

45635

# POPULAR COMMUNICATIONS

DECEMBER 2005

## Under The Gun:

### The Truth Behind The Technology!

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Are You Ready?** pg. 18
- **Tech Showcase: Uniden's  
Bearcat BC-246T Scanner** pg. 46

**Santa  
Has What  
YOU Want!  
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**POLICE**

**RED BANK**

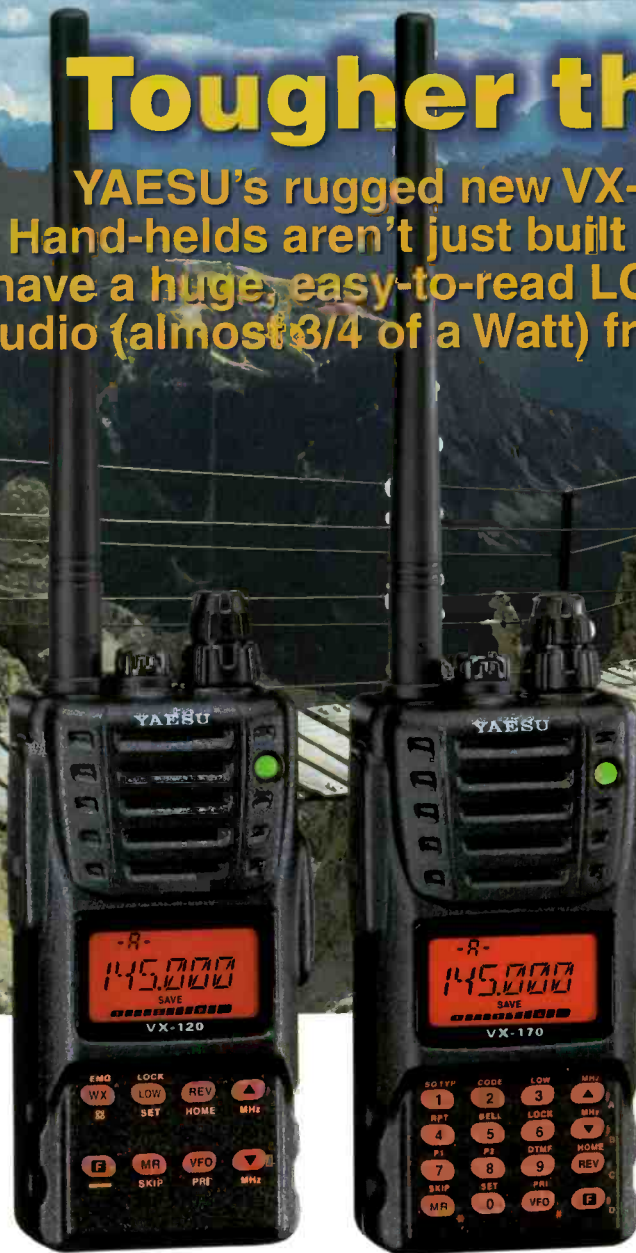
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YAESU's rugged new VX-120/170 Series of 2-meter Hand-helds aren't just built tough. They're submersible, have a huge, easy-to-read LCD, and they provide big, bold audio (almost 3/4 of a Watt) from the huge internal speaker!



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5 W Heavy Duty  
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5 W Heavy Duty  
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Ultra-Rugged  
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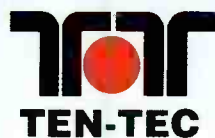
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Order #0340 \$3950.00



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**NEW!**

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## On The Cover

Gotcha! Lieutenant Darren McConnell of the Red Bank, NJ Police Department takes aim, but will he really snag you with that gun? Wherever you travel this holiday season, drive safely, and bring along this issue of *Pop'Comm* with Alan Dixon's article, "Radar-Based Hazard, Alerting And The Evolving Telematics Scene," beginning on page 8. As Alan said, "Before you buy a radar detector, you've got to read this!" (Photo by Harold Ort, N2RLL)

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# Tap into secret Shortwave Signals

Turn mysterious signals into exciting text messages with the MFJ MultiReader™!

Plug this self-contained MFJ MultiReader™ into your shortwave receiver's earphone jack.

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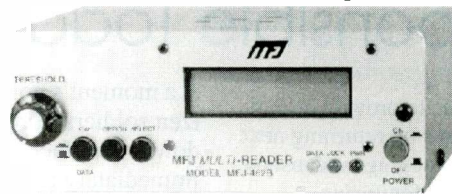
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"World Radio TV Handbook" says

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

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Rival outside

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Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as a preselector with external antenna. Covers 0.3-30 MHz. Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

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# So, Who Is Responsible Today?

*Editor's Note:* Writer Allan Stern was unable to provide his column this month due to health issues. He plans on returning next month with a multitude of his usual excellent loggings and insight into the fascinating world of *Military Radio Monitoring*.

In an intelligent, thinking America *everyone* should be asking hard questions about what happened in the Gulf coast. Today the Gulf, tomorrow Wichita, Fort Worth, Chicago, or Your Hometown.

For the survivors of Hurricane Katrina, reeling from the collective failures of numerous persons and agencies to appropriately respond to the disaster, this will certainly be a holiday season to remember, and in many ways a special time to be thankful. Our hearts, thoughts, and prayers are with them all. We also take this moment to wish our readers and their families a happy, joyous holiday season.

As most of us realize, Katrina and the storm's aftereffects will be with us for a long, long time. I do believe it's important to stop, sit back, and think for a moment about what happened and, yes, hold people and agencies accountable up and down the proverbial chain.

It's very easy and convenient not to listen to all sides of the story when rewinding the Katrina videotape. When gathering the facts and adding some common sense about the situation, there are some amazingly sophomoric statements that most intelligent, caring people would *not* consider uttering, but because some folks speak, *then* think, I've actually read things like, "Well, if they didn't evacuate when told to, it's their own fault." Or, "You can't expect the feds to do what the cities and states should do."

Fact is most people *did* evacuate when told to do so. Sure, there were those who didn't—and many who *couldn't*, with many of them through no fault of their own. How do you tell the 80-year-old invalid in a nursing home or hospital to get off the wheelchair and move out? How do folks without a vehicle simply "evacuate"? Of course, they don't. So obviously the responsibility for such actions is borne directly by those with the proper assets to handle the situation. That would, in most instances, be the federal government, with proper advance coordination with the state and local governments.

Take a look at Mississippi, a fairly poor state with a population of about 2.8 million people. Louisiana isn't much different with about 4.4 million residents. Both are largely dependent on the feds, as are other states, for emergency aid during such a crisis.

