spain, via Costa Rica	SS
1900	15190	Radio Africa, Equatorial Guinea	various
1930	13790	Deutsche Welle, Germany, via Portugal	AA
1930	17785	Voice of America relay, Morocco	FF
1930	13620	All India Radio	AA
1930	17750	Radio Taiwan Int., via Florida	CC
2000	11995	Radio France Int., via Gabon	
2000	12085	Radio Damascus, Syria	various
2000	11850	Voice of Turkey	FF
2030	11755	YLE/Radio Finland Int.	Swedish
2030	9580	Africa Number One, Gabon	FF
2030	11820	BSKSA, Saudi Arabia	AA
2030	11695	Radio Budapest, Hungary	HH
2030	15730	Voice of America relay, Sao Tome	
2130	11600	Radio Prague, Czech Republic	
2130	11855	Radio Japan/NHK World via Ascension	
2130	12075	Radio Free Asia, via Northern Marianas	unid
2130	11535	Voice of Korea, N. Korea	CC
2130	11965	Star Radio, Liberia, via Ascension	
2130	11940	Radio Romania Int.	
2130	11740	BSKSA, Saudi Arabia	AA
2130	11620	All India Radio	Hindi
2200	15515	Radio Australia	
2200	4319	AFN/AFRTS, Diego Garcia	
2230	9990	Radio Cairo, Egypt	
2230	21455	HCJB, Ecuador	SS
2230	13790	BBC Relay, Thailand	CC
2230	15410	Deutsche Welle relay, Sri Lanka	
2300	7345	Radio Prague, Czech Republic	SS
2300	9675	Radio Cancao Nova, Brazil	PP
2300	7320	Radio Jamahiriya, Libya, via France	AA
2330	9925	Voice of Croatia	Croatian
2330	9855	Radio Kuwait	AA
2330	9700	Radio Bulgaria	
2330	7490	Radio Ukraine Int	GG
2330	7811u	AFN/AFRTS, Florida	

by Harold Ort, N2RLL

New, Interesting, And Useful Communications Products

Magellan's new 2200T GPS lets you add live traffic updates and outdoor navigation capabilities and offers full map coverage of the 50 United States, Canada, and Puerto Rico.

New Magellan RoadMate 2000, 2200T, And 2500T GPS Units

The Magellan RoadMate 2000 is, according to Magellan, "The world's first pocket-sized, durable and powerful auto navigation system for under $400" (actually the MSRP is $399). Its features include a new user interface, route options with SmartDetour, and multi-destination routing, compact design with integrated antenna and battery, pre-loaded, detailed map coverage for the 48 contiguous states, and a database of 1.5 million points of interest, including lodging, restaurants, etc. The display is a 3.5-inch color touch screen.

The Magellan RoadMate 2200T ($499), has the same features as the 2000, plus is upgradeable to add live traffic updates and outdoor navigation capabilities, and offers full map coverage of the 50 United States, Canada, and Puerto Rico built-in, and full-featured driving GPS guidance with SayWhere text-to-speech. Battery life is reported to be up to eight hours. The 2200T is water resistant to IPX-4 standard and includes multimedia functions (MP3 player and picture viewer).

At $549, the new Magellan RoadMate 2500T is a IPX4-waterproof, pocket-sized CrossoverGPS built for driving as well as outdoor adventures, whether off-road, on foot or on water. It delivers all the features of the Magellan RoadMate 2200T plus has out-of-the-box outdoor navigation capabilities (no multi-function upgrade required), is preloaded with topographic contour maps of the lower 48 states and includes a Sports Guard rubberized jacket for easy gripping and protection. It also includes a lanyard hook for off-road use.

For more information on these new Magellan GPS products, contact Thales Consumer Products at 960 Overland Court San Dimas, CA 91773; Phone: 909-394-5000; Web: www.magellanGPS.com. Be sure to tell them you read about their new GPS units in *Popular Communications*!

New PRO Version Of MFJ-269 With Extended UHF Frequency Coverage

The MFJ-269PRO, which sells for $409.95, instantly checks and tunes any antenna from 1.8 to 170 MHz and 430 to 520 MHz. MFJ describes it as a "rugged easy-to-use complete handheld antenna test lab."

The MFJ-269PRO measures SWR, return loss, reflection coefficient, match efficiency, coax loss in dB and coax length in feet and electrical degrees on UHF frequencies.

With the MFJ-269PRO there's no more lugging bulky, expensive test equipment to remote antenna sites and hard-to-get-to places. This handheld unit replaces a "workbench full of expensive delicate test equipment and measures every antenna parameter: SWR, return loss, reflection coefficient, match efficiency, RF resistance, reactance, impedance and phase angle of antennas and antenna resonant frequency, bandwidth and Q," according to the manufacturer. You can also determine coax cable loss in dB, velocity factor, length in feet and electrical degrees, and how many feet it is to an open or short in faulty coax. You can set the MFJ-269PRO for any coax characteristic impedance, 10 to 600 ohms, and even measure inductors in µH and capacitors in pF at any frequency.

A rugged, extended commercial lab-type all-metal case protects the MFJ-269PRO's front panel controls and connectors from damage if bumped, knocked around or dropped , so you can take it anywhere—to remote sites, up towers, in cramped places. is fully portable, battery operated, and compact, weighing in at two pounds. An N-to-SO-239 adapter is included.

The MFJ-269PRO is protected by MFJ's "No Matter What" one-year limited warranty. To order the new MFJ-269PRO, get a free catalog, or for your nearest dealer, contact the MFJ at 300 Industrial Park Road, Starkville, MS 39759; Phone: 800-647-1800; Web: www.mfjenterprises.com.

New Relm Radios.

New Tektite Household LED Conversion Bulbs

Tektite is offering superior energy-saving white LED light bulbs with cost-efficient technology for use in any ordinary 120-volt light socket. These bulbs are suitable for close-range work and consume about 90 percent less energy than standard incandescents. The color is similar to that of fluorescent tube office lamps.

For more information on the Tektite household LED conversion bulbs and other Tektite products, visit the company's website at www.tek-tite.com.

New RELM Radio For Disaster Communications

RELM Wireless has introduced a new high-specification radio, designed to address the needs of public safety and disaster response professionals. The BK Radio DPH-CMD, "is capable of field communications using 500 channels, with 25 user groups of 20 channels per group and meets rigid MIL-STD 810 C/D/E military specifications," according to an RELM statement.

This latest addition to RELM's APCO Project 25 (P25) offerings expands the company's digital radio product line. (P25 "requires interoperability among compliant equipment regardless of the manufacturer" and was established by the Association of Public-Safety Communications Officials.) It is approved by the U.S. Department of Homeland Security. RELM described the DPH-CMD digital portable radio as offering "distinct advantages, including superior audio clarity, ease of use and programming, longer battery life, and lower cost than comparable competitive products."

The shift towards interoperability has gained momentum as a result of the recent communications failures during the Oklahoma City bombings, 9/11 attacks, and Hurricane Katrina, and RELM was one of the first manufacturers to develop P25-compliant technology.

For more information, contact RELM Wireless, 7100 Technology Dive, West Melbourne, FL 32904; Phone: 800-821-2900; Web: www.relm.com; E-mail: inquire@relm.com.

MFJ's Dry DC To 500 MHz Dummy Load With PL-259 Connector

The new MFJ-261 dry dummy load connects directly to the transmitter or to your SWR analyzer with a PL-259 connector. No patch cable is used, so it reduces SWR. It's a useful accessory with a finned aluminum, air-cooled heatsink. The MFJ-261 is three inches long and handles 100 watts PEP SSB, 15 watts average at 50 ohms impedance. It covers DC to 500 MHz with less than 1.15:1 SWR.

The MFJ-261 is $37.95; the MFJ-261N (same price) has an N-male connector. For more information, contact MFJ at www.mfjenterprises.com or phone 800-647-1800.

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by Ken Reiss, radioken@earthlink.net

Scanner Features—Part II

This month, as promised, we're continuing our series on basic scanner features. And we're going to tackle a couple of tough ones this month, so let's jump right in where we left off.

Conversion? What In The World...?

If you look at receiver specs, they'll sometimes say something about conversion. Single conversion, double conversion, triple conversion, quadruple conversion. Why should you care? Well that's probably worthy of an entire column by itself someday, but for now let's look at the basics.

One thing is for certain: the more conversions a receiver has, the more likely manufacturers are to mention it. All receivers of modern design convert the received or desired frequency to something else before processing the audio. It can be done in one step, which would make it a single conversion receiver. Single conversion receivers are quite prone to interference for a variety of reasons. By adding a second stage (intermediate frequency stage, or IF for short), however, we can eliminate much of the interference. If you want to go further, you can add still another IF stage and have a triple conversion receiver. There is even one receiver that I'm aware of (although there are probably more at the high end of the government/industrial market) that is quadruple conversion—four IF stages.

So all of this conversion business really comes down to interference rejection. You can have a triple conversion receiver that gets interference, make no mistake about that. But it's much less likely to occur than with a double conversion receiver if all other factors are equal. There are also some things that double conversion receiver designers can do to their systems to make them less interference prone, so don't think that one is bad and the other is not. Just different. You can expect to pay a bit more for a triple conversion receiver, and you should be able to expect better performance from it overall. *Overall* is the key word.

The Tones: CTCSS

Continuous tone coded squelch system (CTCSS), also known by its Motorola trade name of PL for private line, has been the subject of our "ScanTech" columns before, and probably will be again as it's a topic I get asked about on a regular basis. Here's a condensed explanation for now.

CTCSS is a tone that's transmitted right along with the audio, but at a lower level and frequency so that it can be filtered out of the receiver. The idea is that the receiver won't open its squelch unless that tone is present. It works kind of like a password to get into the receiver. Without that password, the receiver will ignore the signal, even though it may be very strong.

This system really isn't in place for us as scanner listeners, but rather for the users of two-way systems to reduce interference from nearby transmitters, or to allow two or more users to share a frequency without having to listen to each other's traffic.

This BC-9000 features a CTCSS decoder, but not DCS. There are still a lot of systems where this is useful and it sure cuts down on interference.

Normally, as scanner listeners we want to hear *all* the traffic on a particular frequency. However, it could be that a frequency you listen to is shared by many users. By having CTCSS in your scanner, you can take advantage of this system if the transmitter is sending the tone. You can also use CTCSS in your scanner to reduce interference. It's a very effective tool for this purpose.

DCS

Digital coded squelch (DCS) is used exactly the same way as CTCSS. This is a newer version that offers more codes than CTCSS, so more users can share frequencies or adjoining channels. It's not uncommon to find some users on a frequency with a CTCSS tone and others with a DCS code.

If you're interested in DCS, read the radio's feature list carefully. Many scanners that include tone squelch just receive CTCSS, not DCS. If DCS is in use in your area, you'll need to make sure the receiver you're looking at can also decode those signals. Remember that DCS is just a form of tone squelch, so you can listen to the signals without the feature, you'll just hear everything that's transmitted on that channel.

Delay

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

If the reply takes place on the same frequency, then it would be nice to have the scanner wait a second or two for the response before going off to find the next available activity. This feature

is called channel delay, scan delay, resume delay, or simply "delay." This is one of those basic functions that you shouldn't have to think about, but you do.

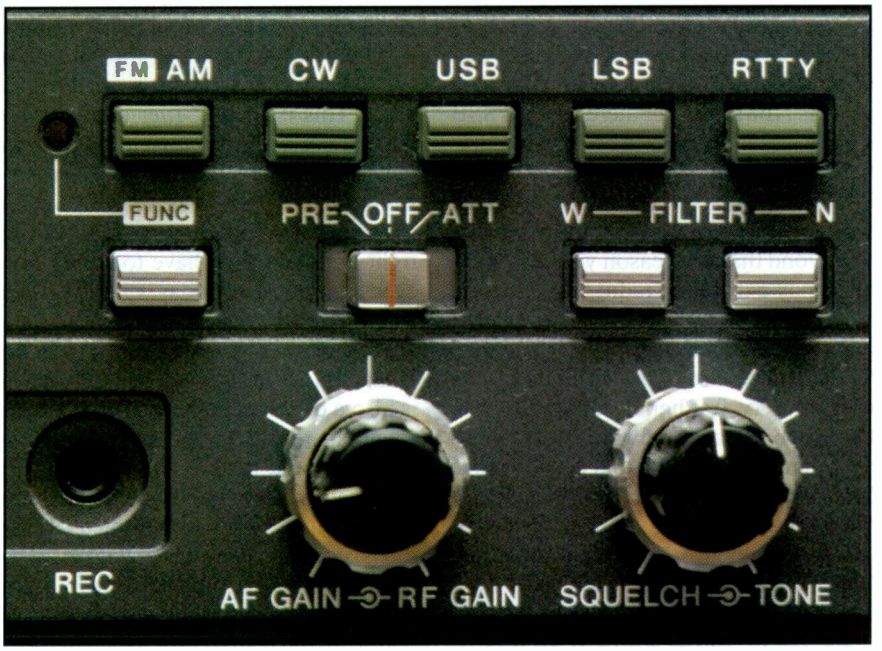
Some of the radios out there don't have it, or have a universal setting; that is, you turn the delay (usually two seconds) on for all channels or off for all channels, but it is one way or the other. The ideal situation, and that found on the higher-end units, is channel selectable delay. This lets you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

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

Trunking radios also may have a delay feature. This causes the receiver to hang on to the channel for a second or two hoping the reply will come back on the same channel. If you have this option, and assuming you're listening to a trunking system, experiment and see what works. Sometimes it really does improve the number of callbacks you hear, but other times it actually can work against you.

Hold Function

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



This shortwave communications receiver has the AF and RF gain adjustments located on the same control. The collar is the RF gain, and the front part of the knob is the AF, or volume control. Also note the switch right above this knob which controls Preamp, Normal or Attenuator, but it's all or nothing.

All About Mode: NFM, WFM, AM, USB, LSB, And Digital (APCO-25)

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

The term mode refers to the method of transmission, using one of the standard, or not-so-standard, transmission types. NFM is by far the most common, and refers to narrowband frequency modulation. This is the method used by most of the public safety and business users in the bands we listen to.

WFM stands for wideband frequency modulation and is reserved primarily for FM transmissions in the FM broadcast band, although there are a few government and military stations that use some form of wideband, or at least wider-than-NFM, transmission.

Finally AM is short for antiquated, er, amplitude modulation. It's an older system and is primarily of interest to aviation band enthusiasts of both commercial and military transmissions. This is really a legacy of World War II, when radio was first added to airplanes. After the war, all the planes came back with AM radios in them, and the cost of conversion was simply too high, so they continued to use AM in all aviation applications. There is also the theory that AM will produce a whine, or heterodyne, when two people transmit at the same time, which FM does not. This way, a tower can tell if two planes doubled with each other. That's an advantage of AM, but not the reason we're still using it for airplanes.

AM transmits a carrier (a radio wave used to carry the modulation) as well as two identical sidebands which contain the speech. It turns out that this is terribly inefficient in terms of transmission power, but the receivers for it are easy to build. By employing a more sophisticated receiver, you can reduce the transmission to just one of the two sidebands (called single sideband, or SSB). You can use either the upper sideband or lower sideband (USB or LSB) and get the same results as long as the receiver can determine which one you're using.

There's not much use of SSB in the VHF/UHF regions, except in the ham

bands where it is used because the SSB signal is easier to transmit over long distances. Of course, most activity in the ham bands is NFM, too, but there is some SSB activity there. There have been a few commercial systems used with a variant of SSB for one reason or another, but none that I'm aware of are in common use today.

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

RF Gain—Good Or Bad?

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

S-Meter

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

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

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

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

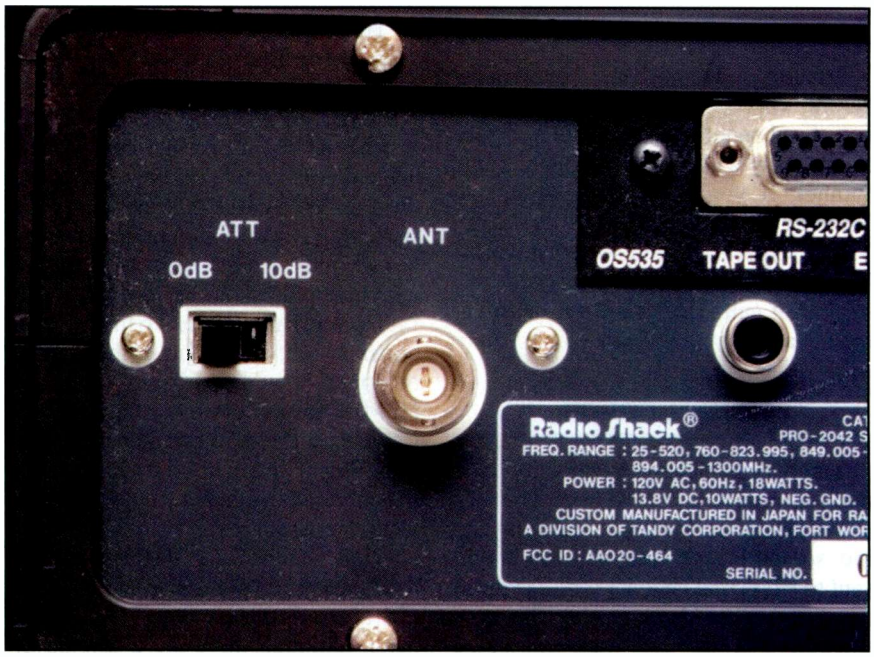
Real analog meters, or LCD meters with enough steps to simulate an analog meter, are only found on communications receivers. If you're not looking to spend that much money, you'll have to take what you can get, but some form of signal strength indicator is highly desirable.

Scanner Versus Communications Receiver?

Just what is the difference between a high-end scanner and a communications receiver? Well, in some ways, nothing. They're both receivers intended to pull radio signals out of the sky, and both probably cover about the same frequency range. Many of the VHF/UHF-capable communications receivers are actually wideband units that also cover down into the 100- or 150-kHz range.

The difference lies in the purpose of the receiver. A high-end Uniden scanner (something like the BC-9000, for instance) is intended mostly for scanning and has many functions available to support scanning, including alpha display, banks, lockouts, channel-selectable attenuators, etc. Pretty much all the things we've talked about as being desirable for scanning.

A communications receiver on the other hand, might be able to scan, but the primary purpose is to have the best receiver possible. These units have very high



This older RadioShack scanner has a rear-mounted attenuator switch, again all or nothing. It's better than no attenuator at all, but some newer receivers have a per-channel setting that makes it easier to live with when you need it, but make sure it's off when you don't.

Frequency Of The Month

Each month we ask our readers to let us know what they're hearing on our "Frequency Of The Month." Give it a listen and report your findings to me here at "ScanTech." We'll pick a name at random from the entries we receive and give the lucky winner a free one-year gift subscription, or extension, to *Pop'Comm*.

Our frequency this month is **42.380**. We haven't been down to the low band for a while. We're a bit past the peak long-distance season for VHF skip, but almost anything is possible down there. Plug it in and have a listen for a few days. Let me know what you hear and we'll enter your name in the drawing for a one-year subscription to *Popular Communications*! Make sure you mark your e-mail or envelope with the frequency so it can get to the right place!

specifications, but tend to fall apart a bit in the basics. Many of them make terrible scanners unless there's a computer control of some sort. Radios like the ICOM 8500 or the AOR 3000, for instance, really are able to scan almost as an afterthought. The 3000 can only scan one of its 100 channel banks at a time. The older ICOM R-7100 doesn't even have banks. Many of them don't have channel lockouts, or if they do, it's a bit of a chore to make it work.

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

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

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

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

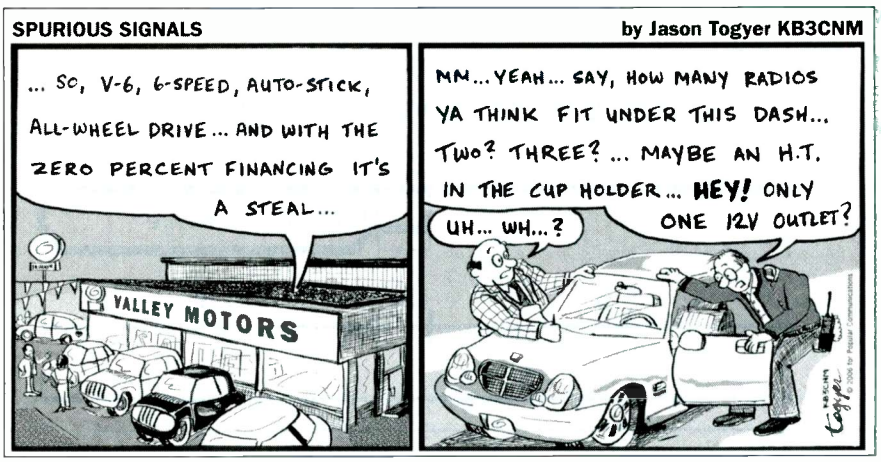
I hate to draw lines, because as soon as I do, someone will remind me of an exception to the rule. However, in order to help you see where the distinction is drawn, let's put an artificial barrier at about the $800 level. Above that price point, you're probably getting a fairly sophisticated piece of equipment that will meet most, if not all, of the requirements of a communications receiver. Below that price point, you probably have a high-end scanner. I know somebody's gonna say "what about..." and you're right. But as a quick and dirty judgment tool, this should work pretty well with today's market.

If you're really interested in more specifics, don't hesitate to write and ask. We've addressed this issue in the past, but it's probably due for an update. When we get enough questions we'll take up the topic again.

Your Signals Are Needed!

Well, we're done for another month. Once again, I hope you've found the definitions useful and informative. In the meantime, if you've got a question or information you'd like to share, drop me a line. I can be reached at radioken@earthlink.net, or via traditional methods at Ken Reiss 9051 Watson Rd. #309, St. Louis, MO 63126. Until next month, Good listening! ■

Editor's Note: Pop'Comm *welcomes longtime DXer and scanner enthusiast Jason Togyer, KB3CNM, of McKeesport, Pennsylvania, who brings us a new monthly cartoon, "Spurious Signals." Jason works part-time for WKHB (620) radio in Irwin, Pennsylvania, near Pittsburgh, and is also a writer and editor for the University of Pittsburgh's Web team. In addition to radio, his other hobbies include history and railroading, and he maintains a local website, "Tube City Online" at mckeesport.dementia.org. He is currently writing a book about the G.C. Murphy Co. five-and-10 chain, hopefully to be published in 2007. Welcome aboard, Jason!*



by Kent Britain, WA5VJB

Scanner Antennas For VHF And UHF Monitoring

Editor's Note: Pop'Comm *has asked antenna guru Kent Britain to do a regular bimonthly column on his topic of expertise. He starts with scanner antennas for the various VHF and UHF bands, and then goes over shortwave and CB antennas. Hey, certainly nothing wrong with covering several topics in a column! You can reach Kent with your antenna questions and topic suggestions at popularcom@aol.com. Welcome aboard, Kent!*

We've got quite a lot of ground in "The Antenna Room," so let's hit it running—there's a lot to learn. I also want to encourage readers to give their input for future columns, so send in an e-mail and let me know what you're interested in.