The fact that aid took *days* to materialize is inexcusable and shameful, especially in the post-9/11 world, a world in which we've all been told *repeatedly* by those charged with our protection to be ready for the next "attack." If those charged with our protection can't collectively get it right when forewarned about an "attack" that was following a predicted path across Florida, into the Gulf of Mexico, and then northward toward the coast, it's pretty clear that this tragedy will be repeated. Obviously, as I've said before, when it comes right down to the nitty-gritty, it's up to Americans to help our neighbors, because you just can't depend on Uncle Sam. It's sad, isn't it?

What we *can* always depend on, though, as we have for many years, is our nation's amateur radio operators, REACT teams, and other volunteers who are *always* ready to jump in

at a moment's notice wherever disaster strikes. They're our citizen soldiers of the air, always prepared, and they never let us down. The fact is many were ready to go to the Gulf Coast immediately and had to be told to hold off because there was virtually no way in or out and no essential services for emergency responders or even medical teams. But to the hams' credit, they were standing tall and on the ball—much more so than their own government.

## Asleep At The Switch

Despite the fact that grade school kids know that New Orleans sits below sea level in a hurricane-prone area, and despite the fact that this year *in particular* was forecast by NOAA to be one of the most severe hurricane seasons in years, the system failed miserably. That just doesn't make me feel very proud or patriotic. Clearly, the beleaguered former FEMA head, Michael Brown, wasn't the only one asleep at the switch.

I'm puzzled, though. Isn't it interesting that President ("Brownie, you're doing a heck of a job") Bush was pleased as punch one day, and then Brown quit a couple of days later amid a firestorm of criticism? Kinda makes—or should make—you wonder about the degree of understanding about disaster preparedness at high levels of government, and whether inter-agency communication is up to par. Clearly, on both counts, there is a serious deficiency.

It's not all Brown's fault, either. It's been widely reported that Homeland Security Secretary Chertoff was warned that focusing FEMA's resources on terrorism instead of on the traditional natural disaster scenarios was harming the agency's readiness. There's enough blame to go around, even at the state and local levels. We've all read about the appalling lack of cooperation and coordination between the various responding agencies and, in some instances, the downright refusal of one agency to take charge until *asked* to do so; meanwhile people were dying.

You know, we Americans are indeed a strange lot, getting oh-so-upset and wrapped around the proverbial axle when it comes to things that *really* don't amount to a hill of beans in our little corner of the world. The harping on the sexual escapades of presidents comes immediately to mind, as does an *actual law* prohibiting monitoring of cell phones, not to mention verbally chastising *our troops* for contacting their parents, elected officials, and the media (including *Pop'Comm*) when the Pentagon hasn't provided them with two-way radios. And, as if that isn't enough insanity, there are those who think it's patriotic to label Americans who publicly challenge or question our leaders' actions on those things that *do* matter as "unpatriotic."

Much of how we think and do business is very seriously wrong. Thank God this wasn't a nuclear attack from the "axis of evil" or other renegade group. If Katrina is any indicator, a *single* ICBM with only three or four warheads would put us into the dark ages. If you still think it couldn't happen today, you're living in la-la land. Chances are you're also watching *Scooby-Doo* and drinking a beer!

Back to reality: Most Americans *are* a caring, thinking lot. Whether it's radio-toting volunteers providing essential communications, diners taking up collections or servers donating their tips for hurricane victims, or concerned families and cit-



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- Computer control capability.
- Optional wideband converter unit enables reception of 30 MHz to 2,000 MHz frequencies (less cellular) in all modes.



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For a few moments, let's revisit what happened and examine some of the possible causes for the catastrophic failure in the Gulf.

## Taking Stock

A while back the current Administration saw fit to create a new Cabinet-level department, the Department of Homeland Security, which just over a year ago released its National Response Plan. Stated in the preface of that plan was a laudable goal, "The end result is vastly improved coordination among federal, state, local and tribal organizations to help save lives and protect America's communities by increasing the speed, effectiveness and efficiency of incident management."

Note that the plan doesn't differentiate between acts of terrorism or natural disasters; it's about the bureaucracy getting its act together to help people. Period. Remember the massive communications failures on 9/11 when firefighters in the World Trade Center lobby couldn't talk to their brothers upstairs? If you think everything is hunkey-dory and that sad situation has been corrected, think again.

I'm not sure—having frequently seen various limp bureaucracies up close and personal for many years—that a new multi-bazillion dollar department was ever needed. Matter of fact, I'm sure it wasn't. As we've said before, simply requiring folks to do their jobs and holding them accountable to performance standards would be a lot less expensive and far more effective. What a concept!

Ironically, FEMA became part of the Department of Homeland Security in 2003, two years after 9/11. And those charged with your protection at all levels—state, local, and federal—are still unable to communicate on those high-tech multi-million dollar radio systems. Yet in an emergency, you and I can talk across the county via 2-meter radio, or MURS, or even locally on FRS!

Of course, along with FEMA's absorption into the Department of Homeland Security came an increase in FEMA's budget. Even so (wouldn't you know it) two years later, and four years after the findings of the 9/11 Commission, FEMA's new interoperable state-of-the-art radio system failed when it was needed most, as did cell phone and public safety comms. But you and I knew that the infra-

structure would crumble; after all, Katrina was a massive Category 5 hurricane.

I actually heard with my own ears Director Chertoff say in a news conference, "That 'perfect storm' of a combination of catastrophes exceeded the foresight of the planners, and maybe anybody's foresight," calling the storm, "breathtaking in its surprise."

My question is, if hams and other radio volunteers could see it coming and weren't "surprised" and were ready days before the storm made landfall near New Orleans, why couldn't Chertoff? Given that fact alone, and the fact that FEMA, in many instances, according to local and state officials, actually turned away fuel trucks and Red Cross assistance, Chertoff should also resign and give the job to someone who can understand and write a comprehensive Standard Operating Procedure plan and implement it, no questions asked—even if the FEMA chief has stepped aside. That's how it works; the emergency system is supposed to continue on in the absence of a director because of that SOP! Perhaps both he and Brown could attend the next REACT convention and speak to the group on how *not* to implement a disaster plan.

For Heaven's sake, we're not talking about a kid operating a lemonade stand or some fellow giving you the wrong change at K-Mart—this is life-saving business that went wrong and there are no excuses.

The levees failed (although both Director Chertoff and the President said the levee failures could not be foreseen), buildings designated as safe shelters failed, the evacuation plan failed, inter-agency communication ordering help to the area failed, training federal and state workers failed, and the National Guard and Reserves failed (through no fault of their own, but obviously because these typically home-based troops aren't home).

In speaking of the deaths and destruction from Hurricane Katrina, I actually heard Chertoff tell Fox News, "...it is going to be about as ugly a scene as I think you can imagine." Really, Sherlock? I'll bet fourth graders could deduce that glimpse into the obvious.

So, patriotic Americans, we have a couple of choices. We can nod in zombie-like unison and take the Preparation-Not medicine, or reject the business-as-usual, post-Katrina PR and excuses, and demand answers. It's that simple. No new department needed—just blend in some common sense and mix! But it will take some work on our part, in the form of letter writing, phone calls, and being truly patriotic. Now is the time to take a stand.

(Continued on page 72)

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CQ Communications, Inc.  
25 Newbridge Road  
Hicksville, NY 11801-2953 USA

Offices: 25 Newbridge Rd., Hicksville, NY 11801, Telephone 516-681-2922; Fax 516-681-2926. Web site: www.popular-communications.com.

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The ATS-909 is the flagship of the Sangean line. It packs features and performance into a very compact and stylish package. Coverage includes all long wave, medium wave and shortwave frequencies. FM and FM stereo to the headphone jack is also available. Shortwave performance is enhanced with a wide-narrow bandwidth switch and excellent single side band performance. Five tuning methods are featured: keypad, auto scan, manual up-down, memory recall or tuning knob. The alphanumeric memory lets you store 306 presets. The three event clock-timer displays even when the radio is tuning and has 42 world city zones. The large backlit LCD also features a signal strength and battery bar graph. The ATS-909 will display RDS on PL, PS and CT for station name and clock time in areas where this service is available. Also features a record jack and tone switch. Includes AC power adapter, carry case, stereo ear buds and Sangean ANT-60 roll-up antenna. 8 1/2"x5 1/2"x1 1/2" 2 Lbs. Requires four AA cells (not supplied). For a limited time you will receive a **free Sangean SR-25V AM/FM/VHF-TV radio** plus the 321 page *Shortwave Listening Guidebook* by Harry Helms. #1909 **\$239.95**

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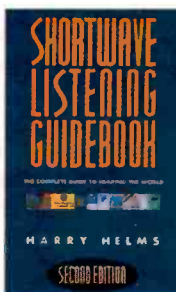
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# Radar-Based Hazard Alerting And The Evolving Telematics Scene

**Before You Buy A Radar Detector, You've Got To Read This...**

by Alan Dixon, N3HOE/WPUC720/KST8678

Time really flies in the world of cutting-edge technical developments, and this is especially true in the world of *telematics*. It's been nearly a year since we've seen an article on telematics here in the pages of *Pop'Comm*, and several years since we've taken a look at radar-based hazard alerting technology and speed radar countermeasures.

Remember what telematics is? "Telematics" is a fairly new, and now universally accepted, term used to describe all of the collective electronics systems in motor vehicles involving communication, navigation, and artificial intelligence.

## The Safety Warning System

I first examined the radar spectrum-based Safety Warning System (SWS) in the July 2002 issue of *Pop'Comm*, in "On-The-Go Radio," back when I was producing that column (which is now in the very capable hands of veteran columnist Jack Elliott). So much has developed in the realm of radar detectors and associated safety alerting receivers since that time, however! As it turned out, shortly after that column was written in early 2002, four major developments in this field have occurred: one, perhaps the most recent, appears to be market-related; two are technological evolutions; and the third is the result of a regulatory development that at first looked to be bad, but has turned out to be a blessing of sorts, in disguise.

First, though, let's review the traffic speed radar and laser lidar (light detection and ranging) bands. If you already own, or if you have been shopping for, a radar detector, then you already know that there are *three* microwave bands currently in use for police traffic radar. These are, in order of their evolution, the original X band, followed by the Kq or K1 band (which became more simply known as K band), and more recently, the Ka band (see **Table 1**).

This may be just a bit confusing, since the Ka band is a subset of the broader K band. Nonetheless, if a radar detector manufacturer claims that the unit covers the X and K bands only, you should presume that it would *not* cover the Ka band. While this may seem deceptive, it is simply a matter of convention that has developed over time. As it turns out, back when the FCC authorized the Kq band in addition to the original X band, no one could have foreseen that another portion of the K band would eventually be authorized for police radar in the future. If



*One good choice is one of the Cobra Electronics XRS 9700 series radar/laser and Safety Alert telematics receivers. This unit offers radar and laser speed detection alerts on all bands, POP-mode "undetectability" detection, and alerting of both VG-2 and Spectre I Radar Detector-Detectors—all in addition to Safety Alert message reception.*

*(Photo courtesy of N3HOE.)*

this had been anticipated, the Kq band would no doubt have been specifically labeled as such.

## SWS: What It Is And Does

Here's a quick overview at what SWS technology is and what it does. As originally noted way back in that July 2002 article, it was SWS functionality that ushered radar detectors full scale toward the telematics concept. An SWS receiver is truly both an artificial intelligence device and a digital communications receiver.

This system was designed to give specific advisory messages to motorists by means of four-bit binary codes sent by SWS transmitters, up to a total of 64 possible messages. A microprocessor in most late model radar detectors can receive the Frequency Shift Keying (FSK) digital message and use a ROM



**Table 1. Radar Bands**

BAND	FREQUENCIES
X Band	10.525 GHz $\pm$ 25 MHz
K <sub>q</sub> or K <sub>1</sub> Band (K Band)	24.150 GHz $\pm$ 100 MHz
K <sub>a</sub> Band	33.4-36.0 GHz
Safety Warning System	24.100 $\pm$ 25 MHz ( 6.002 MHz occupied bandwidth)
Safety Alert	24.070, 24.110, 24.190 , 24.230 GHz
Strobe Alert	300-770 THz
Laser	300-375 THz ( 910 nm $\pm$ 50 nm wavelength)
LTI 20-20	300-375 THz
ProLaser	300-375 THz
Ultralyte Laser	300-375 THz
VG-2 RDD	11.4-11.7 GHz
Spectre Mark I & II RDD	$\sim$ 11-15 GHz
Spectre Mark III RDD	$\sim$ 10-25 GHz

MHz = Megahertz  
GHz = Gigahertz  
THz = Terahertz  
nm = Nanometer

database lookup table to translate the message into either text or synthesized speech emulation for a spoken alert to the driver. Some radar detectors built in recent years use RISC (an acronym for reduced instruction set computer) chips, the same microprocessors that have been used in professional-grade UNIX computer workstations.