UHF Antennas

This month we'll begin with a look at UHF antennas. These are part of a family of Yagi antennas designed to be simple and inexpensive to build. Officially they're part of a family of over 80 "controlled impedance" Yagi antennas, but we affectionately call them "cheap Yagis." (See **Photo A**.)

Don't let their simplicity and cost-effectiveness deceive you, you can really boost the range of 460-MHz radios or the distance at which you can hear the 460-MHz business band and public safety services on your scanner. They can also be used on the FRS and GMRS frequencies!

The Driven Element

The same driven element is used on all 460-MHz antenna versions covered in this month's column. (See **Figure 1**.) The J element has about a 150-ohm impedance when mounted by itself. But as the other elements are added, the loading effects of these elements pull the impedance down.

So if I keep the elements a bit wide spaced, I can pull the driven element impedance down to 72 ohms. Now we have a direct impedance match to 72-ohm coax. You can use RG-59 or some of that satellite RG-6 which can be directly soldered to the driven element, achieving a good SWR. Bring the elements in a little closer, and you can have a direct match to 50-ohm coax. (We'll be covering some uses for 72-ohm versions of these Yagis in the coming months.)

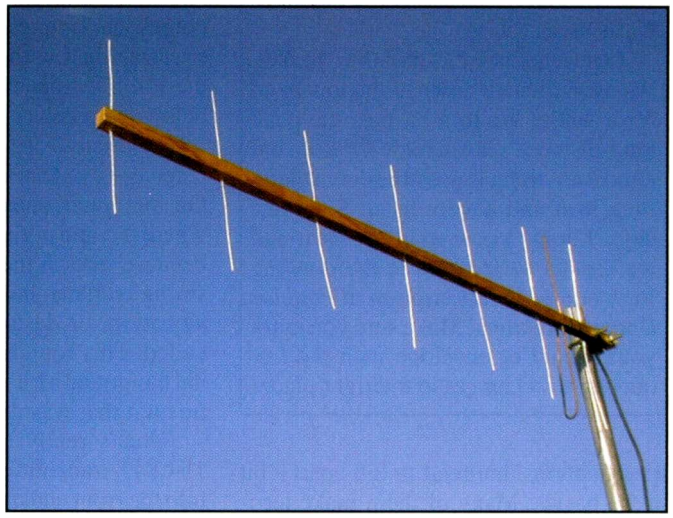


Photo A. *UHF cheap Yagis.*

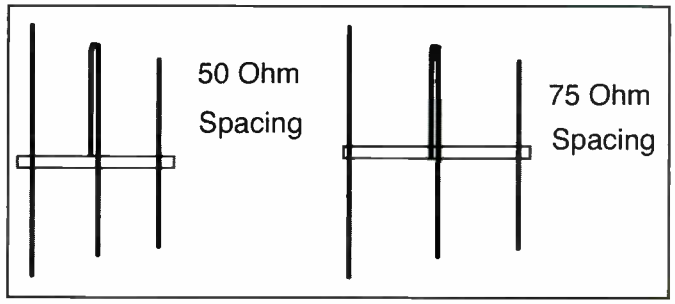


Figure 2. *Fifty- and 72-ohm element spacing.*

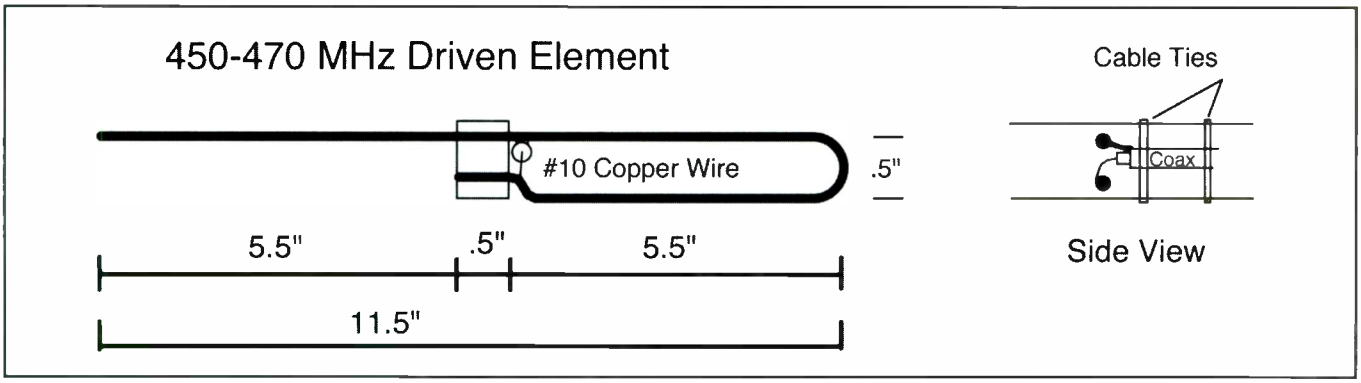


Figure 1. *Driven element dimensions.*

What You Need

The elements are made from 1/8-inch diameter material. You can use #12 copper wire, bronze welding rod, or 1/8-inch hobby shop tubing. (See **Photo B**.) But the cheapest material for the reflector and director elements is solid aluminum ground rod wire, RadioShack #15-035. A 40-foot roll will run you about $5 at your local RadioShack. Using something much bigger or much smaller in diameter will detune the antenna (see "Dimensions" box).

Try to stay pretty close to 1/8-inch rod or wire. While the reflector and director elements can be made out of almost any metal, it's nice to use something you can solder for the driven element, so the driven element really needs to be copper or brass.

***Photo B.** Cheap Yagi elements.*

The Boom

My preferred material is 1/2 x 3/4-inch wood. The dimensions are for the elements. Add five or six inches for the U-bolt. You really want at least two inches between the last element and the mounting mast. While many cheap Yagis have been built using PVC pipe, I've had much better long term luck with good wood. You can go a little bit thicker, but the wood does change the tuning of the elements a bit.

If you built one of these antennas on, say, a 2 x 4, a test would show that it came out as a 420- or 430-MHz antenna, not 460 MHz. If you plan to mount the antenna outdoors for an extended time, a coat of spar varnish, clear spray paint, or even house paint will add many years to the life of the antenna. My favorite weather-proofing material is one of the wood sealers commonly used to preserve wood decks.

Poke the elements through the boom, center them as best as you can, then a drop of glue will hold them in place.

Mounting

End mounting works well with lightweight antennas. This keeps the mounting mast and coax away from the elements giving you a better, cleaner pattern. Again you want at least two inches between the back element and your mounting mast.

I like to drill the end of the boom so it can be mounted either way, especially for portable operation—you never really know if you want vertical or horizontal polarization, and you never know if it's going to be on a vertical or horizontal mast. This way you're ready all contingencies. And, again, for portable operation, those wing nuts are worth the extra few pennies. I've

Scanners And TV Hardware Tip

There's a lot of TV and cable hardware that works great with scanners and other wideband receivers. A good TV preamp has to be pretty flat from 50 to 800 MHz, and most TV amps work from 20 MHz to 1000 MHz or so.

That mast-mounted preamp for fringe TV reception can be expected to work just fine on the 30–50, 108–170, 420–512, and 800–900-MHz scanner bands. You can use that old TV distribution amp to supply signals to two or more scanners. That A-B switch in your box makes an excellent antenna selector switch. So watch for 72-ohm versions of the antennas we'll cover in the near future as well as new uses for those old TV accessories you've probably got in your accessory box!

Dimensions

	Ref	DE	D1	D2	D3	D4	D5	D6	D7	D8	D9
3-Element	12.5	Fig 1	11.5						Element Lengths		
	0	3.75	7.75						Element Spacings		
4-Element	12.5	Fig 1	11.3	10.0					Element Lengths		
	0	4.75	7.5	9.6					Element Spacings		
8-Element	12.5	Fig 1	11.5	11.0	11.0	11.0	11.0	10.0	Element Lengths		
	0	2.5	5.25	10.5	16.5	22.75	28.5	33.5	Element Spacings		
11-Element	12.5	Fig 1	11.5	11.0	11.0	11.0	11.0	11.0	11.0	11.0	10.0
	0	2.5	5.25	10.5	16.5	22.75	28.5	33.5	38.5	43.5	50.5

Notes:
All versions use the same driven element from Figure 1.
All spacing is measured from the reflector element.
All elements are .125 or 1/8 inch in diameter.

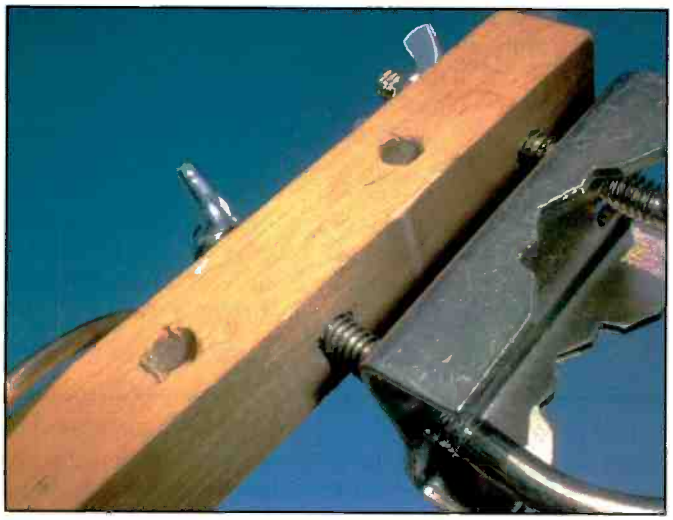


Photo C. *U-bolt mounting and wing nuts.*

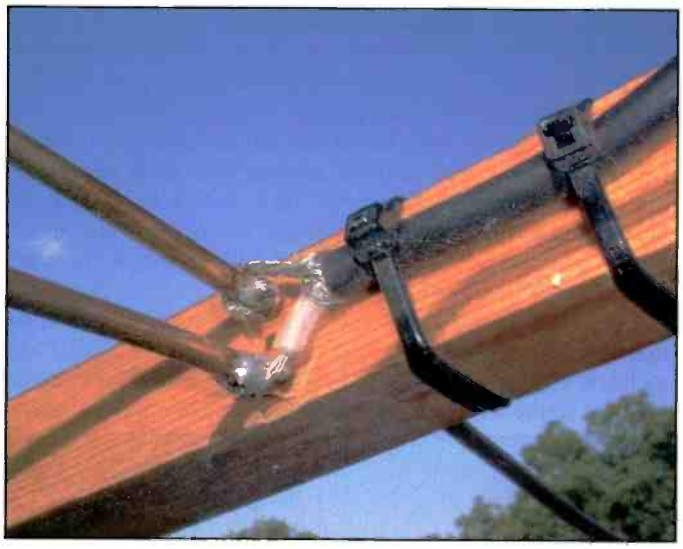


Photo D. *Coax attachment.*

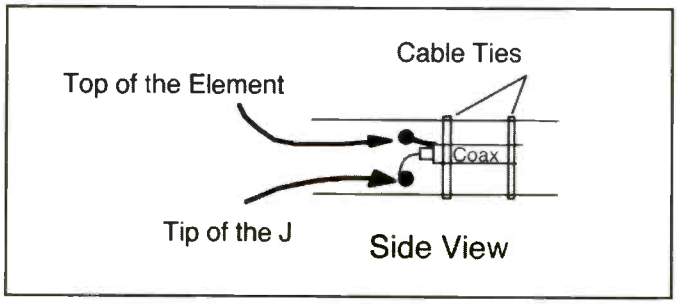


Figure 3. *Coax attachment.*

CQ VHF Ham Radio Above 50 MHz

The magazine for the VHF/UHF Enthusiast

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spent a lot of time digging in the trunk and never finding the right wrench, but wing nuts are finger tight in seconds! (See **Photo C.**)

And these antennas do not have to go outside. I currently have six versions mounted inside the attic of my home. Some have been up there for 12 years and still look good. On UHF you'll loose 3 or 4 dB as the signal goes though the roofing material, but you never have to worry about water in the coax or the elements being bent by birds.

Attaching The Coax

I usually just solder the coax directly to the driven element. (See **Photo D.**) Even when I have a connector on the antenna, it's normally on a short length of coax. The very center of the top of the driven element is a voltage null point. (Yes, you're a fraction of an inch to the side, but since the length of the driven element is experimentally determined, the offset is allowed for). It is near this null point that you want to solder the coax shield.

The coax center conductor goes near the tip of the J element. (See **Figure 3.**) While it's possible to use the aluminum ground wire for the driven element and make some clips for the coax, I find it much easier to just use #10 or #12 copper wire. It's nice to have that good solid solder joint to the copper wire or brass welding rod.

If you can measure SWR at 460 MHz, the free end of the J can be trimmed for best SWR. If you're like me and have the habit of cutting off the tip twice and it's still too short, you can slip some brass or copper hobby tubing over the tip and slide it around for best SWR. Then heat it up and add a dab of solder to hold it in place.

These Yagis have been designed for a very wide bandwidth, but which one you decide to use depends on your listening area. Bigger is not always better. If you live on the edge of a large city, the three- or four-element version will have a wide enough beam to let you hear just about the whole city. Live 30 miles from a small city? Then the longer versions might make a better project.

Regarding gain, you can expect about 6.5 dBi from the three-element Yagi (See **Figure 4**), almost 8 dBi from the four-ele-

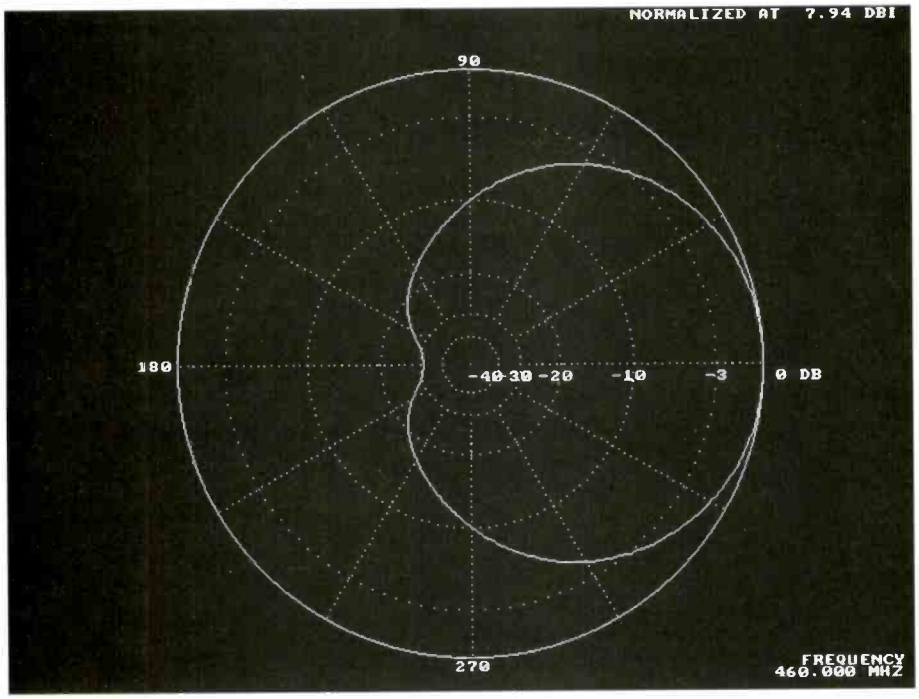

Figure 4. Pattern of the three-element Yagi.

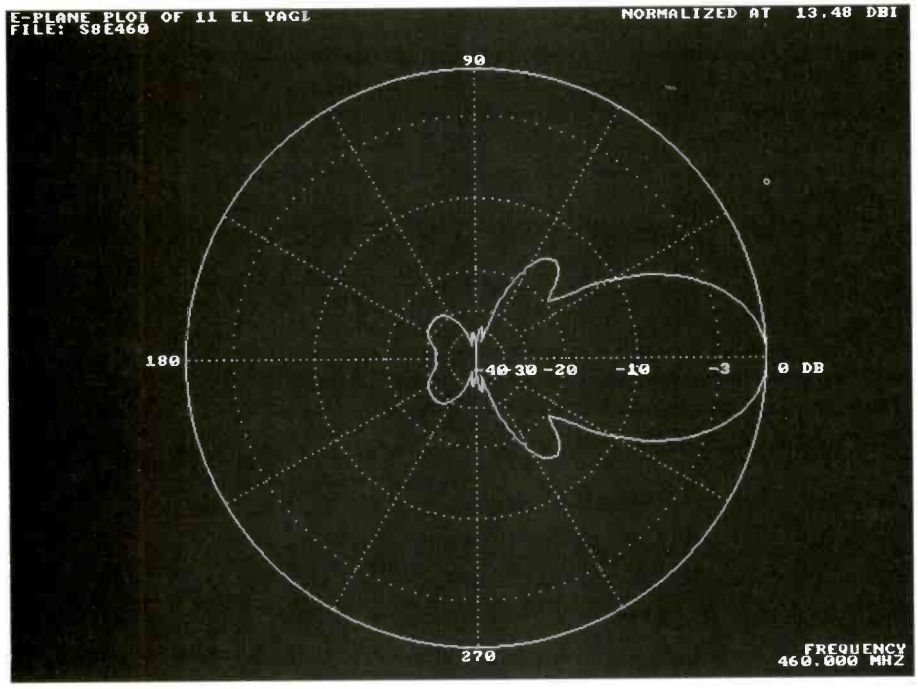

Figure 5. Pattern of the 11-element Yagi.

ment, 11 dBi from the eight-element, and about 13.5 dBi from the 11-element Yagi. (See **Figure 5**.) But again, the idea is for the pattern to match your desired monitoring area. Bigger may not be better.

Coming Up

Next time I'll cover some 150-MHz versions of the "cheap Yagi." If you're interested in ham frequencies, my original 1993 paper on these antennas can be downloaded from www.wa5vjb.com in the Reference section. And again, your suggestions are my best source for new topics.

Remember, when it comes to antennas, a paper clip in the air works better than the ideal antenna still on the drawing board. ■

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by Kirk Kleinschmidt, NTØZ, kirk@cloudnet.com

Mobile HF And The Modern Ham

Moving to another house can really be a pain. But the toil and trauma of moving furniture and toting boxes is nothing compared to the painful realization that—thanks to covenants and deed restrictions—you can't even put up a decent antenna. Or even a crummy one!

Considering that I wrote a book about helping hams get on the air under these conditions—with hidden, disguised, or indoor antennas and a host of other sneaky techniques—you'd think that I could come up with an S-9 solution in a jiffy. I would, of course, if I could, put the neighbors (who live on the other side of the townhouse wall) to sleep for a few hours, find a supplier of finer-than-human-hair titanium wire that's easy to solder, and develop the ability to see in the dark while remaining invisible, etc.

I haven't checked the covenants and townhouse association bylaws for flagpole restrictions, and if there are none, I think a nice, patriotic 90-footer would look nice in the front yard—all 100 square feet of it!

As it stands, I plan to load the quadplex's two-storey downspout with my trusty SGC autocoupler. I'm waiting for my hollow, fiberglass "garden rock" to arrive for camouflage purposes, and I have to wait until the neighbors are gone for the weekend so I can hook it up all sneaky-like. Running the counterpoise wire along the edge of the foundation will be trickier than connecting to the rain gutter.

If you think I'm whining, you're absolutely right! My main alternatives are building a remotely operated station (I'd love to, but my wallet has flatly refused) or working mobile HF (a better idea!).

HF mobile operation keeps getting easier, better and more affordable. Now that's a real triple whammy! What used to take a pile of massive gear and a rat's nest of unsightly cables can now be accomplished with a DC-to-daylight transceiver the size of a Tom Clancy paperback thriller (and costs only a few bucks more now that nobody reads anymore). Besides, if I can't tarnish the neighborhood with my demure skywire, they can't stop me from mounting a huge horizontal loop made from copper tubing on top of my van! And they can't stop me from parking it on the street in front of my house. Hey, maybe the association will trade that eyesore for an invisible wire?

It's a scanner, an HF transceiver, a VHF/UHF transceiver—it's ICOM's new IC-7000, do-everything, DC-to-daylight mobile/base-station transceiver. It's almost spooky how much stuff is packed inside. I'm talking about keyers, voice recorders, DSP, spectrum scopes, video outputs, etc. The price tag is a bit spooky, too (coming in at about $1,500), but the little rig's potential is staggering. Save your pennies and, in the meantime, check it out at www.icomamerica.com/products/amateur/7000/.

Radios Dick Tracy Would Love

Today's micro mobile and portable rigs from Alinco, Yaesu, and ICOM are wildly popular, even for in-the-shack operation. Most cover HF, VHF, and even a UHF band or two with digital readouts and lots of bells and whistles. Smaller than most car radios, these rigs are easy to install in a crowded dashboard. All have conventional mobile mounts and some have detachable "control heads" that allow the bulk of the radio to be mounted under the seat or in the trunk.

Some models to check out include Alinco's DX-70 (a few years old but functional and priced right); ICOM's IC-703/IC-706 series, plus the new IC-7000 (kitchen sink included); and Yaesu's FT-100 and FT-817ND (QRP radio prized by hikers and campers). Kenwood's venerable TS-50S is HF only, but offers solid performance at now-reasonable prices. If you dig around a bit you'll find other radios, including SGC's SG-2020 and even Elecraft's K2 (ultra-performance QRP radio that's small enough to go mobile).

Before getting started, plan your installation thoroughly and read Amateur Radio on the Move (various contributors) and Your Mobile Companion, by Roger Burch, WF4N. Both are available from the ARRL or your favorite amateur radio bookseller. It's out of print right now (a real shame), but if you can find a copy of Everything You Forgot to Ask About HF Mobileering, by Don Johnson, W6AAQ, latch onto it. Don has forgotten more about the subject than most of us will ever know.

Whatever your rig, whatever your vehicle, your first tasks are to 1. mount the radio securely (so it won't fly around, becoming a deadly projectile in a crash) and position it to allow easy operation while underway; 2. run a pair of heavy-gauge power supply wires from the cockpit-mounted rig directly to the vehicle

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battery; 3. find a sturdy, low-resistance chassis ground point as close to the rig as possible; and 4. run a coaxial cable from the rig to the antenna mount.

Grounds And Cables

Even for 100-watt transceivers, your power cables should be beefy. Use well-insulated, flexible power leads that are 8 gauge or larger. Big cables will practically eliminate voltage drop and minimize RFI and noise pickup under the hood. Use a few inches of smaller-gauge wire to make the connections at the back of your rig (to avoid the "tail that wagged the dog" effect!).

The positive and negative supply cables should each be fused at the vehicle battery. And use clean, new, properly sized battery terminals when making your power supply connections. Don't jury rig connections that might pass more than a hundred amps of DC!