The really good news was that the SWS had a measure of backward compatibility with older Kq band (“K” band) radar detectors not equipped for SWS operation. While these non-SWS detectors would not provide any specific text or spoken SWS alerts, they would nevertheless activate in the normal fashion, bringing the driver’s attention to some sort of road hazard nearby. SWS has been probably the most inexpensive upgrade to digital telematics that a motorist could make. In fact, to this day, even if you have a newer vehicle with a factory-equipped embedded telematics system, you probably don’t have SWS functionality or any similar radar spectrum-based warning system.

There is, and has been for some time however, one notable competing radar-based telematics technology on the market as well. Cobra Electronics Corporation’s proprietary Safety Alert Traffic Warning System also transmits emergency warning messages to radar-based receivers for a graphic, text, or voice presentation, much as SWS does (see Table 2). There are substantial differences between these two systems, though. While both technologies operate in the Kq speed

radar band, actual signaling methods differ. But, the Safety Alert System (SAS) is not a new development. It has been on the market for several years now.

According to Cobra product literature, SAS transmitters send various alert messages that are distinguished by the *frequency* of the signal emitted. This stands in stark contrast to the previously mentioned SWS’s binary code signaling method. In any case, all such Safety Alert signals fall within the standard Kq traffic radar band. This in-band signaling enables all conventional radar detectors with Kq band coverage to receive these warning signals as standard radar alerts. Here again, the SAS affords valuable backward compatibility with earlier Kq band radar detectors not already SAS operation-enabled. While these non-Safety Alert detectors are obviously not capable of providing any graphic or spoken Safety Alerts, they would still activate in the conventional manner, bringing the driver’s attention, again, to the possibility of a potential road hazard in the vicinity.

### **SAS Vs. SWS: Your Choice?**

The SAS offers only three alert messages to motorists, however. SAS designers clearly had something elegantly simple in mind in engineering their technology. Rather than numerous text signals with specific messages, SAS keeps drivers’ eyes on the road by acknowledging a hazardous situation within proximity and giving a simple graphic, such as two

words of text and a simple audio alert like a horn sound or a high/low siren.

Depending upon receiver design, graphics could also be shown as a trumpet horn icon, a railroad crossing “X” sign icon, or the universal ball-bat (exclamation point) in a triangle alert icon. These graphics and sound bites are easily and effortlessly learned by drivers so as to be instantly recognized with minimal, if any, distraction from the road ahead. Compare this with having to read and mentally digest a line of scrolling text, “Road Closed Ahead/Follow Detour.” As a consumer and motorist, you ought to have your choice among the two still-new technologies here: flawless simplicity or specific sophistication.

### **Growing Pains?**

But not every fledgling technology that sees the light of day is guaranteed to succeed in the marketplace. So, how is the SWS concept doing in the marketplace after several years? Apparently, not all that well. The SWS SafetyRadar website is now defunct, as is the Safety Warning System, LLC, site. And the radar detector manufacturers we contacted in following up on SWS were entirely mum on the technology.

So, *if* present observations are correct and *if* no other corporation or organization picks up the SWS “ball” and runs with it, that technology *could* become a dying thing over the next several years. Those concerned with this more recent market-related development should watch the radar detector and telematics sector carefully.

In any case, availability and, therefore, the almost inevitable proliferation of Safety Alert transmitters and receivers appears to continue apace, being a viable, marketable technology. So, in choosing a radar detector for its telematics alerting functionality, which system should you opt for? I don’t pretend to see into the future, particularly when the present situation is so murky, so I can’t answer that question for you. But, in selecting an

**Table 2. Safety Alert Warning Messages**

Emergency Vehicle	(In Motion)
Train Approaching	(Crossing)
Road Hazard	(Stationary)
***	(Reserved)



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- Stereo line-level audio inputs and outputs and external antenna connections
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- Headphone jack
- Built-In Antenna: telescopic antenna for AM, FM and Shortwave reception
- External Antenna Connection for the addition of auxiliary antennas
- Calibrated LCD signal strength meter
- Power Source: 4 "D" Batteries (not included); AC Adapter (included)
- Dimensions: 13"W x 7-1/2"H x 2-1/2"D
- Weight: 4 lb 3 oz.



## E5 \$150\*

### AM/FM/Shortwave Radio

The E5 is the world's leading multi-band and Single Side Band (SSB) enabled radio, uniting performance and mobility into one compact unit, and bringing the power of local and world radio into the palm of your hand.

#### Features

- \_ FM-Stereo, AM and full-Shortwave coverage (1711-29999 KHz)
- \_ PLL dual conversion AM/SW circuitry with SSB
- \_ 700 programmable memory presets with memory scan and auto tuning storage (ATS)
- \_ Clock, sleep timer and alarm functions with world zone settings
- \_ Tunes via auto-scan, manual-scan, direct key-in entry and tuning knob
- \_ Internally recharges Ni-MH batteries
- \_ Station name input
- \_ Dimensions: 6-5/8"W x 4-1/8"H x 1-1/8"D
- \_ Weight: 12.2 oz.

Features are subject to change

## E10 \$130\*

### AM/FM/Shortwave Radio

Intelligence meets performance in the E10. With 550 programmable memories, manual and auto scan, precision tuning and alarm clock features, the E10 provides the sophisticated tools for listening to news, sports, and music from around the world. The E10 even allows internal recharging of its Ni-MH batteries (charger and batteries included). With excellent AM, FM, and Shortwave reception, intermediate frequency shift and shortwave antenna trimmer—the E10 gives you the performance you want with the digital ease you deserve.

#### Features

- \_ Shortwave range of 1711 – 29,999 KHz
- \_ 550 programmable memories with memory page customization
- \_ Manual and auto scan, direct keypad frequency entry, ATS
- \_ Clock with alarm, sleep timer, and snooze functions
- \_ Earphones
- \_ Supplementary wire antenna
- \_ Power Source: 4 AA Batteries (included) or AC Adapter/Charger (included)
- \_ Dimensions: 7-1/2"W x 4-1/2"H x 1-1/2"D
- \_ Weight: 1 lb. 1oz.

## E100 \$100\*

### AM/FM/Shortwave Radio

The E100 fits full-sized features into your palm or pocket. This little marvel is packed with all the latest radio features you want: digital tuning, 200 programmable memories, digital clock and alarm, plus AM/FM and Shortwave reception. And, it is small enough to fit in your coat pocket.

#### Features

- \_ Shortwave range of 1711 – 29,999 KHz
- \_ 200 programmable memories
- \_ Memory page customization
- \_ Manual and auto scan, direct keypad frequency entry
- \_ Earphones
- \_ Power Source: 2 AA Batteries (included) or AC Adapter (not included)
- \_ Dimensions: 5"W x 3"H x 1-1/4"D
- \_ Weight: 7 oz.



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upgraded radar detector for my own personal use, I can tell you that I did in fact give up my SWS detector for a Safety Alert-enabled model. That was my personal choice, but there are a couple of other very significant factors to consider when choosing a radar detector, and my own selection considered numerous aspects carefully.

These factors concern the two technological developments coming to light here in *Pop'Comm* since our aforementioned telematics radar detector article was written. One is the advent of higher technology detectors that can sense the new police radar guns using something called "POP" technology.

MPH Industries has been manufacturing its Bee III radar since 1999, with its main advantage over other police radar apparatus being its reputed undetectability by radar detectors on the market up to that time and in the years immediately following. This has been accomplished by a transmitted pulse of as little as ~67 milliseconds (ms). The problem for radar detectors is that most, and quite possibly all, had receiver gate times of about 200 to 300 ms. Taking into consideration the fact that popular design radar detectors sweep (scan) a large chunk of spectrum in the given band (Ka) we can easily see that the probability of a detector intercepting and recognizing the incident signal is minimal.

### How Good , Or Bad, Are Detectors?

Using such short burst times can cause problems with overall accuracy, though. Depending upon how it's applied, this sort of short-burst technology could at best result in a limited number of tightly dispersed tracking intervals over what is an extremely limited sampling period. Such an isolated timing sample or a short, rapid set of samples in an instant of time cannot likely establish a tracking timeline of *statistical significance*, and for what it is worth forensically, *effectively* ignores acceleration and deceleration factors.

The radar transceiver (gun) must be absolutely stationary during the burst duty cycle, or if it were to be used in a moving configuration, the sustained speeds of both the transceiver and the target—even for mere milliseconds—would have to be clocked

with laboratory-grade accuracy, factoring in any acceleration or deceleration, at least on the part of the transceiver station.

Not surprisingly then, industry reports tell us that POP-mode is not expected to stand up in court. The manufacturer, MPH Industries, recommends that officers get a "tracking history" of alleged speed violators by operating the radar transceiver in the conventional mode after using POP-mode to determine that a given vehicle is in fact speeding. MPH acknowledges that this is because most speed radar case law is based on tracking a vehicle by standard, accepted radar operation. So, while MPH Industries asserts that readings obtained in POP-mode are "accurate and reliable," they concede that such tracking may not be upheld in court under case law scrutiny.

**"Not surprisingly then, industry reports tell us that POP-mode is not expected to stand up in court."**

### New Detectors: They "See" POP-Mode Signals

The related development of interest then is a new generation of radar detectors that can now "see" POP-mode signals and will appropriately alarm drivers. POP-mode detection is not a feature offered on all new detectors, but you can look for this valuable protection in the more expensive radar detector products. You may get away with your negligent speeding on a citation based only on a POP-mode observation, but do you really want to bet a hefty fine and even costlier penalty points on it? If I happen to become careless, I would rather take an alert as the friendly reminder that it ought to be: to watch my speed and to adjust it appropriately.

The other technological development of note here is closely intertwined with the one regulatory development to be discussed in this article. This basically comes down to radar detector *undetectability*.

### VG-2: The Cops Are "Listening," Too!

For some years, the "godfather" of radar detector-detectors, the venerable Interceptor VG-2, has used leakage from motorists' radar detectors Intermediate Frequency (IF)-stage local oscillators to sense the presence of any nearby detectors. Technisonic Industries, Ltd., had years earlier developed their pioneering prototype radar detector-detector (RDD) unit, identified as the VG-1 for testing purposes (the mysterious letters "V" and "G" turn out to be initials of the engineers who designed the product). After some early testing with Canada's Ontario Provincial Police had been concluded, a production model, known as the VG-2, was made available to law enforcement agencies.

It wasn't too many years after the introduction of the VG-2, however, that radar detector manufacturers added a similar feature in subsequent products that detected the presence of the VG-2 itself in exactly the same manner: by detecting IF-stage local oscillator leakage! These newer radar detectors would then instantly and automatically shut down their own local oscillators and alert drivers to the imminent threat. Subsequently, radar detector designers added supplementary countermeasures by using nonstandard IF frequencies (that is, other than ~11.55 GHz) or by using sweeping local oscillators, constantly changing the IF frequency.



But, contrary to what you may have read by Internet bloggers, the VG-2 is still in limited production for particular jurisdictions and is used primarily to find radar detectors at close range, in prohibited commercial vehicles.

### Forget About VG-3— It Doesn't Exist

Given this, you still need a radar detector offering protection from the VG-2. So, what about an updated VG-3 version? Here again, contrary to certain Web postings, possibly originating from unscrupulous sources' claims, there never was a VG-3. And Technisonic tells *Pop Comm* that, in essence, there are no plans to design or manufacture any newer RDD products.

Then, just a few years back, a relatively new Australian company called Stealth Microsystems Pty., Ltd., introduced its renamed Stalcar radar detector-detector into the United States under its North American name, Spectre RDD. In early testing, the Spectre prototypes reputedly detected "all" of the pre-FCC certification (see "The Need To Be "Invisible"—Again") radar detectors of that time. This was accomplished by sweeping a broad swath of spectrum in the 11- to 15-GHz range, looking for the now nonstandard IF frequencies of the newer radar detectors. To those of us with any amount of RF expertise, one solution to this detection problem is painfully obvious: RF-shield and isolate the local oscillator and, if practical, reduce IF power levels. Did no one ever think of this? The FCC eventually did.

Quite a number of gasoline service stations throughout the country use satellite Very Small Aperture Terminals (VSATs) to receive sales data from franchise and dealer national or regional offices. These VSAT downlinks operate in the 11.7- to 12.2-GHz frequency band, right where newer radar detector IF stages function. Since many service stations mount their VSAT antennas on the island canopies just above the fuel pumps, leaky detector local oscillators were on occasion causing interference to VSAT comms. When the FCC received complaints about this situation, action was unusually swift and certain.

### The FCC's Part 15 Rules Come Into Play

In ET Docket 01-278, the FCC's First Report and Order (FCC 02-211) on very

short notice required all radar detectors manufactured or imported into the United States after mid-2002 to be FCC-certificated under Part 15 rules. And this certification Order henceforth required that such new radar detectors be brought into compliance with already-established Part 15 radiated emission limits for unintentional radiators. (Existing radar detectors in use prior to that time remain unaffected by this new rule.) When this ruling was first proposed, some felt that it was a thinly disguised step toward outlawing radar detectors. But that was not the case. As it turned out, this regulatory development finally gave radar detector manufacturers a real incentive—indeed, a mandate—to clean up their dirty IF stages.