Don't rely on the negative power supply lead or the shield braid of the coaxial antenna feed to provide a good transceiver ground. Connect a low-inductance braid or strap from the transceiver chassis directly to the nearest piece of frame metal.

Antennas

For performance, mounting the antenna in the center of the vehicle roof is best. The trunk and hood decks are next, and the front or rear bumpers are tied for last place. Antenna mounts come in all shapes and sizes. Some bolt directly to your car body, some attach to the lip of your car's trunk, and some use powerful magnets to hold your antenna in place, but they all simply provide a place to mount your whip antenna. The whip must be insulated from the car body and the coax shield must be connected directly to the car body/frame.

The best antenna for HF mobile newbies is a monoband whip. If you want a simple, inexpensive, and reasonably effective antenna, or if you want to operate on a single band at 20 meters or higher, consider Lakeview's line of Hamsticks (www.hamstick.com). These helically loaded whips are easy to use and easy to tune, and models are available for every band from 80 through 6 meters. Hamsticks sell for about $30 each and they're compatible with almost every mobile antenna mount. Performance on the low bands isn't spectacular, but from 20 through 6 meters, Hamsticks work fine and are an outstanding value.

Save the screwdriver antennas and the big bug catchers for later.

Grounds Are Important For Mobiles!

Good RF grounds are critical for mobile HF performance, and every mobile antenna mount must have a good, low-impedance connection to ground—and that includes magnetic mounts! Without that connection to the vehicle body/frame, your RF performance will suffer tremendously.

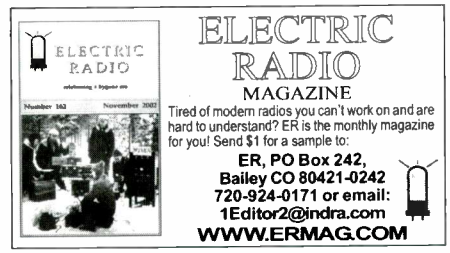
Bumper mounts and other direct-to-the-frame mounts usually provide an okay connection to ground, but even direct frame/body connections can usually be improved with the addition of a ground strap made from copper braid. Improving your ground connection by even a small amount can dramatically improve antenna performance and help reduce or eliminate unwanted noise. You can never have a ground connection that's too good.

Tidbits

Unfortunately, most mobile installations are pretty hostile. Your rig may encounter temperature extremes, voltage swings, mechanical shock, excessive humidity, and a host of other conditions that aren't relevant at home. You may also have to deal with electrical noise from the ignition system, on-board computers, blowers, fans, defrosters, and so on. You may even cause interference to your car's electrical system! The ARRL RFI Book is the best single reference for solving these problems.

There's a lot to learn about mobile HF operating. Here are a few points to consider:

- As an HF mobile beginner, operate at 20 meters or higher until you bone up on the details of successfully installing and adjusting antennas for 80 through 30 meters (where mobile antenna efficiencies can be devastatingly low).
- An effective noise blanker is priceless. When shopping for a mobile rig, always test noise blankers carefully and check out ham magazine product reviews to see how well the noise blankers work.
- Be safe, not sorry. Enthusiastic ham operators can easily cause accidents when tuning antennas, tweaking knobs, reading SWR meters, jotting logbook entries, etc. Drive first, operate second!
- Never use a cockpit-mounted antenna tuner to "match" your mobile whip. Mobile antennas are physically small and offer compromised performance at best. Don't waste precious decibels by using an in-car tuner! If you require extreme frequency agility, get a motorized screwdriver antenna or place an autocoupler at the antenna feed point. ■



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by Ron McCracken, KG4CVL / WPZX486

Where, Oh, Where *Exactly* Are You?

Fewer emergencies occur in winter than at other times of the year, but they can be deadlier. They are fewer because fewer travelers are on the highways, trails, etc. However, that also means fewer eyes to notice your tracks disappearing down an embankment or over a cliff. There are fewer ears passing by to hear your radio calls for help. A mishap that would be an inconvenience in summer can escalate quickly into a life-threatening incident in winter.

It's always a good idea to carry a GMRS, CB, ham, or FRS radio, but especially so in winter, at least as a back-up to the cell phone. Cell phones are great, but in remote or even rural areas they can be useless with no towers nearby to relay your signals. Remember, cells are really two-way radios that require repeaters.

At the same time, in an emergency, your CB, GMRS, ham, or FRS radio may as well be back home unless you *know* how to use it effectively and remember to *apply* that vital radio skill.

A 94-percent Failure Rate?

REACT volunteers can attest to that unfortunate fact. One California REACT Team reported that 94 percent of emergency calls its members monitored in a given period *failed*. Every one of those calls was heard. Each should have succeeded. Sadly, callers broadcast no key details monitors needed, and they could not hear REACT or police asking for the details.

REACTers were prevented from assisting by the very callers they were trying to help. But with good information, they could have had help quickly on the way. You wonder how many lives were lost needlessly. The radios worked perfectly; the operators failed badly.

From my base station in Ontario I monitored a Kansas trucker who was snowbound in his big rig in a blizzard. I listened for half an hour before I heard one useful detail. He couldn't hear my pleas for vital details. He spoke of fearing death and being sleepy, but he said nothing of where he was. Not one word! Finally, at 2:30 a.m. a lady switching

REACT Lake Simcoe (Ont) member (second from right) monitors GMRS comms as Georgina Community Living officials check youngsters at the halfway point of a 5k walk. Note the yellow balloons—a great safety idea that the kids loved.

Albert Lea REACT (MN) member Ruth Olson wastes no time mounting her new ham radio license plate to show the world she is now KCØWPU. She adds ham radio versatility to her Team's comms capabilities. This winter Ruth is upgrading to General Class. "It's easy!" she says. "Anyone can do it." Give it a try.

channels heard him, and he could hear her. I could hear both of them. She got the much-needed details from the driver. I called the dispatcher to report his plight—ironically they had not heard from the lady. I don't know the outcome, but not broadcasting where *exactly* he was nearly cost that trucker his life.

Lesson Learned

Now you know. Where *exactly* is *the* single most important element in any distress message. Remember it well. Broadcast it *repeatedly*. It could save lives. And exactly means *exactly*. The information needed includes the state, nearest town, road, mile marker, landmarks, etc.

Did you know there is a Hwy. 59 in Texas *and* in Ontario? I monitored a distress call I thought was in Ontario, and only when the caller mentioned Dallas did I know something was up. Texas was 2,000 miles away, in another country. The call required different handling entirely. It was fortunate that the caller just happened to mention Dallas.

Drill yourself now and then. As you travel, imagine you suddenly have an emergency to report. Practice in your mind what you would broadcast. Drill others who travel with you, too. Remember, you could be unable to make the call. Others need to be every bit as expert at it as you. Once monitors have that single, vital item of critical information, where *exactly*, help can roll.

Winter Watch

Albert Lea REACT (MN) can count on REACTer Ruth Olson to be monitoring this winter. Ruth just earned her Technician level amateur radio license. Ruth's photo shows her proudly attaching her new ham plate to her car. Would you believe Ruth even took the photo herself?

However, Ruth has only begun. She will be studying for her General level exam as she keeps her radio watch over the winter months. Many REACTers are joining Ruth to expand their radio capabilities into new bands. As hams themselves, REACTers are more easily able to work with other hams in emergencies. Everyone wins, especially the public.

Safe Walking

REACT Lake Simcoe (ON) provides safety radio communications for a special group of people in its community. Georgina Association for Community Living helps mentally disabled adults. Many of them, and their supporters, hold a 5k walkathon each year to raise funds for extra activities.

Safety is a primary concern, so REACT patrols the route for injuries, fatigue, etc. For this event, low-power GMRS radios serve the Team well. Yellow balloons identify the walkers, making REACT's task far easier. They're great for safety, but participants enjoy them, too.

Airport "Disaster"

When a 747 "crashed," complete with volunteer "victims" from nearby high schools, Ramsey County REACT (MN) members were among the first responders summoned by the EOC (Emergency Operations Center). The scene was Twin Cities International Airport. REACT worked the disaster with Robinsdale ARC and Dakota Co. ARES/RACES, using 2-meter ham radio and amateur TV, which played a role for the first time and with good results.

Worthy "First"

Oklahoma County REACT (OK) lays claim to being the first REACT Team with members who are 100 percent compliant with FEMA's (Federal Emergency Management Agency) new NIMS (National Incident Management System) requirements. Every member of OK County REACT has successfully completed FEMA's required ICS-100 and ICS-700 courses. They set the pace for other REACT Teams by achieving 100 percent compliance well before FEMA's deadline of September 30.

And You?

Hopefully, you find these accomplishments by various REACT Teams challenging. If you're inspired by any of these events, you can be part of the action. Visit www.REACTintl.org and click on "Team and Council Directory" at the left of the home page. Check your location for an existing Team's contact information. If you find none, you can help change that. Interest a few friends and form a Team for your own town. Call 1 866-REACT-9-9 (toll free) or e-mail REACT@REACTintl.org to request a Team charter application.

Remember, we welcome your stories about how a REACT Team has helped you or a friend. Drop us a line at Popularcom@aol.com. Look for us again in your January issue. ■

by Harold Ort, N2RLL, Editor

Somalia—Country In Crisis... And Breeding Ground For Terrorists

Editor's Note—Beginning this month Pop'Comm *will present a snapshot of one of the nearly 200 countries of the world, covering a little bit about the geography, politics, and, of course, radio. It's our hope that this additional insight into our world will make your hobby even more interesting as you consider the facts about these places while listening to the evening news, catching a shortwave broadcast, or talking to a ham in a far-flung country.*

This month's country of choice has more fighting going on than the Hatfields and McCoy's ever did—so much so that you practically need a new board game to keep track of the players. Last month, in his article, "DXing The Failed States," Gerry Dexter said that Somalia "has literally come apart at the seams." Too bad those in charge in this war-torn country don't come to grips with that reality. Somalia is always in the news, largely because of the constant state of turmoil, which has gone from bad to worse over the past few years.

Demographics

Famine and warlords grabbing pieces of Somalia are the hallmarks of this country that sits at the Horn Of Africa, with the Indian Ocean to the east and Ethiopia and Kenya to the west. Djibouti lies to the extreme northwest.

In this desert country that's a little smaller than Texas but with a coastline more than 3,000 kilometers long, the latest "news"—which is really not much of a surprise—is that it has become a hotbed for terrorists, exporting those bent on doing the world harm to countries such as Iraq.

Somalia declared independence from an Italian-UK administered UN trusteeship on July 1, 1960, and has declared that date a national holiday: Foundation of the Somali Republic. The country is now run by a Transitional Federal Government with Transitional Federal President Abdullahi Yusuf Ahmed as chief of state, although the fractured government has yet to govern effectively. The actual head of the government is Prime Minister Ali Mohamed Ghedi.

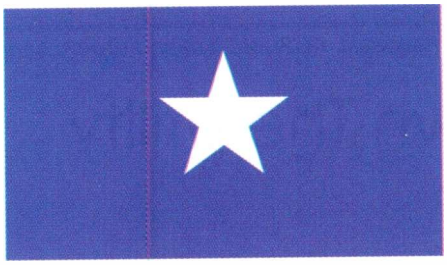
The legal system, if you can call it a system, is mostly nonexistent, and largely means the many regions of Somalia each work out their own conflicts based on customary Somali law, Islamic law, or whatever passes for justice on any particular day. There's an estimated 8.8 million people living in the country (based on a three-decades-old census), primarily between 15 and 64 years old and nearly evenly divided between male and female. The next largest segment of the population, also nearly evenly divided between males and females, comprises those 14 years and younger; those 65 and older are under three percent of the population. Life expectancy is about 49 years, with food-borne diseases, significant use of contaminated water, hepatitis, typhoid fever, malaria, and human conflict contributing to the figure.

Most inhabitants are Sunni Muslim who speak Somali (the official language), Arabic, Italian, and English. There's no national government; the country is officially broken down into 18 regions, which—like they say in ads—are "too numerous to mention here."

Commerce And Communications

Besides the suspected terrorism, Somalia, with a very small industrial sector, exports livestock, fish, charcoal, and bananas. It imports machined goods, sugar, and corn from Djibouti (about 30 percent of the imports); Kenya (about 14 percent); India (about nine percent), Brazil (eight percent or so), Oman (four percent), and the UAE (about 4 percent).

With all the clans and factions operating throughout the country, it's a wonder there's much of any commerce or business, electricity, or even phone service. Interestingly, there is wireless service in most major cities, but with the lowest rates on the African continent. Of course, there's no real way to determine verifiable sales from telecommunications, or much of anything else in Somalia, because the monetary structure is "strange on steroids"—businesses actually print their own money! There's a novel approach we hope doesn't catch on or we're all in deep trouble!



Recent Events

The capital, Mogadishu, was the focus of President Bill Clinton's attention in October 3–4, 1993, when an American-led military force attempted to oust warlord Mohamed Farrah Aidid and his fighters. The ensuing battle resulted in two Black Hawk helicopters being shot down by rocket-propelled grenades. It later became the subject of the book, *Black Hawk Down: A Story of Modern War*. Aidid was not captured in the battle, but three years later died of wounds received in a conflict with—surprise—a warring faction.

There are reports from Somalia that the CIA has tried covertly to fund certain warlords, which has inflamed Islamic groups—and the saga continues! The current Bush administration is concerned that bin Laden and his buddies might be seeking refuge from the pounding they're getting in Afghanistan. News reports, both print and broadcast, continue to point to Somalia as one popular terrorist training destination where they might slither.

With conflict a way of life in this war-torn country, ironically just as this was being written, the UN High Commissioner for Refugees was warning the global community about a humanitarian disaster if a major conflict erupts in Somalia. Recently a Swedish TV cameraman was shot and killed while covering a story near Mogadishu. Since early this year, nearly 400 people have died in sectarian fighting.

Radio

Our best guess is that it's anyone's guess what's really going on. That's where listening to as many radio sources as you can will help you become more informed. As we've said before, somewhere between what the mainstream U.S. media reports, what the government "leaks," what we want (hope) to hear them say, and what the rest of the world's reporting tells you, lies something that resembles what's actually happening. You decide for yourself.

There is radio emanating from Somalia, but difficult to hear in the United States. Radio Shabele in Mogadishu uses 6960 with an 0400 UTC sign on. Radio Hargeisa, in the so-called Republic of Somaliland, is sometimes active on 7530 at 0330. In Puntland there is Radio Galkayo, which signs on at 0400 on 6980.

Two opposition (clandestine) broadcasters are active: Radio Horyaal, aired via Armenia on 7560 from 1730 to 1800 and Radio Waaberi, 17760 via Julich, Germany from 1330 to 1400. Another is the Voice of the Somali People, reportedly using 7175 on Wednesdays and Saturdays at 1730 UTC.

Don't forget to also listen to the international air traffic control routes and these frequencies for that part of Africa: 3467, 5658, 10018, 11300, 13288, and 17961 kHz. While we can't, of course, hear local VHF/UHF activity, very often these HF utility frequencies will yield some pretty amazing listening.

Keep your ears tuned to Somalia. And if you can't hear these stations, check out the BBC and other world broadcasters on shortwave, along with those countries closest to Somalia—both geographically and politically—including Arab countries and Russia.

Note: Some of the information for these monthly reports was obtained from official U.S. government sources, including the CIA World Factbook. ■

When Disaster Strikes...

REACT is Ready!

REACT Teams work with local, state, and national disaster response agencies. Often ***REACT*** plays a unique role in disaster relief because ***REACT*** is the only volunteer communications organization whose members are trained to use **all types of two-way communications** from CB to packet radio, Amateur radio to GMRS.

Fortunately, disasters don't happen every day. ***REACT*** Teams maintain their readiness and serve the public by monitoring emergency channels and by providing communications services for a variety of activities and community events.

Find out how **you** can be part of the ***REACT*** Team! Visit **www.reactintl.org** to find a Team in your area – or information on starting your own Team.

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by John Kasupski, KC2HMZ, kc2hmz@wzrd.com

Clearing The Air: Breaking Down The Utility Monitoring Jargon Barrier

Back in 2003, a well-known manufacturer of CPU (central processing unit) chips for computers conducted a survey which revealed that only a small percentage of people knew the meaning of 11 common terms of computer jargon. Over 1,500 people were surveyed, and only about three percent were able to understand terms such as megahertz, DPI, and MP3. Even among those people surveyed who actually used computers, only about two-thirds understood what the term "megahertz" meant. Never mind that some of us can toss around computer—and radio—jargon with the best of them.

The point is that, considering the fact that the survey was in multiple-choice format, insuring that some people were probably going to get it right simply by guessing, one can only conclude that there are an awful lot of people out there who find all that computer jargon bewildering.

It also occurs to me that some computer terms (the aforementioned megahertz is one that comes immediately to mind, along with "USB") are also a part of radio jargon. To make matters worse, some of them, like USB, do not even have the same meaning with respect to radio as they do with respect to computers! Therefore, there are probably also an awful lot of people out there who find radio jargon equally bewildering. This month we're going to try to do something about that, and right here in this column. After all, the "Utility" in "Utility Communications Digest" is itself a bit of radio jargon; one that—like megahertz and USB—needs explaining to those who haven't long dabbled in the shortwave listening arts like the rest of us have.

Utility?

To begin with, let's clear up the jargon in the title of this column. To many people the term "utility" conjures up images of last month's utility bills from the electric or telephone company. Moreover, although I'm aware of at least one such utility that operates a network on the shortwave bands, that isn't what we mean when we talk about utility stations. The stations we utility listeners like to listen to (which are called utility stations, of course) are those stations on the shortwave bands that are not intended for the entertainment of the general public, unlike shortwave broadcasters.

If you've ever looked at a list of shortwave bands that shows where the broadcast bands are, and where the amateur or "ham" bands are, you probably noticed that there are some fairly large gaps between the bands. That's where you find the utility stations, operating on frequencies that are internationally allocated for use by aircraft, marine, government, military, and commercial communications stations.

It's worth noting that amateur radio, also called ham radio, is a non-commercial radio service whose purpose is self-training, intercommunication, and technical investigations carried out by amateurs (amateurs in this case meaning properly licensed individuals interested in radio solely with a personal aim and without pecuniary interest). Both amateur and utility stations differ from broadcast stations in that broadcast stations' transmissions are intended for the general public, which is not the case with utility stations and is prohibited entirely on the amateur radio bands.

Photo A. Heinrich Rudolf Hertz, German physicist for whom the standard unit of measurement for frequency is named. (Source: Wikipedia)

How Do I Communicate? Let Me Count The Ways...

One confusing aspect of radio jargon pertains to emission modes. The original one was CW, which stands for continuous wave. (Why that is I don't know, since transmissions in CW are anything but continuous, they are in fact on/off keyed transmissions, which is an interrupted wave. But it's been called CW since long before I arrived on the scene to point this out, and it doesn't figure to change anytime soon). When you tune through the bands and hear transmissions between two stations using Morse code, that's CW, the first and oldest method of communicating by radio—the transmitter produces a carrier that is simply turned on and off by the operator in order to communicate with the receiving station.

At first, all radio transmissions used CW, but as time and technology marched on, it was discovered that it was possible to create a radio signal containing voice information. AM and FM were born, two different methods of impressing voice information on a radio signal by modulating (changing) a characteristic of the carrier. In the case of AM, the characteristic changed is the amplitude of the signal, which is why it's called AM (for amplitude modulation). For FM, it is the frequency of the signal that is changed (hence, frequency modulation)s.

That, of course, was simple enough. Too simple, in fact. So at some point another enterprising experimenter discovered that an AM signal actually consisted of not only the carrier, but also two sidebands, one just above and one just below the carrier, each of which carries the same voice information that is

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impressed upon the carrier itself. It was also learned that it was possible to greatly increase the efficiency of a transmitted signal by eliminating the carrier and one of the sidebands and concentrating the transmitter's RF (radio frequency) power into the one remaining sideband. This resulted in adding some more jargon to the radio arts.

The new mode was called single sideband suppressed carrier. This mouthful eventually was shortened to just single sideband, and abbreviated as SSB. When using SSB to suppress the carrier and the upper of the two sidebands and concentrate the transmitter's power into the lower sideband, it is referred to as lower sideband mode, and abbreviated as LSB. Similarly, when we instead eliminate the carrier and the lower sideband and concentrate the transmitter's power into the upper sideband, it's referred to as upper sideband mode, abbreviated as USB, and is entirely different from the "computerese" definition of USB (universal serial bus)!

Since we're momentarily back to computers again, this is the perfect time to mention that modern technology has contributed seemingly countless emission modes that are the result of mating either an actual computer, or some other method of "computerized" control circuit, to a radio. These are generally filed under the term "digital modes" and include such wondrous achievements as ALE (automatic link establishment, where a specialized radio modem—an ALE controller—is used to automatically control radios in order to establish the best possible communications link between stations), SITOR (simplex teletype over radio), RTTY (radio teletype), and...well, the list of digital modes seems to grow on a daily basis, so any attempt to list them here would be fruitless—by the time this month's column appears in print, someone, somewhere will have invented another one.

Each of these modes uses a slightly different procedure to change a characteristic of the carrier in order to impress information onto the carrier. Using digital modes, many things are possible besides the mere sending of words.

Using modes such as PACTOR, we can perform file transfers. Using slow-scan television (SSTV) or facsimile (FAX) we can send pictures. There are also digital voice modes (such as ANDVT, for advanced narrowband digital voice terminal, a secure voice mode used by the military) and modes to allow computer systems to perform wide-area networking (such as LINK-11, also called TADIL-A for tactical digital link mode A; it uses a 16-tone data modem and when heard over a shortwave receiver in SSB mode sounds like several beeps followed by a hissing similar to the sound produced by alligators in heat, which may be why the LINK-11 network is often referred to as "the alligator").

But What Does It Mean, Data?

Those words were uttered by actor Patrick Stewart in an episode of Star Trek: The Next Generation. I've used them not only to demonstrate that *Pop'Comm* "Plane Sense" columnist Bill Hoefer isn't the only one who can work a Star Trek quote into a monthly column, but also to transition to the next step in our process of explaining radio jargon: To wit, with all those different modes available for communicating by radio, one might expect that there would be a lot of communicating going on, and that the content of such communications might (logically, Mr. Spock) be expected to contribute another generous dose of jargon to Radiospeak. And one would be correct on both counts.

In fact, it's probably pretty safe to say that every manner and purpose for a utility station to use its radio has probably contributed one or more bits of jargon to the soup. An entire book could be written on the subject, but we'll try to look at the most commonly encountered terms that appear in the column or in the readers' logs.

Q What?

Something that often sneaks into discussions about radio are the international Q-signals, which consist of universally agreed-upon three-letter codes beginning with the letter Q. These were originally conceived as service signals for use as an expedient when sending messages in CW, but they've spilled over into other areas of radio. The list of Q-signals is quite extensive, with some being seen about as often as Halley's comet and others becoming Radiospeak staples. For example, many hobbyists collect documents confirming reception of a station, often in the form of postcard-like critters we commonly call QSL cards. This convention descended directly from the Q-signal, QSL. The signal QSL followed by a question mark means, "Can you acknowledge receipt?" and the signal QSL sent without the question mark, as a statement, means "I acknowledge receipt" (similar to the use of "roger" when a voice mode is used).

Some Q-signals that frequently find their way into readers' logs include QRM (interference) and QRN (static). Generally, QRM refers to man-made interference, often from another station operating on a nearby (or the same) frequency, while QRN refers to atmospheric noise, such as those static crashes you hear during a thunderstorm.

The term QSO, which refers to a contact between two or more stations, also originated with a Q-signal. Then there is QTH, which is the location of a station (my QTH is Tonawanda, New York—yours may or may not be!).

Also often encountered is QRT, which when used during CW operation is a request to stop sending. In logging stations, it's often used to indicate a station going off the air. Similarly, QSB, which when sent during a CW contact means "Your signal is fading," is often used to refer to the effect of HF signals fading, as in, "The station's signal was S-9, but with considerable QSB." Then there's QSY,

Table 1. Military/ICAO Phonetic Alphabet

A	Alpha
B	Bravo
C	Charlie
D	Delta
E	Echo
F	Foxtrot
G	Golf
H	Hotel
I	India
J	Juliet
K	Kilo
L	Lima
M	Mike
N	November
O	Oscar
P	Papa
Q	Quebec
R	Romeo
S	Sierra
T	Tango
U	Uniform
V	Victor
W	Whiskey
X	X-Ray
Y	Yankee
Z	Zulu

Table 2. Frequency Ranges

ELF	(Extremely Low Frequency)	3–300 Hz
SLF	(Super Low Frequency)	300–3000 Hz
VLF	(Very Low Frequency)	3–30 kHz
LF	(Low Frequency)	30–300 kHz
MF	(Medium Frequency)	300–3000 kHz
HF	(High Frequency)	3–30 MHz
VHF	(Very High Frequency)	30–300 MHz
UHF	(Ultra High Frequency)	300–3000 MHz
SHF	(Super High Frequency)	3–30 GHz
EHF	(Extremely High Frequency)	30–300 GHz

which means to change operation to another frequency. (More on that S-9 signal report later, I promise.)

There are other abbreviations that also descended from commonly accepted Morse code abbreviations. CQ, which is a general call to any and all stations, is one of these, from which one of *Pop'Comm's* sister publications gets its name. The term "Roger" that we sometimes hear as an acknowledgment during voice communications is another one of these. The CW equivalent of this was to send the letter R. At the time, Roger was the radio phonetic for the letter R, and the phonetic "roger" was spoken in place of sending the Morse R for voice operation.

Speaking of the radio phonetics (pun intended), **Table 1** lists the correct set of phonetics for the letters of the alphabet, as currently used by the U.S. military. This is the same alphabet prescribed by the ICAO (International Civil Aviation Organization) for use by the aviation industry. It's included with this month's column because the phonetics used on HF have been known to confuse people expanding their horizons into utility listening after they've spent time as scanner listeners; there's considerable difference between this phonetic alphabet and the one often heard in use by various public safety agencies on VHF/UHF.

Furthermore, since I can already hear some of you out there exclaiming, "What about those abbreviations, like HF, VHF, and UHF?" (and, I agree that they can be quite confusing as well), **Table 2** lists the frequency ranges that correspond to the various portions of the radio frequency spectrum to which these abbreviations apply—from DC to daylight (or at least ELF to EHF—once you get above EHF you're pretty close to the frequency range of infrared light!).

The designations are based on the frequency of a radio wave, which refers to the time it takes to complete one complete cycle. The higher the frequency of a signal, the shorter its wavelength. The basic unit of measurement for frequency used to be "cycles per second," but at some point the unit of measure was renamed to honor Heinrich Rudolf Hertz (**Photo A**), the German physicist who was the first to demonstrate the existence of electromagnetic radiation by building apparatus to produce UHF radio waves. One of the items he built was an antenna that featured a center-fed driven element, which he used for transmitting and receiving radio frequency energy. The same antenna design is in use the world over to this very day, and remains the simplest known practical antenna from a theoretical point of view—namely, your good, old, basic dipole! At any rate, 1 hertz is the same as 1 cycle per second. When we get into higher frequencies, we use kilohertz and megahertz. One kilohertz is 1000 cycles per second, and 1 megahertz is 1,000,000 cycles per second—and now you know what that term, "megahertz" means, if you didn't already.

One bit of Radiospeak that's "name" is dictated by how it is used on the air is SELCAL. You often run across this in loggings of aeronautical, and sometimes maritime, communications. It's short for selective calling, and there are a couple of variations on it; but simply put, SELCAL is a method for activating a radio (or data terminal) at one station without disturbing everybody else who's parked on the same frequency. In aeronautical communications, this is accomplished using a short series of audio tones. In maritime communications, a numerical code is used to identify a particular vessel, with each vessel having a unique code (this is called digital selective calling, or DSC).

Aviation, incidentally, also gives us ACARS (Aircraft Communications Addressing and Reporting System), a relative newcomer to HF, although it has been on VHF for years. ACARS is a system for tracking aircraft in flight and provides messaging capability as well.

This is, of course, far from being an exhaustive treatment of the subject of jargon. Beyond what I've covered already, there's an alphabet soup of federal government agencies that use HF. There's a seemingly endless supply of military acronyms, too, not to mention aircraft numbers, callsigns, codewords, and frequency designators, such as the ZULU and FOXTROT frequencies. As if all that weren't already enough, so many of us now use computers in the shack, we also have to contend with computer jargon as well. Which, among other things, means we now need to remember two meanings for the acronym USB.

Fortunately, though, it's possible to enjoy the hobby (and reading this magazine) without becoming a walking radio jargon dictionary. You can fire up an old shortwave receiver and put it in SSB mode, tune around with the big knob until you hear Donald Duck, then tune the smaller knob to bring Donald to a state of relative intelligibility, without knowing that in so doing you're tuning a beat-frequency oscillator (BFO). You can also read the magazine without getting bogged down in the Jargon Jungle—especially if the column includes a glossary of abbreviations and technical terms that are used in the column. Some of the other columnists have been doing this; for example, Gerry Dexter does just that with the "Global Information Guide" column. And from now on, beginning next time, I'll be doing the same with the "Utility Communications Digest." I hope that you'll be able to refer to the glossary that accompanies each month's column to gain a better understanding of the terminology that describes our hobby.

Signal Reporting Conventions

Earlier in the column, I used an example stating that a station's signal was "S-9" and promised to return to the subject of signal reporting. Since it's helpful to use a standard method of signal reporting so everyone is on the same page when it comes to reporting a signal's strength, readability, and perhaps the effects of interference (QRM), noise (QRN), and fading (QSB) as well, **Table 3** shows the two most widely used methods of signal reporting: the SINPO method and the RST method.

The first method listed is the SINPO code, which like the RST method, is a means of conveying information about radio reception. This may be done for the purpose of getting a QSL card, or just to share what you heard with other radio hobbyists. Some folks are very gung-ho on using SINPO for reception reports to stations, others are not.

The acronym SINPO stands for signal, interference, noise, propagation, and overall. To use the SINPO method of signal

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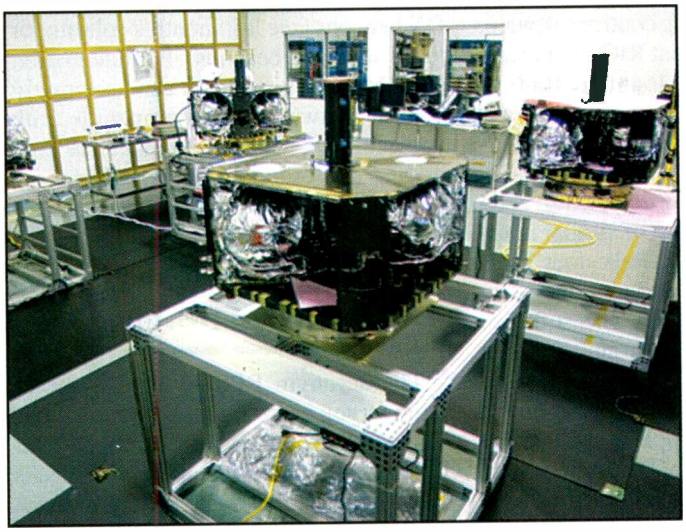

Photo B. One of five identical probes to be deployed for the THEMIS mission. (NASA photo)

reporting, you evaluate each aspect of the signal's quality on a scale of 1 to 5, as indicated in Table 3, with 5 being the best condition. A SINPO of 55555 means a perfect signal. A SINPO of 54423 means the signal was strong but you heard some QRM from another station, there was some noise (QRN) as well, and fading was also a problem, making the signal unreadable much of the time. A SINPO of 54423 is a signal that makes you wonder if it's worth listening to given those conditions! For a SINPO of 25232, there's no interference but the signal is weak with lots of static and lots of fading.

Naturally, these evaluations are a judgment call on the part of the listener, especially the "overall" portion of the report. In some cases, therefore, it may be better to send a reception report in which you describe what the listening experience was like in your own words. If you do use the SINPO code, remember it's just a guide. If, during an hour of otherwise perfect reception, your next door neighbor's car makes two seconds of ignition noise, you should still call it a SINPO 55555!

The other common method of signal reporting is the RST method. RST stands for readability, strength, and tone. The readability scale is from 1 to 5, with 5 being the best condition. Signal strength is on a scale of 1 to 9, with 1 being a very weak signal you can barely tell is there. S-9 is the speaker-busting signal that slams the needle on an analog signal strength meter against the peg, and heaven help your eardrums if you're listening in on headphones and have the volume turned up high because you were trying to pull out a weak station just before you tuned to the strong signal!

The tone in the RST system applies to the technical quality of CW signals. For reporting voice signals using the RST method, you should disregard this and simply report the readability and strength of the signal.

THEMIS Launch Scheduled For This Month

For those who enjoy listening to space vehicle launch communications, the THEMIS mission is tentatively scheduled for launch on November 27. The fact that it is a tentative scheduling means that the launch will be no earlier than the specified date—it could launch on the 27th or it could launch on a later date—so you'll have to keep on top of things by visiting the launch schedule page on NASA's website (www.nasa.gov/missions/highlights/schedule.html) to stay abreast of the situation.

As of press time, even NASA doesn't know what the exact launch date will eventually be—so we don't either. What we do know is that THEMIS (which stands for Time History of Events and Macroscale Interactions during Substorms) is a two-year mission which involves positioning five identical probes aligned across North America, enabling scientists to study auroras, such as the well-known Northern Lights. The launch vehicle will be a Boeing Delta II, which will launch from Cape Canaveral in Florida. **Photo B** shows THEMIS probes undergoing testing at the Jet Propulsion Laboratory, NASA's lead center for the robotic exploration of space, located on a 176-acre site in Pasadena, California.

There are dozens of frequencies associated with NASA operations at Cape Canaveral and the Kennedy Space Center, but I've found that the best way to monitor these events is to stay tuned to 10780.0 kHz, where about 24 hours before launch time, CAPE RADIO (which is located at Cape Canaveral) will give the working frequencies to be used for various assets as they check in. If you miss this, it's pretty much "pot luck" to find the working frequencies for the range's safety net and other assets, even if you're armed with an extensive frequency list. You know you have tuned to the right place when you hear CAPE RADIO talking to the Air Force Rescue C-130 aircraft (using the callsign KING 1, KING 2, etc.) or the Navy ship(s) and/or Coast Guard cutter(s) assigned to the range safety area, which generally are identified by the name of the vessel. In any case, 10780.0—the primary frequency for the Eastern Test Range—remains a key frequency that's used for coordination throughout a launch event.

Computer Control Gets Easier

If you've been dragging your feet about jumping into computer-controlled radio because the serial ports on your computer were already spoken for, West Mountain Radio in Norwalk, Connecticut, may have recently taken away your excuse with the introduction of its RIGtalk USB-to-serial converter. This device makes it possible for your computer software to share frequency and band information with compatible radios without tying up a serial port by allowing you to control the radio using a USB port instead.

RIGtalk accomplishes this task by emulating a serial port (to the software) while yielding positive TTL output to the radio at

Photo C. The RIGtalk radio-to-USB interface. (Courtesy of West Mountain Radio)

the other end. This makes the RIGtalk compatible with numerous ICOM, Ten-Tec, and Yaesu transceivers, but unfortunately not with Kenwood radios, which use negative TTL logic.

Compatible with USB 2.0 or below, the RIGtalk comes in a pocket-sized "dingle" design (see **Photo C**), and you can order it pre-wired and tested to cable to mate to your radio's jack—ICOM and Ten-Tec CI-V (1/8-inch mini plug) or Yaesu CAT (DIN connectors). For those whose radios have an RS232 (DB-9) rig control connector instead, the IOGEAR USB to serial port adapter is available. Also included is a CD-ROM with a custom installer program, all necessary drivers, and a collection of third-party rig control software.

It should be noted that RIGtalk is not a substitute for West Mountain Radio's RIGblaster. RIGtalk will not let you use your computer and radio to do "soundcard" digital modes, such as PSK-31, RTTY, SSTV, and so forth; you still need RIGblaster (or some sort of similar interface) for that. What RIGtalk does do is give you the capability to tune the radio using computer software. The software could be a logging program, such as WriteLog, WinEQF, TR Log, DXbase (to name a few), or you might run a local/remote control application, such as Ham Radio Deluxe or TRX Manager, or you might be using BeaconSee to tune DX beacons (see last month's column for more about the beacons). For that matter, West Mountain says you can use any rig control software that's compatible with your computer and radio. You can find pricing and ordering information on the company's website (www.westmountainradio.com/).

Will BPL Spell The End Of Shortwave Listening?

The acronym BPL is another bit of radio jargon heard frequently these days. The acronym stands for broadband over power lines, but the technology also goes by a few other names and acronyms, such

Table 3. Signal Reporting

SINPO Method

Signal
1 = Terrible signal. Barely detectable. Voices audible but not understood. Some musical notes audible.
2 = Poor signal. Voices audible and sometimes understood. Most musical notes audible.
3 = Fair signal. Voices plainly audible and easily understood. Music plainly audible although lacking clarity.
4 = Good signal. Everything's plainly audible with just a little less than the best quality.
5 = Excellent signal. As strong as it gets.

Interference
1 = Rotten interference. Impossible to tune off to the side to avoid it. You can't hear the signal you want.
2 = Bad interference. Possible to hear the signal you want only some of the time.
3 = Moderate interference. The signal you want is audible around half the time.
4 = Slight interference. It rarely prevents you from hearing the signal you want.
5 = No interference.

Noise
1 = Horrible noise. Hearing the program is impossible.
2 = Bad noise level. Ruins most of the reception.
3 = Moderate noise. Some of the program audible or plainly audible with notable noise.
4 = Slight noise. The program is plainly audible.
5 = No noise.

Propagation
1 = Terrible. Signal is faded out much more than it's faded in.
2 = Bad. Fades a lot, but not always beyond audibility.
3 = Moderate. Shaky signal. Sometimes not audible, sometimes just weaker.
4 = Slight. Mostly steady signal. Minor fading, almost always audible.
5 = None. Signal strength steady.

Overall
1 = Lousy. Not enjoyable or useful.
2 = Poor. Occasional moments when the signal is useful but generally not of enjoyable quality.
3 = Fair. Useful or enjoyable much of the time but with something to be desired.
4 = Good. Generally good. Occasional problem moments or a slight constant problem.
5 = Excellent. Enjoyable and useful reception free of trouble.

RST Method

Readability
1 = Unreadable
2 = Barely readable, occasional words distinguishable
3 = Readable with considerable difficulty
4 = Readable with practically no difficulty
5 = Perfectly readable

Strength
1 = Faint signals, barely perceptible
2 = Very weak signals
3 = Weak signals
4 = Fair signals
5 = Fairly good signals
6 = Good signals
7 = Moderately strong signals
8 = Strong signals
9 = Extremely strong signals

Tone (CW Only)
1 = Sixty cycle AC or less, very rough and broad
2 = Very rough AC., very harsh and broad
3 = Rough AC. tone, rectified but not filtered
4 = Rough note, some trace of filtering
5 = Filtered rectified AC. but strongly ripple–modulated
6 = Filtered tone, definite trace of ripple modulation
7 = Near pure tone, trace of ripple modulation
8 = Near perfect tone, slight trace of modulation
9 = Perfect tone, no trace of ripple or modulation of any kind

Note: If there is a chirp, the letter C may be added to indicate such. Similarly, for a click, add K.

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as power line communications (PLC), power line telecommunications (PLT), and power line broadband (PLB).

There are three types of BPL. First, there's control PLC, which operates below 500 kHz and is used by electric utility companies to control their equipment using the power lines as transmission lines. This type of BPL does not pose any significant interference risk to the HF bands.

There is also in-building BPL, which is a system that uses the electrical wiring within a building to network computers. Most operate under something called the HomePlug specification, which calls for notches in product specifications, to protect over-the-air radio operation.

The one we're worried about, then, is access BPL, which uses electrical distribution lines, overhead or underground, to provide broadband Internet access to homes and businesses. Because this wiring is physically large, often overhead, and extends across entire communities, access BPL systems pose a significant interference threat to over-the-air radio services.

Studies done by ham operators in Europe, Japan, and the United States clearly show that access BPL using overhead electrical distribution wiring poses an interference risk to HF. The nature of the problem is that power lines are designed to carry electrical power, not radio signals. When they're used (in defiance of common sense) to carry radio signals, they quite predictably do a very poor job, losing much of the signal but radiating it as radio signals that interfere with nearby receivers using those frequencies.

Naturally, hams are concerned about this, since they're licensed to operate on a significant portion of the HF spectrum, but hams aren't the only ones whose hobby is at risk from access BPL. Many consumers have enjoyed listening to shortwave radio broadcasts from around the world. If you're reading this magazine that may well include you. The same goes for CB operators, and frankly, everyone else in the residential neighborhoods where BPL will be installed. We will all suffer strong interference from BPL. Furthermore, this also places at risk business, government, military, and aeronautical users, many of whom have also expressed strong concern about BPL interference.

For hams and CB operators, there's another aspect to consider, which is that BPL is seriously degraded by nearby transmissions from ham and CB transmitters. Studies have revealed that as little as 5 watts of power from a nearby radio transmitter can seriously degrade the performance of BPL. In some cases, the interference logged off a BPL user, requiring a reconnection to the network. One test demonstrated that a BPL system totally ceased to transfer data while a mobile station was transmitting with less than 4 watts from the curb of the susceptible house, and with 100 watts from over one half mile away! Another study showed that even in a neighborhood that had been "notched" to protect ham radio from interference, as little as 2 watts of transmitter power connected to an inefficient mobile antenna caused the system to lock up.

Now, if you've ever been the subject of complaints from a neighbor about interference to television reception (TVI), or had somebody call in the local cops because they can hear your voice over their telephone when you're transmitting, imagine what's going to happen when your neighbor's connection to the Internet gets repeatedly dropped in the middle of a download when you fire up your rig to check into your club's morning net on HF!

Yes, it's true that under the FCC rules, BPL is an unlicensed device that must

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accept any interference caused to it by authorized radio services. But, is the cop who shows up at your door going to be familiar with those rules? Based on past experiences others have had with consumers reacting to their Part 15 devices being interfered with, probably not. That leaves you to try to explain that you are right and the power company and next-door neighbor are wrong.

If you've ever tried explaining how Title 47 Part 15 pertains to a neighbor's poorly shielded $60 television or the $8 cordless telephone they bought at the local drug store, you know what I'm getting at here. The local cops know they're going to keep hearing from your neighbor every time they hear you on the telephone or lose a connection to the Internet. They also know that the simplest way to avoid that is for you to stop transmitting. That's what they're likely to tell you to do, and if you refuse, they may even resort to arresting you—all because potential revenue due to the high demand for broadband access from the public seduced the local power company into deploying a broadband system that simply isn't viable.

While the alarm has already been sounded and many radio hobbyists are at least aware of the existence of BPL and the fact that there is a controversy involved, I'm not sure that the majority of radio enthusiasts fully understand what is at stake here: your right to enjoy your use of the radio frequency spectrum (a natural resource owned by everyone). And you don't have to be a ham or CB operator, or be transmitting on HF at all, to have a stake in this issue.

It's true that if you're not transmitting, you won't be interfering with the BPL system, but the BPL system most likely will be interfering with your reception on the HF bands. So whether you're a ham or CB operator, an airline pilot flying overseas flights and using the HF aero frequencies, a government or private-sector business employee whose employer uses HF radio for communications, or just someone who likes to sit back in a chair and listen to the news on the BBC, BPL places you at risk in one way or another.

Rest assured that if a BPL system goes into operation in your neighborhood, the power company—and your neighbors—will do everything they can to protect their own interests, so you should find out as much as you can about it and do what you can to protect your interests, whatever they may be.

You can get a good start by firing up your computer and pointing your browser to www.arrl.org/bpl/ and reading what the American Radio Relay League has to say on the issue. The ARRL is the national organization representing the interests of ham radio and is in the forefront in the battle to protect the HF bands from the harmful interference (is there any such thing as beneficial interference?) caused by BPL. You should also keep informed by watching what goes on locally. Far better to be involved now, before a monster is unleashed in your neck of the woods, than to wait and find yourself involved when an angry neighbor brings the local constabulary to your doorstep.

Reader Logs

That, faithful readers, concludes my sermon on BPL and with it, my column for this month. However, before I close, I'll add the obligatory monthly plea for reader submissions in the form of loggings, shack photos, column ideas—the usual stuff—and, of course, many thanks and a tip of the "Utility Communications Digest' hat to the following readers who contributed their logs to this month's column: Chris Gay (CG), Larry Weiler (LW), Mark Cleary (MC), and Glenn Valenta (GV).