### The Need To Be "Invisible"—Again

And cleaning up local oscillator leakage played right into the then-concurrent need to once again make detectors "invisible." The radar detector industry has responded with redesigned products offering substantial new immunity from detection, as well as a reduced probability of interfering with other communications.

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The higher-end models may variously extend protection against the original Spectre Mark I RDD as well as the newer Spectre Mark II and Mark III series.

According to Stealth Microsystems, the first-generation Spectre RDD, the Mark I, was designed to sniff out pre-FCC certification radar detectors. That is, those detectors sold prior to mid-2002. The Mark II version was developed to combat the earlier FCC-certificated radar detectors, those sold sometime after mid-2002 (look for an FCC authorization number on the product).

A number of later model FCC-certificated radar detectors began using higher IF frequencies for Ka band conversion, from ~15 GHz up to near 24 GHz. And so the Mark III Spectre was developed to cover this expanded IF frequency range. Consequently, Stealth Microsystems claims that its Mark III Spectre finds "all models" of radar detectors FCC-certificated "to December 2004."

### Check The Specs!

Check radar detector product specifications for any given model to get a feel for the level of security available against eavesdropping RDDs. (Note: If a radar

detector claims Spectre III immunity or detection for example, do not *presume* that it will also be immune to, or will detect, Spectre I and/or II. Read specifications carefully.)

Also, when considering radar detector specifications, be sure not to confuse a detector's *immunity* (also called "invisibility" or "cloaking") characteristics with its RDD *detection* capabilities. For example, a radar detector that offers a Spectre I detection alert feature most likely will alert drivers to the presence of a Spectre I RDD, but may offer *no* protection against being discovered by that RDD; that is, unless this radar detector also offers Spectre I immunity from detection by a cloaking technology that renders it "invisible" to the subject RDD.

Radar detector equipment is now *approved* by the FCC (FCC 1st R&O 02-211), and radar detection with safety alerting receiver operation has been federally *endorsed* by the U.S. Department of Transportation since 1998 (TEA-21, P.L. 105-178) for private passenger vehicle use. Lawful, federally approved use of radar detector alerting receivers by private citizens clearly deserves communications security from overzealous eavesdropping state and local officials. Likewise, users of

these federally approved devices also deserve protection from anti-radar detector statutes and ordinances that run counter to stated federal objectives.

### Buying A Detector: What Should You Look For?

This brings us up to the point of getting to know what to look for in selecting a radar detector alerting receiver. With most products, it is customarily advisable to read any product reviews available prior to making a purchase. However in the case of radar detector telematics, you may do better by relying primarily on manufacturer specifications and claims.

There are several Websites, some well known, proffering product evaluations and consumer advice about radar detectors. Most are not worth the bandwidth they consume. I suppose that true scientific method assessment, with double-blind, controlled testing and peer review, is a bit much to ask of these side-by-side product comparisons. But I would expect at least reporting of results according to standard statistical practices, particularly in regard to establishing statistical significance, from any testing entity billing itself as a "laboratory." All such test reports that I've seen depended upon empirical testing.

Although it's tough to question such real-world results, you want to be wary of any such test reporting that makes overuse of superlatives and metaphors, and that overindulges in witty, sarcastic, or irrelevant remarks. And you've really got to wonder about testing and technical evaluations produced by racecar drivers with no engineering background evident.

If you are going to consider product reviews, look for testing conducted, tabulated, or supervised by an engineer who is FCC-licensed (since RF is federal jurisdiction) and is FCC-certified in radar. Avoid test reports littered with idle speculation. And look for assessments that you feel are impartial, if you can find them. Above all, when making your choice of a radar spectrum-based telematics device, carefully consider all of the aspects we have given you right here, as well as any other pertinent points you may discover in the process. Use your own good judgment and consider not only what the information you are collecting says, but also the various sources of your data. Stay safe, and enjoy motoring! ■

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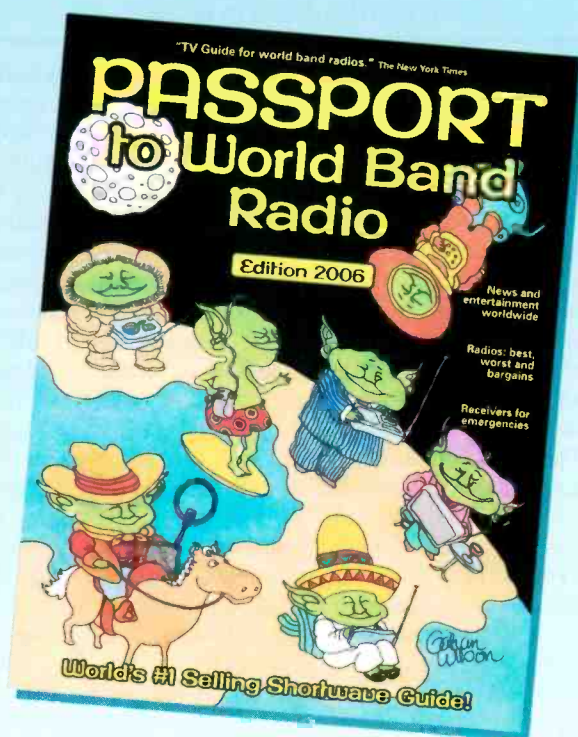
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# News, Trends, And Short Takes

## All India Radio To Vacate 90-meter Shortwave Band

All India Radio is going to vacate the 90-meter band altogether in favor of 60 meters for domestic shortwave services. This means Shimla on 3223 kHz, Bhopal on 3315 kHz, Delhi on 3365 kHz, and Gangtok on 3390 kHz will soon move onto the 60-meter band. It is expected that there will be some adjustments on the present 60-meter band usage by All India Radio.

## Australian Broadcasting Corporation Gives Thumbs Down To BPL

The Australian Broadcasting Corporation strongly believes Broadband over Power Lines (BPL) should not interfere with existing and future radiocommunication services. The ABC, in a submission to the Australian Communications Authority, expressed fear that BPL interference is highly likely in some circumstances to annihilate broadcasting services. Australia's national broadcaster said the evidence available to it indicates that BPL is highly likely to interfere with existing broadcasting transmissions. It said that permitted emission levels under all existing and proposed BPL standards would be of sufficient level to cause interference and loss of service to broadcasting signals in rural areas and, under worst case conditions, in suburban areas.