5547.0—CSN 328 (China Southern Airlines Boeing 777) accepting clearance for flight level 340, USB at 0930Z. (LW/ON)

5550.0—AIR CANADA/ACA 91 passing position report to NEW YORK in USB at 0908Z. (LW)

5649.0—GEC 8204 (Lufthansa Cargo MD-11) giving GANDER position report in USB at 0333Z. (LW)

5680.0—KINLOSS RESCUE in QSO with RESCUE 169 concerning a person with injuries. USB at 2009Z. (CG)

5711.0—KING 22 (HC-130) radio check with KING 16 (HC-130) while en route to helo AR, in USB at 0119Z. (MC)

5717.0—HALIFAX MILITARY informs RESCUE 313 that due to WX jumpers are not to go in and Cormorant helo is to RTB Greenwood, in USB at 0027Z. (MC)

5732.0—CG 6009 (MH-60J, CGAS Elizabeth City) requests guard from CAMSLANT in USB at 1310; OMAHA 2MR (Bombardier Q400) wkg HAMMER while orbiting over TOI in the Bahamas, in USB at 0531Z. (MC)

5778.5—R26608 (UH-60L # 95-26608) calling B1Z171 (1-171st AVN) in ALE/USB at 1755Z. (MC)

6379.0—4XZ, Haifa, Israel with beacon in CW at 1948Z. (CG)

6694.0—BRAVO WHISKEY and other USN vessels in air defense net in USB at 0101Z. (MC)

6697.0—ROLL BACK with EAM broadcast in USB at 0056Z. (MC)

6705.0—RESCUE 305 radio check with TRENTON MILITARY in USB at 0228Z. (MC)

7887.0—UNID YL/SS with 5-fig grps in AM at 2018Z. (CG)

7975.0—UNID YL/SS with "atencion" then 5-fig grps in AM at 1608Z. Also on 8010 starting at 1700Z. (CG)

8010.0—UNID with 5-figure groups (all numbers cut) with pause after each 10 groups. Morse on AM carrier at 1705Z. (CG)

8116.0—UNID with 5-fig groups (0=T) in CW at 1945Z. (CG)

8776.0—AIR SPACE with EAM broadcast, in USB at 2359Z. (MC)

8864.0—N917VZ is cleared by Gander to climb and maintain flight level 430 in USB at 2226Z. Heard again reporting FL430 at 2229Z. (LW)

8867.0—SFO air traffic control working various AC in USB at 0546Z. (GV/CO)

8912.0—CG 1503 (HC-130, CGAS Elizabeth City) position report to CAMSLANT in USB at 0054Z. (MC)

8971.0—GOLDENHAWK calling FIGHTING TIGER 21 (P-3C) in USBat 1217Z. (MC)

8983.0—CG 2127 (HU-25, ATC Mobile) en route SAR 50 miles south of the Mississippi River requests guard from CAMSLANT in USB at 0210Z. (MC)

8992.0—SWIFT BOY with EAM broadcast in USB at 0135Z. (MC)

9007.0—RESCUE 305 (CC-130) working TRENTON MILITARY, reporting they are heading to Detroit, in USB at 0226Z. (MC)

9025.0—CG 2140 (HU-25, CGAS Cape Cod) ALE initiated call to District 1 at 1522Z. (MC)

10242.0—CG 1712 (HC-130, CGAS Clearwater) en route Borinquen requests guard from CAMSLANT, in USB at 2125Z. (MC)

10242.0—39C airborne with 6 POV en route GOLF requests guard from PANTHER, in USB at 1531. (MC)

11175.0—KING 91 (HC-130) p/p via Andrews HF-GCS to Fort Campbell, looking for CH-47s RAVEN 41/42 and RAVEN 51/52, in USB at 0153Z. (MC)

11220.0—Andrews HF-GCS working HIPBONE setting up for data transmission from Andrews, in USB at 1253Z. (MC)

11232.0—SENTRY 05 (E-3 AWACS) p/p via TRENTON MILITARY to VIKING 3 at Tinker AFB, in USB at 2205Z. (MC)

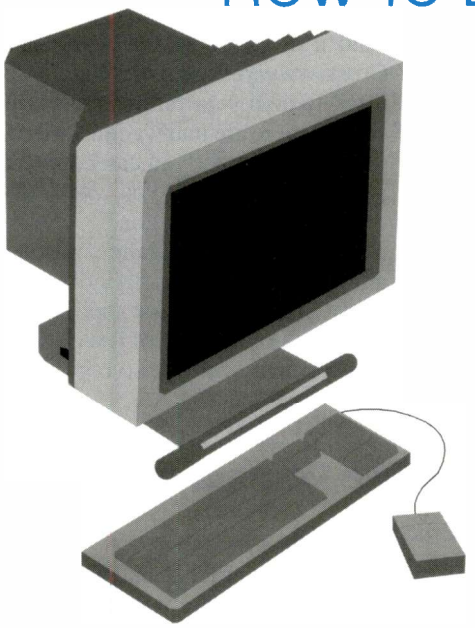
12916.5—HLF, Seoul, South Korea with beacon in CW monitored at 1456Z. (CG)

12935.0—HLG, Seoul, South Korea with beacon in CW heard at 1440Z. (CG)

13927.1—TEAL 29 (WC-130J, 53 WRS/403 AW) working AFA1EN and AFA4DD for p/p at 2217Z. (MC) ■

by Joe Cooper, carm_popcomm@hotmail.com

How To Eliminate Computer Noise



During the past year, I've taken a detailed look at how digital sampling forms the foundation of modern radio communication. Radio engineers and scientists have always preferred digital modes of transmission to analog because digital modes add little or no noise to transmitted information, and today digital technology is superseding analog with breath-taking speed, making it the *de facto* standard of the 21st Century.

However, while we are rapidly moving toward a 100-percent digital world, there's a significant amount of analog (or at least partially analog) equipment still in use. This is particularly true n the radio-monitoring hobby—and, unfortunately, many radios are experiencing a new type of noise as a result. I'm referring to what's known as "computer hash," which is the result of a computer's CPU processing information at rates that correspond to monitoring frequencies. We've all heard this sound at one time or another, which can take the form of a loud and annoying buzz or pulse.

Interestingly, the first time this sound was ever heard over a radio was July 15, 1943, when the first secure digital voice communications took place over the SIGSALY system used by the United States and British military in World War II. The buzz of that digital transmission reminded people of angry hornets and it came to be called "the Green Hornet," because it sounded like the theme song of the popular radio show of the same name. The buzzing confounded the Germans, as they were unable to decode the digitized information, thus helping to end the war.

Over the past few years, however, as personal computers have become less expensive, making them more numerous than ever, that buzzing noise is being heard on radios in close proximity to the computers.

The Digital Hash Problem

While they were never intended as radio transmitters, today's digital devices are spewing out large amounts of digital hash on a wide range of radio frequencies. This is because when they process digital information, they do so at a frequency rate that spans the RF spectrum.

This phenomenon has been well known since the earliest days of digital devices and the FCC has been enforcing rules to keep such noise under control. Most of these regulations are found in FCC Part 15, which covers unintentional radiators of RF energy, such as computers and even TV receivers. These devices may generate the radio signals as part of their operation, but they aren't supposed to transmit them. And while there are FCC standards intended to reduce interference to radios and TVs from digital devices, such rules cannot eliminate them.

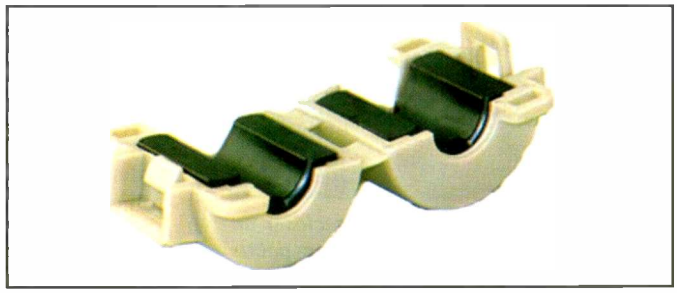
In an effort to offer equipment at prices people can afford, many manufacturers have resorted to cost cutting in the manufacturing process. Unfortunately, one of the easiest ways to save money when making a digital device is to reduce the amount of shielding used to reduce radio noise. Such practices are legal as long as they follow certain minimum standards set by the FCC.

FCC Part 15 rules state that consumer digital devices, such as personal computers, must not transmit harmful interference, say a device interferring with a radio in a police car or fire truck. In the case of an ordinary citizen listening to his or her personal radio, however, the rule is that such a device must accept any interference received, including interference that may cause undesired operation. There are only a few remedies available to you if your radio picks up digital hash from a commercial product like a PC. You can,

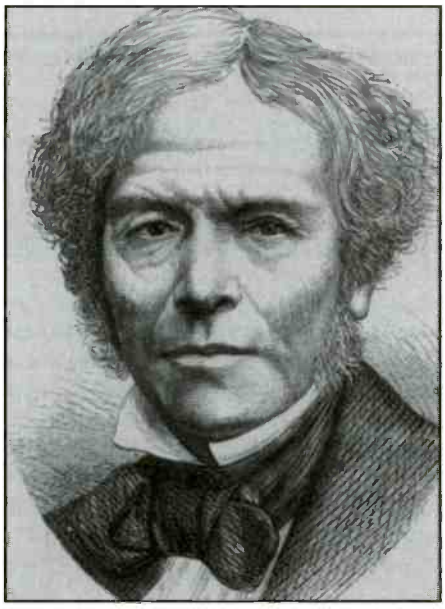
- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.

That advice may seem a bit of a brush-off at first glance, but there's actually a good deal of wisdom contained in each of those suggestions.

Pop'Comm reader Bruce Williams of Valrico, Florida, has put together some interesting information on how to work constructively within the framework suggested by the FCC. By fol-



Ferrite cores can be applied to electrical cords and coaxial cables very easily. Made out of ceramic material with electromagnetic qualities, these devices prevent RF energy from passing them. They're relatively inexpensive and can be purchased at most consumer electronic stores.



Michael Faraday (1791–1867) was a British chemist and physicist. Born into the lower classes of English society, Faraday was entirely self educated. He worked his way into the scientific community by acting as the assistant to many famous scientists of his day. Once his skill and talent were recognized, he found sponsorship for his own research. Much of his work laid the foundation for today's modern chemical and electronic industry, including electrolysis, electrical generation, and the Faraday shield. (Photo courtesy Project Gutenberg)

Here's a Faraday shield that encloses an entire room. Note the connection points along the edge of the door that ensure a complete electrical connection of all surfaces. No matter the size of the "box," the same principles apply. What you build will be just as effective as the professional model, as long as you take your time and follow the instructions provided in the column.

lowing the suggestions Bruce had kindly provided in a special section of month's column (see "Computer Noise Remedies"), you'll definitely be on the right path to eliminate computer hash noise from your radio.

Coming Next Month

Next month I'll return to looking at how sampling devices convert digital information back into analog form. As I've outlined before, it's critical that the conversion process not contain any errors. If there are any errors, it will result in a distorted analog signal.

In the meantime, as always, you can e-mail me with any questions at carm_popcomm@hotmail.com. While I can't answer general questions on computers, I'll be more than happy to help you with any issues raised in the columns.

As of this writing, we've yet to have any major storms, but if we should, please send a donation to the American Red Cross(www.redcross.org/donate/donate.html) to help your fellow Americans. Of course, there are many good (and ethical) organizations that you can contribute to, so please use them if you wish, but don't give into "charity fatigue."

If you have a job, a family around you, and live in a stable neighborhood, then show your thanks for that wonderful good luck by sharing of it with someone less fortunate, and do so regularly.

Computer Noise Remedies

by Bruce Williams

Many of you out there who have tried using computers and radios together may be experiencing excessive noise coming from your loudspeaker or headphones. Unfortunately, this is a common problem because CPUs operate at a frequency that is a harmonic of many commonly used in radio communications and, therefore, generate a lot of radio hash.

For those of you contemplating adding a computer to your shack or listening area, here are some tips I'd like to share, based upon my experience and research into noise elimination. I hope these points will answer some of your questions and concerns.

Many people think that removing computer noise from their radio is a complicated process. Actually, it's not, and very often you need only perform a few simple steps. Following are the top four approaches to try in order to eliminate computer-generated noise, each of which is very simple:

1. Place ferrite snap-ons on all computer cables. These devices are a ceramic material made out of ferrite (MO.Fe2O3), which has important electromagnetic properties. When placed around cables or power cords they will prevent RF energy from traveling along their surfaces. This is very important for power cables where radio signals, such as digital hash, can end up in power supplies, causing noise in electronic circuits.

2. Use shielded cables for the connections from the computer to any radio under computer control. Not all cables are created equal and some may have more shielding than others. If you are trying to keep digital hash out of your radio, make certain that you use premium quality brands. At a minimum, try to use cables that have metal hoods over the connectors.

3. Build a Faraday cage around the computer. Faraday cages (or shields) are used to isolate noise from the radios. This device was first built and demonstrated by British scientist Michael Faraday in 1836 and was originally used to protect electronic equipment from lightning strikes and other types of electrical discharges. (See "Building A Faraday Cage" for specifics.)

4. Plug the computer into a different AC outlet. Remember, radio signals, such as digital hash, will travel over power lines and power cords. By not plugging a radio and computer into to the same power strip you can prevent those signals from traveling from one device to another. It's also highly recommended that you plug

Let's also not forget our troops overseas who continue to need our visible support, particularly as fighting in the Middle East and Afghanistan now seems destined to move into other parts of the world as unrest spreads. Please refer to the U.S. Department of Defense's official webpage, "Defend America." The section found at www.defendamerica.mil/support_troops.html has an amazingly wide range of practical and useful ways that you can directly help.

Again, if you are fortunate enough to live in the United States of America, please remember to give thanks for your personal blessings by remembering to pass on that blessing on to others through regular acts of selfless sharing. ■

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the computer into a surge/noise filter. You can buy these devices at most consumer electronic stores.

Building A Faraday Cage

Even though some people recommend keeping the computer at least six feet away from the radios, I think this defeats the whole purpose of interfacing the computer with the radios. By building a Faraday cage you can enjoy using a radio and a personal computer at the same time, and even have them sitting almost side by side.

A Faraday shield is simply a box coated with metal foil, which carries away any type of electromagnetic discharge (electrical or radio waves). You can make the box as big or small as you want, as long as it can enclose your radio. In some applications, a Faraday shield can be as big as a room, or even an entire house.

As previously mentioned, the digital hash transmitted from your personal computer is a result of your computer's CPU processing information. Your computer is transmitting that digital hash and, as a result, that data can be captured and used as digital information on other computers.

The Faraday cage design I'll be describing is easy to make and was based upon my own experiences in controlling digital hash in my shack. To house all the radios I wanted to protect in one area, I built a shelving unit to sit on top of a desk. I left the center area of the shelving clear since I anticipated using it for a computer to control some of the radio sets. I left a space large enough to contain a laptop or 17-inch monitor, and I wanted the Faraday shield in the area where my computer equipment would be.

To construct the shield I used copper wire mesh (the same material employed by sculptors as frames for their work). The copper is very rigid and can be hard to work with, so I offer this word of caution: Be sure to use a set of sturdy work gloves when installing this material. If you don't you can get very nasty cuts because of its rigidity. However, it's worth using this material because it has the electrical quality you need for a proper shield. What's also good about this type of cooper mesh is that it can be purchased at most arts and crafts retail stores, rather than requiring a special order through an electrical contractor.

I began by lining the center area of the shelving, where my computer would be located, with mesh, covering top, sides, and back. I smoothed out the mesh and stabilized the sides with heavy-duty (not paper) staples. Once the mesh was secure I sprayed it thoroughly with adhesive. After letting the adhesive dry a few minutes I covered the mesh with a light felt material (the color is optional), leaving about 1/2-inch of overlap on the edges. I smoothed the fabric over the mesh to make sure it had adhered to the glue and then cut the edges of the overlap as close as possible to the edges of the shelving so the material and mesh would be held tightly to the shelving. I then placed clear PVC tape over the edges all the way around to make the project look neat and clean.

What To Expect

Since installing the Faraday shield I experience almost no noise on my radios, even with the laptop using an AC adapter. This is not surprising as the effectiveness of the Faraday cage has been demonstrated over many years and in many applications. In fact, take a closer look at professionally built electronic and electrical buildings, such as X-ray rooms and telecommunications centers, and you'll generally find that they're generally located in large-scale Faraday shields.

By using the same techniques of these large-scale professional operations, you can enjoy the same benefits. Instead of dreading starting up the computer before using your radios, why not enjoy the radio as it's intended to operate—noise free!

Additional Information On The Web

Now that you've been introduced to the Faraday shield, you may want to learn more about the electromagnetic properties of the copper that's used to construct it. One of best articles I've come across on how a copper shield acts as both an RF blocker and conductor can be found at www.copper.org/resources/cutopics/Ct78/rfi.html. Check it out.

I hope these suggestions will help you achieve many hours of enjoyable, noise-reduced radio monitoring. Good listening!

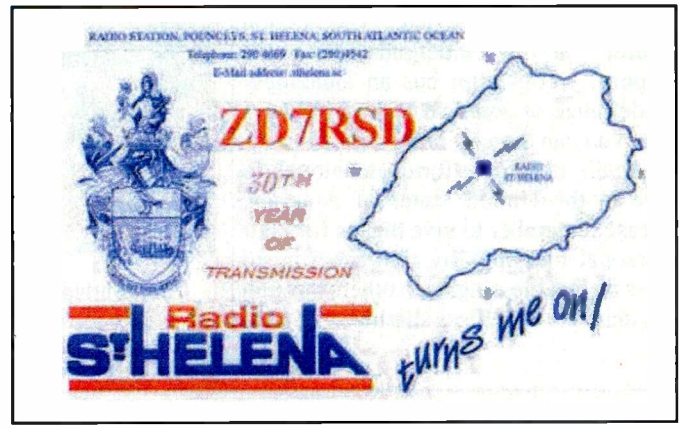
by Gerry L. Dexter, gdex@genevaonline.com

Radio St. Helena Day!

Don't forget that Radio St. Helena Day is coming up soon! Yes, we mentioned it last month, but in case you missed it, the return of these special test broadcasts from Radio St. Helena is scheduled for November 4 and 5 on 11092.5 USB and will run from 1800 to1930 for New Zealand, then 2000 to 2130 for Japan, 2200 to 2330 to Europe and 2330 to 0100 on the 5th for North America (UTC Sunday). There was initially some confusion over the broadcast times but the above is the latest as of press time.

This has been an exciting event in the past (the annual broadcasts ended in 1999) so, whatever you do, don't forget to tune in and let them know they were heard and appreciated. And that second part holds even if you aren't able to actually hear the broadcasts—it's still very important to let them know their effort was appreciated.

A new Radio St. Helena QSL card is being offered this time and there are some requirements to observe. For instance, reports are being accepted by postal mail only (no e-mail reports), and you must include at least *three* International Reply Coupons (or a couple of dollar bills) to cover return postage. Letters should be sent to Ms. Laura Lawrence, Manager, Radio St. Helena, Broadway House, Main Street, Jamestown, St. Helena, South Atlantic Ocean. Please take the trouble to write them, even if it's just a thank you card!



Radio St. Helena Day is November 4. Monitor 11092 and tell 'em thanks!

Calling North Korea: You Listening?

The unusual Japanese broadcasts to North Korea (Shiokaze or "Sea Breeze" in English) are airing on a revised schedule. They're currently heard from 1030 to 1100 and 1300 to 1330 on 9485 and also 2030 to 2100 on 9785, via Taiwan. The programs are produced by a group calling itself the Investigation Commission on Missing Japanese Probably Related to North Korea (COMJAN) and are broadcast in Korean, Japanese, and English, depending on the day of the week. Mostly they consist of a list of names of Japanese citizens who are thought to have been kidnapped by North Korea. Voice messages from relatives trying to provide some comfort and hope are also included.

Actually there are a growing number of broadcasts being aimed at Kim Jung Il's oddball regime. Another, believed to go by the name "Freedom North Korea," is also aired via Taiwan, most recently at 1000 to 1030 on 11750. There is also one called Open Radio for North Korea, which broadcasts voice messages from anyone who wishes to participate. The group behind these broadcasts wants to see Korea reunified. The broadcasts are currently scheduled from 1500 to 1600 on 7470 from Dushanbe, Tajikistan, but that time/frequency combo makes for a difficult catch in North America.

VOA Cutbacks—It's Not Over Till...

The Congressional Committee on Appropriations is calling on the BBG (Board of Broadcast Governors) to reverse its decision to reduce English from the VOA. More than a million dollars has been restored to the VOA's budget for support of Worldwide English. The Committee also denied the request of the BBG to eliminate the several foreign language services that had been put on the chopping block. These bureaucratic and legislative differences have a way to go before all the dust settles.

Florida's Smyrna Baptist Church, KIPM, And More

Meantime, while government indecision and confusion over its international broadcasting efforts continues, yet another private shortwave operation is in the works. The Smyrna Baptist Church in Pensacola, Florida, has filed an application with the FCC for a construction permit. The church's website makes no mention of this project, so that's all we know at this stage.

P.O. Box 69, the Elkhorn, Nebraska, mail drop used by such pirates as KIPM, Ground Zero Radio and several other lesser-known stations, has closed. Seems the vast majority of reports for stations using the Elkhorn address now arrive by e-mail.

Here's a new way to log Lithuania, sort of. The Voice of the Islamic Republic of Iran is now being relayed by Lithuania's Siktunai site, although this appears to be on an experimental basis, at least for now. The schedule has hour-long broadcasts in Italian at 0630 on 11555, Russian at 1430 on 9315, German at 1730, French at 1830, English at 1930, and Spanish at 2030 (the Spanish broadcasts all on 7540). Actually all the broadcasts close at 27 minutes past, so they don't quite run for a full hour. We've checked for several of these but without success.

Reader Logs

Remember, your shortwave broadcast station logs are always welcome. Only please be sure to double or triple space the items (so we have room to navigate scissors), list each log by country, and include your last name and state abbreviation. Also much wanted are spare QSLs you don't need returned, station schedules, brochures, pennants, station photos, and anything else you think would be of interest. And don't forget to send in

that shack photo—oh, never mind—you won't do it anyway...or will you?

So let's begin the tour. All times are in UTC and those double capital letters are language abbreviations (SS = Spanish, RR = Russian, AA = Arabic, etc.). If no language is specified, the broadcast is assumed to have been in English (EE).

ALBANIA—Radio Tirana, 6115/7455 at 0251 in unid language with folk, IS, music with sign off at 0258. (Burrow, WA)

ALGERIA—RT Algerienne, 7260 via Rampisham at 0400 sign on with instl music, woman annor with ID and opening anmts in AA and Koran recitations, //9540-Wooferton. (D'Angelo, PA)

ANGUILLA—Caribbean Beacon, 11775 at 1450 with Dr. Scott. (Maxant, WV)

ARGENTINA—Radio Nacional, 6060 at 0908 in SS. (DeGennaro, NY)

RAE, 11710 in SS at 0152 to 0200 opening in EE. (DeGennaro, NY) 0200 with program intro and IDs. (Burrow, WA)

ARMENIA—Voice of Armenia, 9965 with talks in Armenian at 0310. I rarely hear this one. (Paszkiewicz, WI)

ASCENSION ISLAND—BBC Relay, 6005 at 0442 and 6035 in FF at 0436. (MacKenzie, CA) 7160 at 0301 and 15400 at 1911. (Jeffery, NY) 15400 at 1003. (DeGennaro, NY) 1701. (Jeffery, NY) 1848. (Charlton, ON) 2043. (Brossell, WI) 17830 heard at 1726. (Wood, TN)

AUSTRALIA—Radio Australia, 5995 in Pidgin at 0948, 6020 in Pidgin at 0950, 6080 at 0953, 9580 at 1031, 9590 at 1028, 9710 in Pidgin at 1025, 15415 at 0132, 17715 at 0146 and 17795 at 0150. (DeGennaro, NY) 6020 at 1026, 15240 at 0225 and 15515 at 0232. (Jeffery, NY) 7240 at 1520, 17785 with "Connect Asia" at 2315. (Barton, WA) 9660-Brandon at 0240. (Clapshaw, WA) 11880 carrying Northern Territories Service at 0825. (Taylor, WI) 12080 at 0450 and 17715 at 0135. (Maxant, WV) 11880 at 1920 and 12080 at 1216. (Brossell, WI) 13630 at 2243, 15230 at 2250 and 15515 at 2234. (MacKenzie, CA) 15515 at 2125 and 17785 at 2233. (Charlton, ON) 15515 at 2150. (Fraser, ME)

VL8T, Tennant Creek (p) 4910 at 0824 with man and brief snatches of EE. Very poor to sign off at 0830. (D'Angelo, PA)

CVC International, 13635 to SE Asia at 1112 and 13775 to East Asia at 1101. (DeGennaro, NY) 1252. (Brossell, WI)

HCJB-Australia, 15525 in EE and CC at 2230. (MacKenzie, CA)

AUSTRIA—Radio Austria Inter-national, 9870 at 0035. (Charlton, ON) 0120 and 13775 via Canada in EE/GG at 2115. (Maxant, WV) 13730 in GG at 1039. (DeGennaro, NY) 13755 at 1545 with "Report from Austria." (Fraser, ME)

BELARUS—Belaruskaya Radio One, 11930 with open carrier at 0357, time pips at 0400, woman with ID and man in Belarusian, then a woman hosting pops. (D'Angelo, PA)

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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.