The ABC submission to the ACA discussion paper on the Management of Interference from Broadband over Power Line Applications also noted that BPL interference with broadcasting services could potentially disrupt emergency information broadcasts. They said it has the potential to affect Digital Radio Mondiale services currently being considered as a way of delivering digital radio to rural and regional Australia. The ABC described it as a major concern for HF broadcasting, and said that the BPL emissions are likely to propagate via the ionosphere and have the potential to interfere with receivers thousands of kilometers away.

## Hutt River Province Plans Shortwave Broadcasts

The Hutt River Province Principality, a self-proclaimed independent territory on Australia's mainland, has announced plans to begin shortwave broadcasts and also to seek amateur radio DXCC entity status. Located just north of Geraldton, Western Australia, it claimed self-government 35 years ago and survives on a tourist-based economy. The Australian Government does not recognize its claim of independence.

Hutt River Province Director-General, Ministry of Electronic Communications, Eddie DeYoung has announced plans to set up a shortwave broadcast station, possibly to be called Hutt River Radio. He says its programs will be primarily replays of old radio drama shows, music from yesteryear, and readings from the world's newspapers for print-handi-

capped listeners. It will also provide time-slots to non-government humanitarian aid organizations.

DeYoung says that Hutt River Province is trying to gain United Nations recognition, which would in turn enable the International Telecommunications Union (ITU) to issue it with a block of radio callsigns.

## New Ultra-low Profile Antenna For Sirius Satellite Radio

U.S. broadcaster Sirius Satellite Radio and Sirenza Microdevices announced they are introducing a small, ultra-low profile, high-performance antenna for Sirius that is the thinnest ever produced for satellite radio. The new disc-shaped antenna has been designed by Sirenza to optimally receive and amplify digital signals from Sirius's satellites and terrestrial repeaters. The antenna is magnetically mounted to the roof of vehicles, and is designed to operate with various Sirius radio receivers. The new Sirius ultra-low profile antenna from Sirenza will be available this summer with multiple Sirius portable "Plug & Play" radios and will also be sold separately.

## Indonesian Government Orders Radio To Sign Off To Save Power

Indonesia has ordered television and radio broadcasters to sign off for four hours every night as part of a government effort to save energy. The government stipulated that television and radio stations should not broadcast between 0100 and 0500 local time as a part of national energy-saving movement. The shutdown is effective immediately for a period of six months, but broadcasters will be allowed to start programs at 0300 during the Muslim holy month of Ramadan, when the faithful are required to fast from dawn till dusk. Indonesia has been wracked by fuel shortages, forcing some public transport operators to halt services. Several regions have experienced power cuts with consumption surpassing generating capacities.

## STAR Radio Liberia Launches Shortwave Broadcasts

STAR Radio Liberia has begun shortwave broadcasts aimed to reach the entire population of Liberia and its neighboring countries. The shortwave programming will initially be for three hours daily, with morning broadcasts at 0700 to 0900 UTC on 9525 kHz and evening broadcasts at 2100 to 2200 UTC on 11965 kHz.

STAR radio was reopened in May 2005 after having been forcibly closed down in March 2000 by then President Charles Taylor. It currently broadcasts for 17 hours a day, bringing news, current affairs, and a variety of feature programs to the people of Monrovia and its environs. STAR radio is a Liberian not-for-profit organization, operated in partnership with the Hirondelle Foundation, Media for Peace & Human Dignity, Switzerland. ■



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The handheld BCD396T scanner was designed for National Security/Emergency Preparedness (NS/EP) and homeland security use with new features such as **Fire Tone Out Decoder**. This feature lets you set the BCD396T to alert if your selected two-tone sequential paging tones are received. Ideal for on-call firefighters, emergency response staff and for activating individual scanners used for incident management and population attack warning. **Close Call Radio Frequency Capture** - Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. Useful for intelligence agencies for use at events where you don't have advance notice or knowledge of the radio communications systems and assets you need to intercept. The BCD396T scanner is designed to track Motorola Type I, Type II, Hybrid, SMARTNET, PRIVACY PLUS, LTR and EDACS® analog trunking systems on any band. Now, follow UHF High Band, UHF 800/900 MHz trunked public safety and public service systems just as if conventional two-way communications were used. **Dynamically Allocated Channel Memory** - The BCD396T scanner's memory is

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## Are You Ready—Yet?

This month's column was all wrapped up when along came Hurricane Katrina. If you remember a couple of months ago I indicated that a local meteorologist had told me that this year's hurricane predictions were dire, to say the least. Over the last few "Homeland Security" installments I had concentrated on developing a kit that you might need should a natural or manmade disaster happen in your area. Hurricane Katrina put all this into perspective.

In 1969 Hurricane Camille hit roughly the same area of the Gulf Coast. I'd been married to my first wife less than a year and we were stationed in Fuchu Air Station Japan at the time Camille came ashore at Gulfport, Mississippi. My wife's parents lived only six blocks off the beach in Gulfport. Information into and out of the hurricane disaster zone was almost nonexistent. At that time the Internet was not even conceived, cell phones didn't exist, and ham radio was one of the only reliable means of communications open to disaster relief teams and professional disaster mitigators. K5TYP, the Amateur Radio station at Keesler AFB, near Biloxi, Mississippi, was on the air shortly after Camille's arrival and provided some news of the devastation.

Red Cross and Salvation Army relief crews did a spectacular job of helping the victims of Camille. Via the Red Cross channels we found that my wife's family's house was totally gone, but her mom, dad, and brother were in good health and safe in a shelter. Imagine the relief!

Flash forward to September 2, 2005. After viewing the situation in New Orleans, Mobile, Biloxi, Gulfport, Pass Christian, Ocean Springs, and other areas in and around ground zero of Hurricane Katrina, my heart goes out to those people. Initially the flow of information out of the affected area was slim to none. It wasn't long, though, before ham nets were up and running; essentially the only communication from an area devastated by Mother Nature.

Initially, in checking with Field Services at ARRL Headquarters I was told that many of the SATERN (Salvation Army Team Emergency Radio Network) operators were currently involved with victim rescue support and not passing any health and welfare traffic on HF. This makes sense. ARRL President Jim Haney, W5JBP, has gone on record as telling the ham radio population in general to wait until we are tasked before

*This is my current jump kit consisting of a Yaesu FT-817 HF/VHF/UHF transceiver; an LDG Z-11 auto tuner for HF; an HF Packer Amp that will boost the 5-watt signal from the 817 up to about 40 watts; and a Mirage dual-band VHF/UHF amp for FM operations. Also included are two vertical antennas, an A-Trail Dipole for HF operation, tool kit, 200-channel scanner, 40-channel CB walkie-talkie, and various creature comforts for EmComm operations.*

striking out for the disaster zone. While thousands of hams were willing to drop what they were doing and head south to the New Orleans/Mobile/Gulfport area to support disaster relief operations, there were no specific tasks given by served agencies, so the best thing to do was sit tight, be ready to deploy, and wait.