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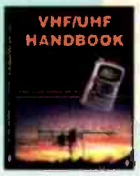

RSGB, printed 2002., 317 pages. One of the most complete guides on the theory and practice of reception and transmission on VHF/UHF band. Hundreds of illustrations and photos.

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Packet Radio Primer

By Dave Coomber, G8UYZ & Martin Croft, G8NZU

RSGB, 2nd Ed., 1995, 266 pages Detailed practical advise for beginners. Completely revised and greatly expanded to cover developments in this field and beyond bare basics into advanced areas such as satellite operations.

Order: RSPRP **$16.00**

Practical Receivers for Beginners

By John Case, GW4HWR

RSGB, 1996 Ed., 165 pages Selection of easy-to-build receiver designs suitable for amateur bands (including microwaves) and simple fun projects and test equipment.

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RSGB, 2002 Ed, 416 pages. A complete self-study course in RF technology, with conscise reference text to dip into in a readable and straightforward format.

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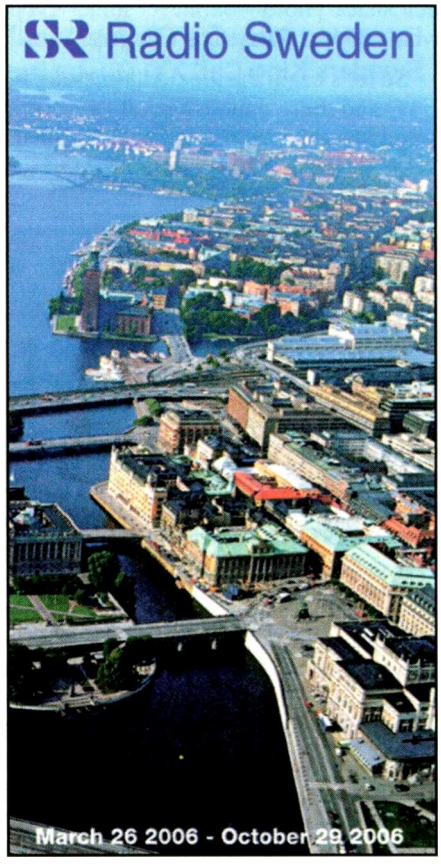
Tons (Actually 467) Of Loggings Processed!

Month after month the "Global Information Guide" offers you more logs than any other monthly SW publication! (**467*** shortwave broadcast station loggings were processed this month!) Why not join the fun and get your name on the list of "GIG" reporters? (See the column text for tips on proper format.) Send your logs to your editor at 213 Forest St., Lake Geneva, WI 53147. Or e-mail them to gdex@genevaonline.com or, if you have problems getting through, to Editor Harold Ort at popularcom@aol.com. Our deadline is the 25th of each month.

**Not all logs get used; there are usually a few which are obviously inaccurate, unclear, or lack a time or frequency.*



It gets more difficult to hear the real thing. Radio Sweden's current schedule has only one broadcast to North America coming direct from Sweden's Horby site.

BELGIUM—RTBF Int., 9970 in FF at 0303. (Brossell, WI)

BOTSWANA—VOA Relay, 4930 at 0335. (MacKenzie, CA)

BRAZIL—(All broadcasts in PP) Radio Cancao Nova, Cachoeira Paulista, 9675 at 2316. (DeGennaro, NY)

Radio Brazil Central, Goiania, 4985 at 0215. (Brossell, WI) 11815 at 0949. (DeGennaro, NY) 0215. (Brossell, WI)

Radio Clube do Para, Belem, 4885 at 0247 with ballads and DJ. (Taylor, WI) 0937. (DeGennaro, NY)

Radio Educacao Rural, Tefe, 4925 at 0011. (DeGennaro, NY)

Radio Anhanguera, Goiania, 4915 with listener call-ins at 0845. Also 11830 at 1054. (DeGennaro, NY) 2147. (Brossell, WI)

Radio Trans Mundial, Santa Maria, 5965 at 2354. (DeGennaro, NY)

Radio Intergracao, Cruzeiro do Sul, 4765 at 0227. (Brossell, WI)

Radio Bandeirantes, Sao Paulo, 11925 at 0240. (Brossell, WI)

Radio Nacional, Macapa, 4915 with ID at 0230. (Brossell, WI)

Radio Nacional Amazonas, Brasilia, 6180 at 0920 and 11780 at 1100. (DeGennaro, NY) 0237. (Brossell, WI) 2300. (Barton, AZ) 2304. (Charlton, ON)

BULGARIA—Radio Bulgaria, 9500 in BB at 0041, 9700 in FF at 0110, 11700 in FF at 0104 and 15700 in FF at 1105. (DeGennaro, NY) 9700 at 2307. (Charlton, ON) 2345 with DX program. (Fraser, ME) 11500 at 1730. (Wood, TN) 11700 at 0233 on tourist destinations there. (Brossell, WI)

CANADA—Radio Canada Int., 13655 at 1450 and 17765 at 2120. (Maxant, WV) 13700 in SS at 2231. (MacKenzie, CA) 17765 in FF at 1853. (Charlton, ON)

CFRX, Toronto, 6070 heard at 1425. (Maxant, WV)

CHILE—Voz Cristiana, 5960 in SS at 0855, 6110 in PP at 0913 and 15585 in SS at 0138. (DeGennaro, NY) 17680 in SS at 1909. (Charlton, ON)

CHINA—China Radio Int., 6020 via Albania at 0055 with ID and CC lessons. (Wood, TN) 0440 on women's property rights. (Mackenzie, CA) 7210 via Albania in SS at 2338, 9570 via Albania at 0022, 9590-Kashi in SS at 0027, 9800-Kashi in SS at 2325 and 11660-Kashi in FF at 2100. (DeGennaro, NY) 9570 via Cuba at 1300. (Fraser, ME) 11660 at 1811, 13655-Urumqi in RR at 1750 and 13700-Urumqi with operatic music at 1823. (Strawman, IA) 11690 via Chile at 1239 and 11975 via Mali in FF monitored at 2155. (Brossell, WI)

CPBS-4460, Beijing in CC at 1100. (Barton, AZ) 5925 in SS heard at 1206. (Brossell, WI)

Voice of Pujiang, Shanghai, 5075 in CC at 1200. (Brossell, WI)

Xinjiang PBS, Urumqi, 7230 with Mongolian domestic service at 2332. (DeGennaro, NY)

China Music Jammer, 11785 at 1242 against VOA-Thailand. (Brossell, WI)

COLOMBIA—La Voz de tu Concencia, Puertro Lleras, 6010 in SS at 0900 with music and religious message. (DeGennaro, NY)

CROATIA—Voice of Croatia, 9925 via Germany with EE ID at 0200. 0310. (MacKenzie, CA) (Clapshaw, WA) 2341. (Charlton, ON) 2352 in Croatian. (DeGennaro, NY)

CUBA—Radio Havana Cuba, 9550 in SS at 1430. (Maxant, WV) 9550 in FF at 0014 and 9600 in SS at 0030. (DeGennaro, NY) 11760 in SS at 1736. (Wood, TN) 15230 with SS ID at 1426. (Charlton, ON)

Radio Rebelde, 5025 in SS at 0857 and 9505 in SS at 1035. (DeGennaro, NY)

CZECH REPUBLIC—Radio Prague Int., 6200 with news at 0102 and 11600 at 2145 (Wood, TN) 7345//9870 at 0301 with Czech and European news. (Burrow, WA) 7345 in SS at 2320, 9440 in Czech at 2347, 11665 via Ascension in SS at 0015 and 15710 in unid language at 1112. (DeGennaro, NY) 9870 at 0323, //7345. (MacKenzie, CA). 11600 at 2140. (Charlton, ON) 2135. (Maxant, WV)

ECUADOR—HCJB, 6125 in QQ at 0916, 9745 in SS at 0119 and 12020 in PP at 0102. (DeGennaro, NY) 21455 in SS at 2256. (MacKenzie, CA)

EGYPT—Radio Cairo/Egyptian Radio, 7270 at 0246 to 0304 when introduced "a weekly program from Cairo." (Burrow, WA) 9735 in AA at 0030 and 12050 in AA at 1116. (DeGennaro, NY) 9990 at 2155. (Maxant, WV) 2200 with a cooking program. (Wood, TN) 9990 at 2232 and 12050 in AA at 1921. (Charlton, ON) 11950 in AA heard at 0130, then a stretch of dead air and into ME music. (Barton, AZ)

ENGLAND—BBC, 6110 via French Guiana in SS at 0355. (MacKenzie, CA) 9410 at 0515, 15390 at 2145 and 21470 at 1440. (Maxant, WV) 9410 via Cyprus at 0031, 11680-Rampisham in AA at 2057 and 17640-Skelton at 1123. (DeGennaro, NY) 11865 via French Guiana at 1246. (Brossell, WI) 12095 at 1827. (Charlton, ON)

ETHIOPIA—Radio Fana, 6940 at 0332 with news in Amharic, ID at 0336. //6209.9 was awful. (D'Angelo, PA)

Voice of the Tigray Revolution, Mek'ele, 5500 heard at 0355 sign on with IS, man in presumed Tigrinya. (D'Angelo, PA)

FINLAND—YLE/Radio Finland Int., 11755 in Swedish at 2039. (DeGennaro, NY)

FRANCE—Radio France Intl. 11600 via China in unid Asian language at 1233. (Brossell, WI) 11995 via Gabon at 2008. (DeGennaro, NY) 15160 via South Africa in EE at 1610. (Strawman, IA) 15300 in FF at 1843. (Charlton, ON)

GABON—Africa No. One, 9580 in FF at 2028 and 17630 in FF at 1012. (DeGennaro, NY) 15475 in FF at 1849. (Charlton, ON) 1854. (Wood, TN) 17630 in FF at 1247. (Brossell, WI)

Radio Gabon, 4777 heard at 0500, appar-

The building on the right at the WEWN site houses four 500-kW transmitters! (Thanks Charles Maxant, WV)

ently just after sign on, several IDs by man and woman anncr. FF talk and high-life vocals. (D'Angelo, PA)

GERMANY—Deutsche Welle, 6100 in GG at 0350. (MacKenzie, CA) 9545-Wertachtal in GG at 2307, 9695 at 0041, 9775 in GG at 2319, 9825-Wertachtal to South Asia at 0020, 11795-Wertachtral at 2031, 13780 in GG at 1054, 13790 via Portugal in AA at 1936, 15595-Wertachtal in GG at 1053 and 21840-Nauen in GG at 1153. (DeGennaro, NY) 9630 with a DJ at 0530. (Maxant, WV) 9695 with ID at 0006. (Charlton, ON) 15410 via Sri Lanka heard at 2045. (Brossell, WI)

Deutschland Radio, 6005 in GG at 2317. (DeGennaro, NY)

GREECE—(All broadcasts in Greek) Voice of Greece, 7475 at 2332, 9420 at 0034, 15630 at 1057 and 15650 at 0141. (DeGennaro, NY) 15630 at 1851. (Charlton, ON)

GUAM—Adventist World Radio, 15320 at 2242 and ID as the "Voice of Hope." (MacKenzie, CA)

Trans World Radio, 9975 in unid Asian language heard at 1238. (Brossell, WI)

GUATEMALA—Radio Verdad, Chiquimula, 4052.5 in SS at 0246. (Brossell, WI)

Radio Buenas Nuevas, San Sebastian, 4800 at 0212 with SS talks and soft instrumental music. (Brossell, WI)

Radio Cultural Coatan, San Sebastian, 4780 monitored at 0202 with rustic vocals and instls alternating with brief SS talks by man. (D'Angelo, PA)

GUYANA—Voice of Guyana, 3291 with rap heard at 0236. (Brossell, WI)

HAWAII—KWHN-World Harvest Radio, Naalehu, 9930 in CC at 1021. (DeGennaro, NY)

HONDURAS—La Voz Evangelica, Tegucigalpa, 4819 in SS heard at 1105. (Barton, AZ)

Radio Luz y Vida, San Luis, 3250.1 with SS talk, ID at 1033 and pgm of mellow music. (Taylor, WI)

HUNGARY—Radio Budapest, 9770 to North America at 0025, also 11695 at 2054. (DeGennaro, NY)

INDIA—All India Radio, 9445-Bangaluru in Hindi at 2058 and 11620-Aligarh in presumed Hindi at 1234. (Brossell, WI) 9470 with FM Gold service in Hindi at 0145. (Taylor, WI) 9910-Aligarh in Hindi at 2347, 10330-Bangaluru in Hindi at 0049, 11715-Panaji (Goa) in EE and Pidgin to Australasia at 2050, 13605-Bangaluru in FF at 1949 and 13620-Bangaluru in AA at 1944. (DeGennaro, NY) 11620-Bangaluru at 1903. (Charlton, ON) 2125 with Indian music and ID for general overseas service. (Maxant, WV) 15075-Bangaluru in Hindi heard at 0236 to 0300 close. (D'Angelo, PA)

INDONESIA—Voice of Indonesia, 9525 at 1125 in Mandarin and JJ. (Taylor, WI) 1232 with woman anncr and several mentions of Jakarta and Indonesia. Also 15149.8 at 1615 with pops and occasional anmts to news at 1700. (Strawman, IA)

IRAN—VOIRI, (Voice of Justice) 9495 at 0159. (Taylor, WI) 0215. (Maxant, WV) 9935 in AA at 0157. (DeGennaro, NY) 9935 with Koran at 0214. (Brossell, WI) 15085 in FF at 1835. (Charlton, ON)

ISRAEL—Kol Israel, 9345 in HH at 0026, 15760 in FF at 1007, 17525 in FF at 1119. (DeGennaro, NY) 11590 with news items at 1915. //9400. (Fraser, ME) 13675 with news at 1734. (Burrow, WA) 15760 in HH at 1448. (Charlton, ON)

Galei Zahal, 6973 in HH heard at 0020. (DeGennaro, NY) 0110. (Wood, TN)

ITALY—RAI Int., 7235 with news at 0455. (Maxant, WV) 9840 in II to South America at 0010 and 11800 in II to North America at 0133. (DeGennaro, NY) 9845 at 1942. (Brossell, WI) 11800 in II at 0015. (Charlton, ON) 0058. (Fraser, ME) 15380 at 1850 with II pops. (Wood, TN)

JAPAN—Radio Japan/NHK, 5960 via Canada in JJ at 0447, //17560 and 17825. (MacKenzie, CA) 6120 via Canada at 1118 with "A Song For Everyone." (Fraser, ME) 6120 via Canada at 1000, 9530 via French Guiana in JJ at 0934 and 11935 via Bonaire at 0125. (DeGennaro, NY) 7230 at 0545 and 11935 at 0130. (Maxant, WV) 9535 with ID at 1710 and 9540 with play-by-play sports in JJ at 0845. (Barton, AZ) 11855 via Ascension at 2137, 11895 via French Guiana in JJ at 2239 and 15355 via Gabon in JJ at 1845. (Charlton, ON) 15355 in JJ at 1710. (Strawman, IA) 17870 via Ascension in FF at 1250. (Brossell, WI)

Radio Nikkei, 9595 in JJ at 1205. (Taylor, WI) 1257. (Strawman, IA) 9760 in JJ at 0430. (Clapshaw, WA)

KUWAIT—(All broadcasts in AA) Radio Kuwait, 9855 to Europe at 2335. (DeGennaro, NY) 9855 at 2307 and 15505 at 1932. (Charlton, ON) 11675 in AA at 0325. (Paszkiewicz, WI) 15505 heard at 1855. (Wood, TN)

LIBERIA—Star Radio via Ascension, 11965 at 2152 with "Hello and welcome to programs on Star Radio," then into talks in an African language. (Brossell, WI)

LITHUANIA—Radio Vilnius, 9875 at 2330 with news in EE. (Paszkiewicz, WI) 2340 on apartment prices in the Baltic States. (Maxant, WV) 2342 and 11690 with ID at 0030. (Charlton, ON) 9875 to ECNA at 2341 and 11690 at 0057. (DeGennaro, NY)

LIBYA—Radio Jamahiriya, 7320 via France in AA at 2312. (DeGennaro, NY)

MADAGASCAR—Radio Madagasikara, 5010 heard at 0256 with O/C, national anthem, opening ID and anmts, music and a discussion pgm. (D'Angelo, PA)

MAURITANIA—Radio Mauritanie, 4845 in AA at 0005. (DeGennaro, NY)

MEXICO—Radio Educacion, 6185 at 0058 with IDs in SS, EE and others and back into SS. (Wood, TN) 0144. (Taylor, WI) 0216. (Brossell, WI) 0924 with classical guitar. (DeGennaro, NY)

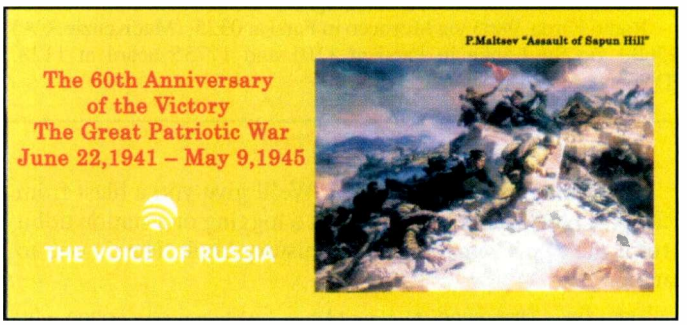
Radio Transcontinental da America, 4810.1 at 0850. (Taylor, WI) 0856 with music and ID. Awful noise on this channel. (D'Angelo, PA)

MOROCCO—RTV Marocaine, 11920 in AA at 0225 with AA music, woman hosting discussion program. (D'Angelo, PA) 0242 with call-in pgm. Also 15335 with raucous group singing in AA at 1225. (Brossell, WI) 15345 in AA at 1815. (Jeffery, NY)

1859. (Wood, TN) 1820 in AA and 17785 in FF heard at 1955. (Charlton, ON)

VOA Relay, 9885 at 0140 with "Issues in the News." (D'Angelo, PA) 15410 at 1852. (Wood, TN)

Radio Medi Un, Nador, 9575 in AA at 0024. (DeGennaro, NY)



Mike Clapshaw got this Voice of Russia QSL, one of a series on WWII.

Rich D'Angelo landed this very nice QSL from Radio Belarus on 7210.

NETHERLANDS—Radio Nederland, 7400 via Madagascar in DD to SEA at 2326, 9895 in SS to SA at 2344 and 13700 in DD to Europe at 1031. (DeGennaro, NY)

NETHERLANDS ANTILLES—Radio Nederland Relay, Bonaire, 17810 at 1900 with "Vox Humana." (Fraser, ME)

NEW ZEALAND—Radio New Zealand Int., 7145 with news at 0800. (Barton, AZ) 0910 carrying national service. (DeGennaro, NY) 9630 at 1858. (Burrow, WA) 9870 with "Dateline Pacific" at 1108. (Fraser, ME) 9885 at 1240 with a church service being translated into Maori. (Brossell, WI) 13730 at 0105 on security in Timor. Also 15720 on women's bull riding in NZ. (Maxant, WV) 0025 with news and world stocks. (Charlton, ON)

NIGERIA—Voice of Nigeria, 15120 at 1731 with "Africa Hour." (Jeffery, NY) 1744 with economic news. (Burrow, WA) 1831 with pgm "Insight." (Wood, TN) 1838 on a UN meeting. (Charlton, ON)

Radio Nigeria, 4770 at 0427 with open carrier, drum IS, national anthem, prayer and ID "Radio Nigeria...4.77 megacycles on 60 meters" and into religious talk. (D'Angelo, PA)

NORTH KOREA—Voice of Korea, 9730 at 0145 on NK and China relationship. (Maxant, WV) 11535 in CC at 2139. (Brossell, WI) 11710 in FF at 1145 in FF and 15180 in FF and EE at 1044. (Taylor, WI) At 1650 and 13760 with news at 1804. (Strawman, IA)

KCBS, 6285 with military march music at 1210. (Brossell, WI)

OMAN—Radio Sultanate of Oman, 9760 at 0021 with Koran, woman in AA at 0045 with talk and music, f/by a drama pgm. (D'Angelo, PA) 0123 in AA to Europe. Also 13640 in AA at 1109. (DeGennaro, NY) 15140 in AA at 1710. (Strawman, IA)

BBC A'Seela Relay, 11955 in EE to S. Asia monitored at 0112. (DeGennaro, NY)

OPPOSITION—Shiokaze (Sea Breze) (p) 9855 via Taiwan monitored at 1030 sign on with instl music, opening anmt and talk. Poor. (D'Angelo, PA)

Sudan Radio Service, 11805 via Skelton at 0315 with interview, ID and UN report about HIV. (D'Angelo, PA)

Radio Farda, 9865 via Morocco in Farsi at 0325. (MacKenzie, CA) 15690 via Sri Lanka in Farsi at 1101 and 17755 heard at 1128. (DeGennaro, NY)

In Times Past...

And now for some nostalgia. We'll give you a blast from the past here each month, perhaps a logging or a station tidbit from the *Pop'Comm* shortwave history book. Here's one to remember:

ITALY—IBF, 5000 (National Electrical Institute) at 0700 with CW and II time signals on January 5, 1968. 5 kW. (Dexter-WI)

Radio Republica, 7205 in SS at 0029. (DeGennaro, NY)

Radio Marti, 6030 via Delano opening with ID heard at 0900. (D'Angelo, PA)

Radio Free Asia, 9455 via Sri Lanka in an Asian language at 1232. Also 11590 in unid Asian language at 1249 and 12075 via No. Marianas in Asian language at 2136. (Brossell, WI) 15490 via Northern Marianas with Mandarin service at 2320. (Strawman, IA)

PERU—Radio Vision, 4790-Chiclayo, at 0254 with group religious vocals, SS anmts and long sermon. (D'Angelo, PA) 1012 with a church service in SS. (DeGennaro, NY)

PHILIPPINES—VOA Relay, 12040 in CC at 1121 with Chinese jamming. (Taylor, WI) 1205. (Brossell, WI) 15290 at 2246. (MacKenzie, CA)

FEBC Int., 9430 with religious pgmg in CC at 1223. (Brossell, WI)

Radio Pilipinas, 11720//15190 in Tagalog with mentions of "Pilipinas" at 1732. (Burrow, WA)

PIRATES—MAC Shortwave, 6950 (v) Noted on various dates at 0005, 0020, 0030, 0115, 0200, 0246 and 0600 with various TV themes, "Dr. Who," Spiderman, oldies, heavy metal. E-mail to: macshortwave@yahoo.com. (Hassig, IL) 0125, 0149 and 0203 with music from '50s and '60s and one time relaying "Pirate Weekly" podcast. (Wood, TN) 0056 with rock oldies anncd as the "Paul Star Show." Did not include "shortwave" in their IDs on this occasion. (Zeller, OH) 0234 with Elvis items from a live concert, e-mail address. (D'Angelo, PA)

James Bond Radio, 6925u at 0040 with music from Bond films, multiple IDs but no address anncd. (Zeller, OH) 0057 with seven different themes from James Bond movies, several IDs as "Bond, James Bond. Stirred, not shaken." (Wood, TN) 0115. (Hassig, IL)

Northwoods Radio, 6925u heard at 0020, 0118, and 0300 with heavy metal, Roger Miller, SSTV data transmitted, Willie Nelson. (Hassig, IL) 0119 with "Hard Rockin' with Northwoods Radio," loon call and other animal sounds, many rock selections. (Wood, TN) 2331 sign on with loon and other bird noises, into obscure rock things mixed with a couple of familiar ones ("Hit the Road, Jack"). (Zeller, OH) 2354 with vocals on road subjects. Mentioned Great Lakes in the ID and sent some Morse code at the end. (D'Angelo, PA)

Radio Free Speech, 6925u variously heard at 2042, 2104 and 0002 with Bill O. Rights, discussions on Clinton, rock and pop oldies and occasional sketches. (Zeller, OH)

KIPM, (p) 6925u heard at 2338 with a drama. Poor in heavy static. (Wood, TN)

Grasscutter Radio/Sunshine Radio, 6925u with a joint broadcast at 0030 and 2200 with various pop songs. QSL via grasscutterradio @yahoo.com. Later repeated the earlier program. (Hassig, IL) 0008 opening joint broadcast to 0039 close. (Zeller, OH)

WBNY-Radio Bunny, 6925u at 0026 and 2331 with parody tunes and several IDs. Belfast address announced. (Wood, TN) 0302 with the "Monkey Dance" program, frequent IDs by commander Bunny and close with "That's all, folks!" theme. (D'Angelo, PA)

Random Radio, 6925u at 0035 hosted by Robert Random, "Hurdy Gurdy Man," swing tunes. (Hassig, IL) 0035 and asking for reports via FRN. (Zeller, OH)

Canada Free Radio, 6925u at 0134. Anncr might have said "Canadian" rather than Canada. Only readable bit was the Canadian national anthem at 0143. Off at 0144. (Wood, TN)

Pirate Radio Boston, 6925.2u at 0201 with "Charlie Loudenboomer" host and rock things from local Boston groups and read e-mail letters. (D'Angelo, PA) 0205 with what seemed religious music and talk. The program host sounded familiar—must be on another station as well. (Hassig, IL)

WMPR, 6925u at 0006 and 0054 with techno rock and several man/woman IDs as "WMPR-6925" with chirping birds in the background. Used Micropower Radio slogan as usual and, as usual, no address given. (Zeller, OH) 0152 with more vocals than normal. (Wood, TN) 0600 with industrial dance music. (Hassig, IL)

Ground Zero Radio, 6925u at 0117 and 0140 with trumpet fanfare orchestra, "Happy Trails," "ads" for "Girls Gone Wild" video, gave info on a contest and mentioned this was the last chance to use the Elkhorn address. (Zeller, OH)

The Crystal Ship, 6875.9 monitored at 0104 with pgm of rock, one clear ID as "Voice of the Blue States Republic." Gave the Belfast address. Also 6876.1 at 0107 with 60s pops, normal ID and occasional audio from "The Life of Brian." (Zeller, OH) (p) At 0030 with Beatles tunes. Heavy static and virtually unreadable by 0040. (Wood, TN)

PORTUGAL—RDP Int., 9715 at 0114, 11995 at 0951, 12000 at 0954, 12020 at 0956, 13700 at 0022, 15295 at 0129 and 21655 at 1146—all in PP. (DeGennaro, NY) 15295 in PP at 0148. (Jeffery, NY) 15560 in PP with soccer at 1934. (Charlton, ON)

ROMANIA—Radio Romania Int., 7265 in EE at 2340, 9645 in EE at 2313, 9690 in EE at 0109, 11940 in SS at 2012 and 11970 in Romanian at 0108. (DeGennaro, NY) 11940 at 2130. (Wood, TN)

RUSSIA—Voice of Russia, 7330-Moscow in PP to Brazil at 2344, 9665 via Moldova in EE to NA at 0058, 9725-Armavir at 0116 in RR to ECNA, 9830-Armavir in SS to South America at 0015, 12055-St. Petersburg in RR to Mideast at 2002 and 12070-Moscow at 1958. (DeGennaro, NY) 9665 via Moldova with ID at 0150. (Maxant, WV) 9860 via Vatican at 0200 and 9880-Armavir in RR at 0215. (Clapshaw, WA) 12070 with "Panorama" at 1910. (Fraser, ME) 0255 in RR. (Brossell, WI)

Radio Rossii, 12070 in RR at 0157. (Taylor, WI) 13655-Moscow in RR at 1028. (DeGennaro, NY)

Radio Tikhy Okean, 12065 monitored at 0821 with open carrier. Instl music began at 0835, then a woman with ID and news in RR. Off at 0900. (D'Angelo, PA) 0835 in RR with chimes, IDs, contemporary music, correspondent reports. (Taylor, WI)

Russian International Radio, 7125 via Moldova in RR to ECNA at 0024. (DeGennaro, NY) 2333 with pop and dance music, man/woman in RR, and news on the hour. (Wood, TN) 15430 via Germany in RR at 1435.

RWANDA—Deutsche Welle Relay, 11985 in Hausa to West Africa at 1735 and 15410 in Hausa at 1345 (Strawman, IA) 15205 with African vocals at 2135. (Fraser, ME) 15275 in GG at 1805. (Jeffery, NY) 1842. (Charlton, ON).

SAO TOME—VOA Relay, 15730 in FF at 1835. (Charlton, ON) 2050 in FF. (Brossell, WI)

SAUDI ARABIA—BSKSA, 9555 at 2035, 11740 at 2047, 11820 Holy Koran Service at 2025, 11915 Holy Koran at 2016, 17805 at 1131 and 21705 at 1149—all in AA. (DeGennaro, NY) 11740 with Koran at 2144. (Brossell, WI)

SEYCHELLES—BBC Relay, 9750 with ID and news headlines at 0330. (D'Angelo, PA)

SINGAPORE—Radio Singapore-Kranji in II to close at 0959. (DeGennaro, NY) 6150 at 1551 with program notes, ID for "9-3-8" and off at 1559. (Burrow, WA)

BBC Relay, 15285 in CC at 1222. (Brossell, WI)

This Month's Book Winner

To show our appreciation for your loggings and support of this column, each month we select one "Global Information Guide" contributor to receive a free book. Readers are invited to send in loggings, photos, copies of QSL cards, and monitoring room photos to me at *Popular Communications*, "Global Information Guide," 25 Newbridge Road, Hicksville, NY 11801, or by e-mail to popularcom@aol.com. The e-mail's subject line should indicate that it's for the "Global Information Guide" column. So come on, send your contribution in today!

Our book winner this month is **Robert Brossell**, of Pewaukee, Wisconsin, who receives a copy of the 2007 edition of *Passport to World Band Radio* from Universal Radio. If you still aren't on Universal's mailing list to receive their super catalog of cool radio things each time it's released, then it's high time you signed up. Call Universal at (614) 866-4267 or e-mail them at dx@universal-radio.com, or you can get crazy and actually *write* to them at 6830 Americana Parkway, Reynoldsburg, OH 43068.

RFA

RADIO FREE ASIA

Created and funded by the U.S. Congress, Radio Free Asia (RFA) began in March 1996. As a surrogate broadcast network, RFA is dedicated to the free flow of accurate, timely, unbiased news, information and commentary that is beamed to Asian countries where such news reports are unavailable. It also aims to promote freedom of opinion and expression, including the freedom to seek, receive, and impart information and ideas through any medium, regardless of frontiers. Mandated to broadcast in Burmese, Cantonese, Khmer, Korean, Lao, Mandarin, Tibetan, Uyghur and Vietnamese, English is spoken only when appropriate.

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The Father of Radio

Guglielmo Marconi
1874-1937

Radio Free Asia Releases Its 11th QSL Card

RFA's Technical Operations Division has released its 11th QSL card in honor of the Father of Radio, Guglielmo Marconi. While we just got word of the new card and you might have missed it (it was scheduled for distribution through the end of August), we think it's such a good-looking commemoration, it's presented to you here.

Marconi was born on April 25, 1874, in Bologna, Italy. In 1901 people still thought the curvature of the earth would prevent radio signals from traveling more than 200 miles, but in July of 1901, Marconi was able to transmit across the Atlantic Ocean, helping to accelerate the development of the wireless industry. In 1909 Marconi shared the Nobel Prize for physics with Karl Ferdinand Braun. More information about Marconi, his life, and his work is available at http://nobelprize.org/nobel_prizes/physics/laureates/1909/marconi-bio.html.

SOUTH AFRICA—Channel Africa, 9685 at 0505. (Maxant, WV) 15235 at 1730. (Charlton, ON) 0534 on child labor in southern Africa. (Burrow, WA)

SOUTH KOREA—KBS World Radio, 9560 heard at 0155 with ID and news. (Maxant, WV) (*This is via Canada!—gld*)

SPAIN—Radio Exterior de Espana, 6055 in SS at 0340, //6125 via Costa Rica. 6125 also at 0420 in SS. (MacKenzie, CA) 9535 at 0047, 9570 at 2032, 9620 at 0038, 11795 in Sephardic at 0137, 11680 at 0146, 13720 at 1036, 15585 at 1048, 21540 at 1137, 21570 at 1139 and 21610 at 1143, all in SS except as noted. (DeGennaro, NY)

15385 in EE at 0021 and 17850 via Costa Rica in SS at 1911. (Charlton, ON)

SUDAN—Republic of Sudan Radio, 7200 at 0338 with man in AA and flute music. (Strawman, IA) 0341 with woman in AA and time pips heard at 0400. (D'Angelo, PA)

SWAZILAND—Trans World Radio, 4775 heard at 0428 sign on with usual IS, man with EE ID and a canned religious program. (D'Angelo, PA)

SWEDEN—Radio Sweden Int., 6010 via Canada with area weather and into Swedish. (Maxant, WV) 15240 at 1246, //15380 and 15735. Their schedule shows this North America xmsn is from Sweden—all others are via Canada. (Fraser, ME) 1426 via Canada in Swedish. (Charlton, ON)

SWITZERLAND—Radio Reveil, 15675 via Germany in FF at 1851. (Charlton, ON)

SYRIA—Radio Damascus, 12085 in FF to Western Europe at 1954. (DeGennaro, NY)

TAIWAN—Radio Taiwan Int., 17750 via Okeechobee in CC heard at 1952. (Charlton, ON)

WYFR, 9280 via Taiwan in CC at 1219. (Brossell, WI)

The pirate station Radio Bunny-WBNY e-mailed this QSL to Rich D'Angelo.

THAILAND—Radio Thailand, 5890 via Greenville at 0031. (Charlton, ON)

VOA Relay 13775 in CC at 2257 and 13790 in CC at 2256. (MacKenzie, CA)

TUNISIA—RT Tunisienne, 7275 in AA at 0440. (Clapshaw, WA) 11950 in AA at 0118. (DeGennaro, NY) 12005 in AA at 0208. (Brossell, WI)

TURKEY—Voice of Turkey, 9830 in EE heard at 2236. (Charlton, ON) 11850 in FF at 2019. (DeGennaro, NY) 15450 with news items at 1231. (Brossell, WI) 1310 in EE with Turkish music. (Strawman, IA)

UKRAINE—Radio Ukraine, 7440 in UU at 2339 and 7490 in GG at 2325. (DeGennaro, NY)

UNITED ARAB EMIRATES—Adventist World Radio 11975.1 at 0314 with religious talks in Tigrinya, EE ID at 0330 and into Amharic. (D'Angelo, PA)

UNITED STATES—AFN/AFRTS, Key West, 7811u heard at 2341. (DeGennaro, NY)

United Nations Radio, 17810 via Ascension at 1741 with interview of an East Timor official. (Charlton, ON)

Family Radio/WYFR, 15165 via Rampisham in AA at 1904. (Jeffery, NY)

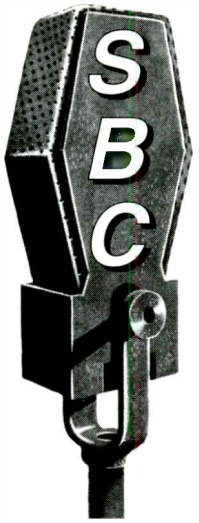
VATICAN—Vatican Radio, 6210 via Russia in RR at 1240. (Brossell, WI) 7305 in SS at 0225 and into FF at 0230. Also 12055 in Malayan at 0155, into EE at 0200. (MacKenzie, CA) 7305 at 0250 and 9660 at 0510 (Maxant, WV) 9610 in PP at 0036. (DeGennaro, NY)

And that's wrap! An avalanche of thanks to the following who checked in this time: William Hassig, Mt. Prospect, IL; Charles Maxant, Hinton and Barboursville, WV; George Zeller, Cleveland, OH; Dave Jeffery, Niagara Falls, NY; Joe Wood, Greenback, TN; Jerry Strawman, Des Moines, IA; Bob Fraser, Belfast, ME; Robert Charlton, Windsor, ON; Bruce Burrow, Snoqualmie, WA; Stewart MacKenzie, Huntington Beach, CA; Robert Brossell, Pewaukee, WI; Arnold Zeck, Bayberry, NY: Rick Barton, Phoenix, AZ; Mike Clapshaw, Port Angeles, WA, Rich D'Angelo, Wyomissing, PA; Cero DeGennaro, Feura Bush, NY; and Mark Taylor, Madison, WI. Kudos to each one of you!

Until next month—good listening! ■

by Shannon Huniwell, melodyfm@dreamscape.com

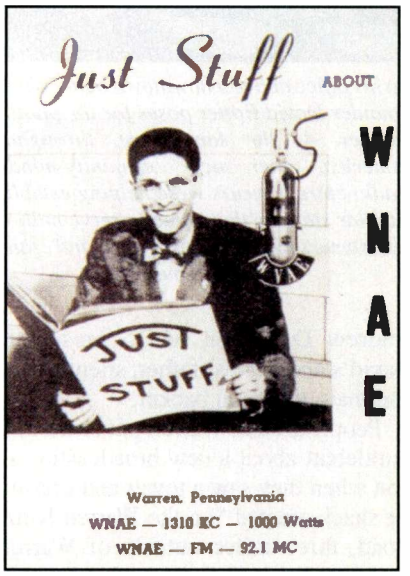
"Percolator" Stations And Decaffeinated Short-Form Syndicated Programming



"I'd better warn you!" *Broadcast Pro-File's* Jan Lowry advised, "That little Pennsylvania AM that you asked about is one of those "percolators" with almost no paper trail to research. It's really not very exciting." Jan was referring to WNAE of Warren. He'd assigned it to his so-called "percolator" section because, since 1946, the station has simply been percolating throughout a folksy portion of northwestern Keystone State airwaves without a whole lot of documented fanfare or change.

In fact, WNAE would never have been on my radar screen had not somebody in Montana come across a tiny WNAE promotional booklet and offered it on eBay. Apparently, WNAE wasn't on too many eBay shoppers' minds, either, as my initial—and admittedly rather measly—bid was the pamphlet's sole suitor. After mailing the very modest check to the seller, I again contacted Jan (at 28243 Royal Road, Castaic, CA 91384-3028) to confirm an order for a WNAE *Pro-File*. He'd already spent several hours pouring through his broadcast history company's voluminously overflowing file cabinets and bookshelves with the hope of culling at least a page of WNAE information.

"That old daytimer must have truly been minding its own business!" Jan exclaimed. "Besides a power increase, a short move to a new transmitter site, and a couple of ownership changes, WNAE has been remarkably steady." Though Jan should have known I'd have been wonderfully pleased with whatever he could muster up about WNAE, his mailing to me also included several other Pro-Files he hoped "would prove more exciting."



LeRoy Schneck joined WNAE in 1946 as its first program director. Pictured three years later on the cover of this station publicity booklet, he looked very much at home in the Warren AM's live studio. Schneck stayed with WNAE for decades and became its owner in the mid-1970s. WNAE-FM is listed at its initial dial position of 92. 1 megacycles. Interestingly, while 1 kW is proudly attributed to WNAE-AM, no FM power is specified.

So What's So Bad About A Perky Little "Percolator" Radio Station?

From my perspective, nothing at all. At last April's National Association of Broadcasters convention I got to chatting with a gentleman and his wife who own three small market stations, each 1000 watts or less. The couple seemed quite surprised about my interest in their enterprises, and looked at each other incredulously when I took out my reporter's notebook. "Tell me about your stations," I invited, my pen poised to jot down every detail.

"Well," they admitted with a bit of a drawl, "There's really not much of anything to tell. We've got a nice audience, loyal employees, and enough advertisers to have paid the bills and put our two kids through college—and one of them through medical school." Two of the couple's facilities had debuted in the early 1960s and the third a decade later. None had ever changed calls, dial position, or transmitter locale. Except for the fact that some satellite-delivered, long-form network talk programming (like *The O'Reilly Factor)* is now mixed in with the stations' innocuous music, local news, several short-form (less than 15 minutes) syndicated programs, weather, and sports, anyone familiar with their "hometown service" format 30 years ago would probably quickly recognize it as "about the same and just as good" today.

"Gosh, I guess we are pretty old-fashioned on the air!" the Pop in that Mom & Pop operation proffered. "Heck, we still broadcast "Pet Patrol" alerts five times daily." Those of us who live in an area covered by good local radio can appreciate that such constancy is a community service radio station's biggest value to the listener—especially the type of listener who's glad to hear the "Pet Patrol" announcer say that the kid down the street just got reunited with her runaway puppy.

WNAE, A Steady Voice Any True Broadcaster Would Be Proud To Own

My passport-sized WNAE booklet suggests that one David Potter got the idea to found a community-minded Warren radio station sometime in 1945. It's likely, though, that no official request was tendered at the Federal Communications Commission at least until World War II's August 1945 conclusion. In any event, the paperwork resulted in Potter's organization, The Northern Allegheny Broadcasting Company, getting an FCC Standard Broadcast Station Construction Permit on July 25, 1946. The authorization was good for 1000 watts daytime power on the assigned carrier frequency of 1310 kilocycles.

Potter gave another nod to the nearby northern section of the Allegheny River by naming his project, WNAE. Company directors included David Potter; his brother James, the "sales manager"; chief engineer, Homer Haines; LeRoy Schneck; and

In his office above a downtown bank, WNAE founder David Potter poses for the photographer. At the same time, throughout America, other such community-minded radio entrepreneurs were helping establish similar stations that came to serve millions of listeners in almost every nook and cranny of our country.

Andrew D. Potter, M.D., presumably David's and James' father, silent partner, and main financial backer.

People around Warren put stock in the scuttlebutt about a new broadcasting station when they saw a tower and transmitter shack erected "on the Warren Kinzua Road, three miles outside of Warren's business district." Back in the day when "downtown" was still the heart of most small communities, situating a radio studio in a centrally located bank building provided a note of status conferral. In keeping with that tradition, Potter installed his AM above the Warren First National Bank headquarters at 310 Second Avenue. WNAE's debut came three days after Christmas 1946. From the start, Potter employed W. LeRoy Schneck to oversee programming, which was local fare aimed at making those in WNAE's footprint feel proud to be from the Warren area.

To continue this outreach after sunset, Northern Allegheny Broadcasting put a sister FM facility on the air in late winter 1948. Schneck used this WNAE-FM for high school sports coverage and the continuation of shows that he would have run on WNAE, had the sun not set. Though it's doubtful that FM radio households came close to equaling the number with AM sets, WNAE-FM offered early frequency modulation "adopters" live, as well as recorded, fare. For example, a 1949 program guide lists in-studio performances of "Dance Rhythms by the Ford Winner Trio over WNAE-FM, Sundays at 10:30 p.m." Mutual network content, such as "Gabriel Heatter and the News" (daily, 10:00 p.m.) and "The Roy Rogers Show" (Sunday, 6 p.m.), that would have otherwise been missed by daytime AM audiences of a daytime-only AM outlet was proudly fed over the fledgling FM.

I'm missing a bit of this station's data from 1949 to 1951, but it appears that WNAE-FM started at 92.1 megacycles with a few hundred watts (perhaps at the AM tower site), and then by 1952 had been renamed WRRN-FM and moved to 92.3 mc (and likely to a new transmitter site) where it ran 3.4 kW with an antenna at 450 feet above the average terrain. WRRN-FM had been boosted up to 26,000 watts by the end of the 1960s.

I found it charming that the circa 1949/1950 WNAE booklet devoted several pages to say, "the folks who built, own, and operate WNAE are grateful for the welcome reception the station has received. They feel at home in Warren where they have bought six homes and have had eight children born since the station started three years ago." Of course, those were the baby boom days when it was considered extremely patriotic, fashionable, and industrious to be home regularly enough to practice "good" Catholicism or a "passionate" Protestantism.

To prove the point, a cute picture of five young women and seven kid—captioned, "Wives of station personnel with children born to staff families since WNAE went on the air"—was shot in a WNAE studio. Presumably the eighth baby mentioned in the booklet's copy was so new that he or she and the related mommy hadn't debuted in time for the publicity photo session. Whatever the gestation scenario, one can assume that WNAE management didn't require its staff to be thinking only about radio night and day.

Obstetrics aside, throughout the 1950s, only a few changes affected WNAE. The Mutual Broadcasting System network affiliation Potter had secured in 1946 was quietly dropped five years later when long-form network drama, soap operas, and comedy offerings began sounding like old time radio and cut into Schneck's ability to program WNAE in a decidedly local fashion. An FCC application requesting more transmitter power passed muster for a significant jump from 1 to 5 kW in early 1958. The improvement necessitated a new transmitter and tower site, which was installed "off Mohawk Avenue, south of Warren."

Jan Lowry says WNAE did some nice percolating through the 1960s and shied away from anything but the hometown spotlight until Thanksgiving 1974, when the Commission approved David Potter's application to sell the station (and related FM). Rather than let them go to some outside buyer, though, Potter decided that longtime WNAE program director W. LeRoy Schneck, under the name Kinzua Broadcasting Company, should purchase the Warren radio properties for $570,000. Two years after the transaction was finalized, WNAE listings described its programming as "adult contemporary music and local news," not too far from the spirit of its original fare.

Over a decade and a half flew by before radio observers distant from Warren, Pennsylvania, noticed WNAE again. And all they saw was an FCC okay for Schneck to keep his AM on the air after dark with 94 watts, a respectable post-sunset authorization in a milieu where some stations were only getting licensed for 4 or 5 watts.

By the way, a couple of years after this change, another longtime staff member, David Whipple earned a promotion to vice president and station manager. He helped with the transition when Kinzua Broadcasting sold WNAE (along with its FM and another area frequency modulation outlet) to locally oriented Iorio Broadcasting, Inc. Keeping with the longevity tradition, Whipple is still managing WNAE—from the same address where the station began happily percolating some 60 years ago.

How To Get Cappuccino From A Little "Coffee Pot" Station

Remember that couple I met at the NAB convention? When I asked them about what a typical day sounded like on their small market AMs, they got to reminiscing about all of the short-form syndicated shows they aired in an effort to make the stations sound bigger than would otherwise be possible with a staff of two or three. "Didn't all that outside programming cost you quite a bit?" I wondered. At that, they looked at each other and chuckled, "Oh we were big spenders all right! In fact our budget allowed us to run anything that someone would send us *for free*."

Strangely enough, Herman Munster came to mind when I requested an example of the quality of stuff one could receive and air without charge. They recalled a daily, four-and-a-half-minute show called "Hometalk" in which Fred Gwynne—of Munster fame—and former NBC *Today* host, Betsy Palmer, chatted about household hints and ways to make beautiful, but

Announcer Pete Mesner reads some listener mail during his "Your Neighbor" show. The publicity still gives a good look at WNAE's studio/control room circa 1950. Note the 16-inch electric transcription on the turntable. There's one on the other turntable, too. It's likely that the "cut" or "track" Mesner has cued up is his program's closing theme. Other WNAE offerings of this era include a husband and wife hosted "gossip" show; farm interviews by the local agricultural extension agent; "Listen Ladies," a housewife information segment; a local crooner vocalizing "Songs We Like To Sing;" an organist playing the station's Hammond; a daily "Fashion Show of the Air;" Warren high school students with their own radio show; and educational programs broadcast to area classrooms.

easy, home improvements. Always conveniently worked into the conversation were ways to use Armstrong brand flooring and ceiling tiles. Stations got "Hometalk" gratis because Armstrong paid the advertising agency that produced/distributed the shows.

"We ran that one for years at 8:45 every weekday morning," my new radio friends remembered, "and always made a few bucks on each episode by airing—right after the program's opening sounder—a :30 second commercial for a local hardware store that sold Armstrong home improvement products."

They continued,

Funny thing was, more than a few listeners asked us what Fred Gwynne was really like and were rather miffed when we admitted to never actually having met him. Our morning announcer had a folksy way of introducing the syndicated show that apparently gave some people the false impression that Fred and Betsy sometimes took the show on the road and occasionally did the broadcast from our station. Once I heard our DJ heard say, just before pushing the "play" button, that, just for fun this particular morning, Fred was wearing the Munster coat and shoes, but wouldn't go so far as to stick on the little neck electrodes.

The mischievous announcer also described a completely fabricated instance of Betsy Palmer playfully taking out her lipstick and drawing a characteristic Munster scar on Fred's forehead.

Radio Syndication's Start

Loosely defined and chronicled, radio syndication—the process of a non-network entity providing recorded programming for stations to transmit—began with Reginald Fessenden's Christmas Eve 1906 airing of phonograph records. Of course, the record company had no prior knowledge that its product would be distributed over what is typically considered the world's first radio (voice/music) broadcast, but the event set the stage for anybody with the wherewithal for recording something saleable to offer the resulting transcription to any number of stations via the U.S. mail. It was an effective method of audio distribution to radio stations without having to take out a bank loan in order to lease broadcast quality telephone lines to reach them.

In *The Encyclopedia of Radio*, journalism professor Barbara Moore confirms that "the first syndicated radio program is credited to Freeman Gosden and Charles Correll, the creators of *Amos 'n' Andy*." She notes that the duo's 1928 deal with the *Chicago Daily News* and co-owned WMAQ allowed Gosden and Correll "to record their program [presumably electrically transcribed as it was simultaneously being broadcast over WMAQ] and sell it to other stations" for subsequent airing. Moore cites some 30 stations being mailed the show in 1928 prior to it officially *going network* on NBC during the following year.

Sixteen-inch diameter electrical transcription (E-T) discs were the cat's meow during this dawn of syndication. They were easily breakable, though, could get scratchy while being played at 78 rpm, and tracked from the inside (near the label) out. During the late 1940s, smoother sounding 33.3-rpm, 12-inch long-playing record "albums" became the syndicator's standard and were continued, by some program providers, into the 1990s.

Reel-to-reel tape was a favorite of syndication companies without the means to press quantities of records. This late 1950s through the early 1980s format is frequently associated with the term "bicycle tape network," because syndicators often instructed stations to turn the tape

Engineers Dick Gilson, W.C. Gladd, and Bud Boyd (who looks like he's fielding a call from the FCC!) all working towards keeping WNAE AM/FM technically legal. Not shown is Chief Engineer Homer Haines, who oversaw station construction. Imagine a small market facility—or even a medium market cluster of a half-dozen signals—today having the fulltime services of four technicians!

mailing box inside out, affix an enclosed label on it, and either send it back to the syndicator or on to the next station slated to get the program.

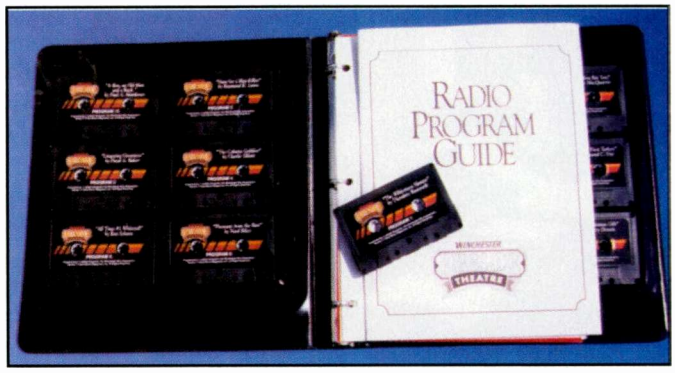
When, by the 1980s, cassette tapes shook off their reputation for lacking fidelity, being too slow (1-7/8 inches per second, as compared with 7.5 or 15 inches per second for reel-to-reel), and too persnickety for professional use, they quickly bypassed their heavier and more expensive to mail reel-to-reel counterparts. And, just as fast, lighter and cheap to "burn" compact discs made cassette distribution of syndicated radio fare obsolete during the mid 1990s. A decade earlier, satellite-based audio delivery had broken the phone company's hold on (predominantly network) radio distribution. But our topic centers upon programs primarily from short-form providers that catered to the small and medium market stations attracted to inexpensive fare that wouldn't impact the bottom line if not sponsored by a local advertiser.

The Non-Network Paul Harvey

No one would deny that heartland radio's biggest star has long been ABC's Paul Harvey of "News & Comment" and "The Rest of the Story" fame. Many hometown station owners have paid for phone line interconnect charges and run a full schedule of ABC network commercials just to be able to air Harvey's rather brief broadcasts, daily segments that local advertisers literally beg to support.

Those without Paul Harvey on their air, though, were often anxious to acquire the rights to run a syndicated short-form

You'd think that a station with two nicely crowned microphones on heavy-duty stands would use something more expensive looking than hastily ripped masking tape to mount its "mobile broadcasting station" sign. Then again, maybe the impromptu display (from the late 1940s) telegraphed a brand of informal flexibility needed in covering a diverse range of local events. In addition to having personnel on the road, WNAE handled news reporting at the main studio in Warren, as well as via correspondents working in Youngsville, Sheffield, and Kane, communities approximately 10, 12, and 25 miles (respectively) from the station's city of license. Each journalist delivered newscasts devoted to his or her particular beat.



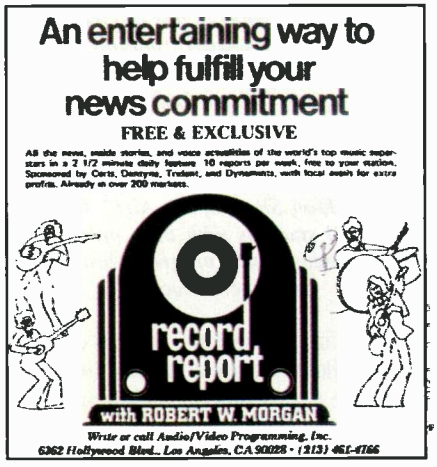
Though made up of half-hour programs, consequently not considered "short form," Winchester Arms Company's "Fireside Theatre" series was offered free to any station that would air it with the integral rifle commercials positioned in several "stop sets," or advertising breaks. The 1982 show package was sent to stations in a three-ring binder that held 12 episodes of drama, general instructions, audio promos, cue sheets, and print advertising mats for promoting the programs in the local paper or shopper weekly, often a co-owned enterprise of the radio station.

show called "Our Changing World with Earl Nightingale. A survivor of the Pearl Harbor bombing and a late 1940s radio actor (as rancher/pilot Sky King), Nightingale had a program on Chicago's WGN over which he offered motivational themes. By 1959, he produced a syndicated version that soon ran on hundreds of stations. His deep, rich, grandfatherly voice became a staple on millions of radios, mostly in small-town America where Nightingale's "you can do it if you try" brand of bootstrap/determination admonition rang especially true.

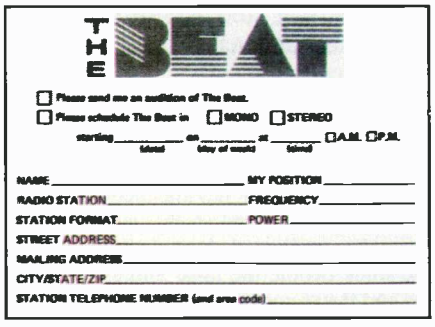
"Our Changing World" was not free, but most station managers found that community-minded individuals (like doctors, bankers, lawyers, or even funeral home directors) jumped at the chance to tastefully advertise on a program they felt was a cut above the hoopla and levity of other radio content available for sponsorship. Nightingale's show lasted for over four decades, and was still running on some stations—fully subscribed with local advertising—several years after his 1989 passing. In fact, the couple at the NAB convention told me that, into the mid-1990s, one of their AMs sprang for (it was the only "paid" show they bought) and ran "Our Changing World" twice daily because both banks in town were more than willing to pay the freight and then some to keep the positive outlook series on air as long as possible.

By way of contrast, lots of short-form syndicated radio programs never reached the heights of Nightingale's classic or even Herman Munster's, ummm Fred Gwynne's, "Hometalk." One of my father's radio buddies, who operated a 500-watt AM out west, told Dad about the cadre of gratis programs he subscribed to, mostly to get free recording tape to later use in the production room! He, too, aired "Hometalk" and some similar household hints show with *Brady Bunch* mom Florence Henderson.

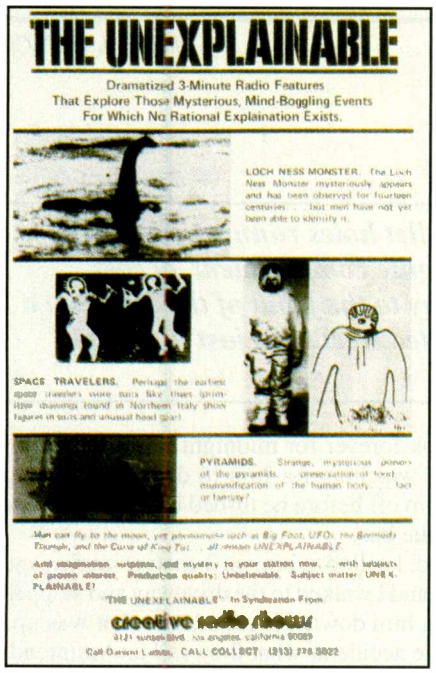
The one that made Dad's friend really laugh, though, was a very short-lived, short-form series called "UFO Journal." Reportedly, it was produced on three-for-$1 Shamrock brand cassette tapes, typically (during the 1970s, anyway) marketed in plastic bags near the check out counter at K-Mart. The tapes had lopsided labels bearing the producer's address (an apartment someplace in rural New Jersey) and included ten, 5-minute interviews with people who'd either seen a flying saucer or had been abducted by aliens. The jarring, tinny "beep, beep, beep"



This 1976 ad in a radio magazine pitched the "Record Report," a 2 1/2-minute segment, 10 times weekly, hosted by famed KHJ Los Angeles air personality Robert W. Morgan. Sponsored by Certs, Dentyne, Trident, and Dynamints (plus a second pause so a local spot could inserted) "Record Report" consisted of "all the news, inside stories, and voice actualities of the world's top music superstars." Reportedly, it was aired in over 200 media markets. Prior to massive FCC deregulation, every radio station was required to air news. To help stations—especially little ones with one or two person news departments—meet their informational commitment, outfits like Audio/Video Programming, Inc., produced short infotainment"-style shows covering topics like music, automotive trends, health, and consumer tips.



Among the most prolific "free radio program" providers were the Southern Baptists. Through their Radio & Television Commission, the Fort Worth, Texas-based denomination produced some of the most listened to weekly half-hour radio shows in the post World War II period. Examples include the Top-40 music formatted "Powerline," "MasterControl" with a middle-of-the-road/adult contemporary flavor, and "Country Crossroads," hosted by legendary C&W DJ Bill Mack. One could say that God sponsored the programs, as a Christian message of hope was gently woven into each high-quality segment.



What small market station owner could resist airing a little intrigue in the form of this three-minute daily show that "explores those mysterious, mind-boggling events for which no rational explanation exists?" Besides being fun, short-form syndicated programs such as "The Unexplainable," promoted via fuzzy ads in a mid-1970s magazine targeting radio station program directors, were usually easy to sell to local sponsors who believed in flying saucers!

1957 code pattern of Sputnik served as that series' opening and closing sounders.

After airing 20 episodes and securing local sponsorship (from a guy whose principal business was selling $2 bundles of firewood to campers), the tapes stopped coming. Apparently, the firewood man wasn't very disappointed, but several callers to the station's combination classified ads/public affairs show ("Tradio/Talk Back") warned that the "UFO Journal's" host probably hadn't had time to leave a paper trail and was likely the victim of Martian foul play.

Till Next Time

We hope you enjoyed this cup of percolator nostalgia. Make sure to join us again next time for another trip into radio's past. And so ends another day of broadcast history on *Pop'Comm*... *"Beep, beep, beep..."* ■

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by Bill Price, N3AVY

Paleface Norm

It's always a cause for celebration when Norm comes to visit, and this was no exception. Norm brought his new babe-magnet Jeep, towed behind "the bus." Driving the bus meant he didn't have to sleep on my new inflatable bed with the not-so-slow leak. Instead, he sawed wood in the bus, while parked by the woodpile, near the cows.

And where other RVs might have saunas or hot-tubs, this one has a comm center. Where most people install a generator on their RV for creature comforts, Norm's generators' first duty is to provide communication with the world. It powers a 100-watt HF station on what Norm calls "all the useful bands," as well as two 2-meter rigs, a CB, and a scanner.

So we played with the radios and rode around town for a day or two, but on Saturday Norm had to take a day trip to visit a relative who lives a few hours from here. I would home. And that's when the most devious idea hit me.

I actually know a person with a Class III federal firearms license, or whatever it's called, that allows a person to own a full-automatic weapon, what you would commonly call a "machine gun." I told Norm that if he'd spring for about 500 rounds of ammunition for this thing I'd see if I could talk this person into bringing it out to the farm for a little demonstration, since we have plenty of room to shoot. The truth is, I don't know the person well enough to ask him to do that, but it did set the stage for the rest of my plan.

Norm gave me about $200 to pay for some ammunition for the thing, which I told him would be a classic "tommy gun." I had not really expected Norm to part with that kind of money, but he let the moths out of his wallet because, like so many others, he wanted his one chance to play G.I. Joe, just like in the movies. I tucked the money in my wallet as he left to visit cousin whatzisname in Maryland, and told him we'd get to shoot the tommy gun the next afternoon.

Because I live on a farm, I have access to a large, powerful air compressor, so I had no apprehension about letting the air out of all five tires on the right side of Norm's bus. The bus listed beautifully to starboard, as I had hoped it would.

I had bought the bullet hole decals a couple years ago. I never quite knew what I would do with them, but they were about as realistic as I'd ever seen, and I knew I'd have a chance to enjoy them someday. That day was quickly approaching.

After I power-washed the bus, I thought out exactly where I would place a string of bullet holes that would best simulate a machine gun gone awry. The line I made went straight across the tires, which were convincingly flat. To top off the effect, I put a few on a small shed just in front of the bus. I will forever kick myself for not taking pictures of this event.

At about 2:00 that afternoon, I called Norm on a local repeater and he answered right away.

"Hey, the guy's here with the tommy gun. He can't leave it here, but we're gonna shoot a magazine full now and he'll come back tomorrow so you can blast some Communists or tree stumps or whatever gets in your way," I told him.

"Fine business," he told me. "Just make sure the cows get out of the way. I'll be out there about midnight tonight. See you then."

"There were 28 bullet holes running from the side of the rear engine compartment, across the tires, all the way to the front of the bus, and a few in the corrugated steel shed just in front of the bus."

We signed off. It took forever for midnight to roll around. I sat on the front porch, watching for him to drive up the long lane, so I could head him off before he turned behind the house and his headlights hit the bus.

Eventually, he arrived. I called to him on 2-meter simplex and told him to slow down, and I walked to the driveway and stepped in front of him, waving him down. He asked me what was up.

"Look, we had a little accident, what they call an 'unintended discharge.' A couple of bullets hit the bus."

His normally pale skin went to pure white. He gunned the Jeep past me and drove around to the back of the house and stopped with his high beams aimed at the side of the bus and got out quickly and just stood there. I stood next to him, admiring my work. I have to say, it looked pretty convincing in that light.

There were 28 bullet holes running from the side of the rear engine compartment, across the tires, all the way to the front of the bus, and a few in the corrugated steel shed just in front of the bus. One of the windows in the shed had been shattered, but he didn't realized it had been that way for years. It only added to the effect. Norm uttered what might be construed as a small prayer. He did not walk closer to the bus, which I thought was great. I kept my mouth shut because I didn't think I could speak convincingly enough.

"Do you know what those tires are gonna cost me?" he asked. I said nothing. "And that aluminum on the side of the bus—you can't just put body putty on those holes—the aluminum panels have to be replaced!" Still, I said nothing.

"And that's where my radio equipment is located!"

"Geeze, Norm, I'm awful sorry. I'm sure I can get you a deal on some used tires. C'mon, let's take a look at those holes. There must be a way to patch them," I said. We walked toward the bus.

He first felt the tires at the back. Yet another religious statement crossed his lips as he reached for the nearest bullet hole to put his finger into it. He got a strange look on his face as his finger would not enter the hole, no matter how hard he pressed.

"You son of a..."

I handed him his $200 back.

"There was no guy with the tommy gun. I'm sorry. Really. Dinner's on me tomorrow. You pick the place," I said.

"How we gonna get the tires pumped up?" he asked.

"I'll take care of it."

I don't believe he ever did anything like this to me in all the years I've known him, but somehow I think he will soon try. I am concerned that his effort might include some high voltage or similar discharge. He made me leave the bullet holes on the side of the bus. He said they added an "air of intrigue" to an otherwise ordinary motor home. I had to agree. ■

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DA3000: a 16 element receive wideband discone antenna with useable frequency coverage from 25MHz to 2GHz. Using different length elements to ensure true wideband characteristics, the DA3000 also includes one 'loaded' element to enhance low frequency performance. Engineered and manufactured to AOR's exacting standards, the DA3000 comes with 50 feet of quality RG58/U coaxial cable terminated in a BNC plug for the radio connection and a low-loss TNC plug in the antenna base. Pole clamps are also standard.

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LA380

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The **TV5000A NTSC TV Internal Converter** adds the ability to receive broadcast television signals (NTSC) and allow monitoring video feeds from a variety of sources including broadcast TV channels, public safety agencies, aircraft, Amateur Radio FSTV, news media video and more when used with AOR AR5000A series of communications receivers.

TVA-1 External NTSC TV Converter

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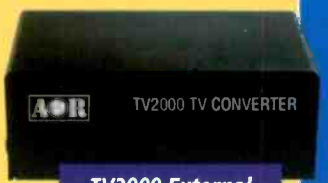

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The **TV2000 External NTSC Video Decoder** is designed to be used with the AOR SR2000. Compact and lightweight, no external power supply is required (power is supplied from the SR2000). The video output is available from the rear panel of the TV2000 and audio is provided from the SR2000 through the external speaker jack.

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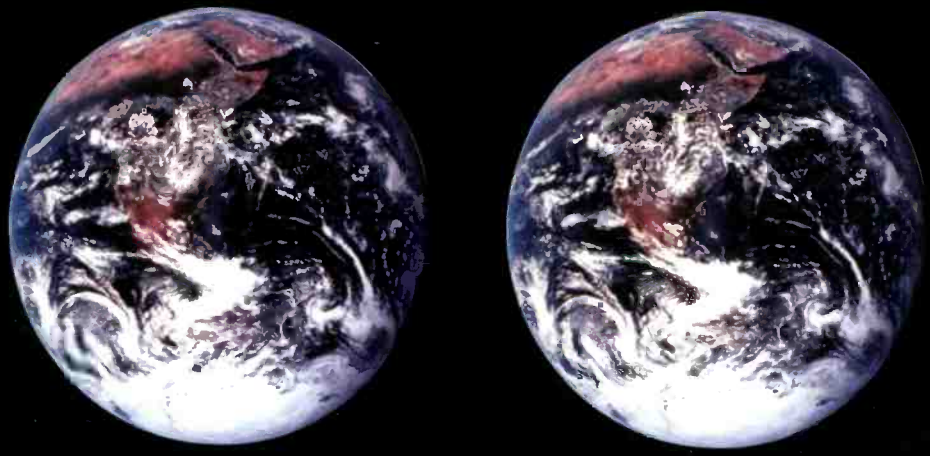

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