That's the hard part for any EmComm volunteer: waiting. However, it was a necessity because some parts of the disaster area were extremely dangerous. Not only were the physical conditions extremely taxing and dangerous (many areas are *still* without potable water or food, the risk of contamination and disease is high, there is limited transportation, etc.), but at one point there was also the threat of armed looters who were reportedly shooting at police officers, rescue boats, and helicopters! The Fox News Network reported that some New Orleans police officers were turning in their badges, saying that it was too dangerous for them on the streets! In other words, things became *extremely dangerous* for those of us who would place ourselves on the front lines, endangering our lives to help mitigate this huge natural disaster.

### The Phases Of This Disaster

Hurricane Katrina has gone through a series of phases, not uncommon to many large scale disasters.

The actual hurricane itself—on a predicted track for days— for awhile packed Category 5 killer winds in excess of 165 mph; a Cat 4 at landfall, it destroyed buildings and infrastructure. While Hurricane Camille's winds were around 200 mph, it was a relatively small storm (in size) by comparison. Katrina was huge! This factor alone contributed to the millions of metric tons of water that inundated the New Orleans, Mobile, and Gulfport areas.

In no particular order, simply because of the sheer size of the storm, the area flooded, destroying homes and businesses,







Here is an FT-817/LDG Z-11 tuner combo in a Communications Outfitters pack complete with onboard HF antenna. This system can be carried with little effort and used as pedestrian mobile from almost anywhere.



Another version of a jump kit centering on the ultra versatile FT-817/LDG Z-11 tuner. This kit features a PAC-12 HF multiband dipole antenna, antenna alignment device, and internal battery and charger, all built into a tool box available from many home improvement stores. This is a very rugged jump kit that is ready to go on short notice.

especially in the low lands and *especially* New Orleans, which is below the surrounding water level and became inundated when the levies adjacent to the Crescent City failed.

While New Orleans and other coastal cities were evacuated, there were many problems since there were people who could not, or would not, leave, thinking that although hurricanes had plagued the Gulf before, New Orleans might be spared. This inevitably happens in any disaster, and is part of public safety and first responder training scenarios.

Prior to Katrina making landfall, the mayor of New Orleans actually declared the state of emergency and *ORDERED* the citizens of New Orleans to evacuate. Unfortunately, by that time, there was limited transportation available and thousands were unable to flee the city proper, being trapped in the "soup bowl." The Super Dome was turned into a hurricane shelter just prior to Katrina's arrival. Figures vary but around 30,000 plus evacuees were housed in the Super Dome during and immediately after the storm's passage.

The dynamics in each area are different. But with extremely limited police protection and the inability of law enforcement to rapidly respond to developing situations, those who had the guns made the rules. Guns, of course, were available at large department stores like Wal-Mart, sporting goods shops, gun shops, etc. With no one around to provide security at these stores, it was a simple matter for looters to pick up a few guns

and some ammo along with that much-needed new TV set, some GAP jeans, and that cute little DKNY sleeveless black dress on their way through the store!

Now you had a highly charged situation that could only get worse; the power was out, no one was in charge and chaos reigned. One Fox News crew reported that it was confronted by a large truck containing armed looters who were waving guns and threatening them. The news crew quickly scurried away after several shots rang out. The reporter was unsure that the shots were aimed at them, but they did not want to take any chances. Can't say as I blame them!

### Inside The Super Dome, And Beyond

How about the folks who fled to the Super Dome for security? A medical doctor was interviewed on one news program and stated that he pulled his people out after they had been accosted by armed evacuees (now how did they get those weapons into the shelter?) demanding drugs. For a while the Super Dome was turned into something less than a sanctuary. The Governor of Louisiana dispatched several thousand National Guardsmen to the city to help restore law and order.

With the tremendous flooding that took place in the wake of Katrina, fire department personnel were unable to respond to calls which led to building fires burning uncontrolled for hours. EMS responses were similarly hampered.

Repeated stories from evacuees told of elderly and medically needy citizens of the Crescent City dying for lack of insulin and other medications considered necessary for their day-to-day survival. Since there was extremely limited EMS/medical and police presence in the city, the bodies were left where they died, often covered over with only a rug, drape, or sheet. This only fueled the contamination of the flood waters with decomposing human remains.

The pictures of the aftermath of Hurricane Katrina are not pretty. But those folks who took the time to prepare for this killer hurricane undoubtedly had a much easier time of it than those who made no preparations at all.

Once again I remind the readers of this column that your survival and the well being of you and your loved ones is *your* responsibility. There was a long ramp-up time for Hurricane Katrina. When it became very evident that the storm would make landfall in or around the area between New Orleans and Mobile, the folks in those areas should have been on the road headed north or west ahead of the storm.

As long as we are talking about ramp-up time, the Fed's showing was certainly less than splendid. With all the advanced notice on this storm, given the size, predicted landfall, and given the expertise and resources at the National Hurricane Center and FEMA, the Fed should have prepositioned relief assets at various military installations in and around Katrina's path and been on-scene much quicker

# Re\_Inventing Radio through Design and Necessity



## FR250 \$50\* Multi-Purpose

Stay informed and prepared for emergencies with this self-powered 3-in-1 radio, flashlight and cell-phone charger — no batteries required.

- \_ AM/FM/Shortwave Radio Reception
- \_ Built-in power generator recharges the internal rechargeable Ni-MH battery (Included)

- \_ Cell-phone charger output jack 3.5mm (various cell phone plug tips included)
- \_ Built-in 2 white LED light source and one flashing red LED
- \_ Dimensions: 6-1/2"W x 6"H x 2-1/2"D
- \_ Weight: 1 lb. 3 oz.
- \_ Power Source: Built-In Rechargeable Ni-MH Battery Pack; 3 AA Batteries (not included); Crank power alone; AC Adapter (not included); AC Adapter recharges built-in Ni-MH battery pack



## FR200 \$40\* Crank it Up

Without the need for batteries, this self-powered 2-in-1 radio and flashlight helps you stay informed and prepared for emergencies.

- \_ AM/FM/Shortwave Radio Reception
- \_ Built-in power generator recharges the internal rechargeable Ni-MH battery (Included)

- \_ Built-in white LED light source
- \_ 12 international bands
- \_ Dimensions: 6-1/2"W x 5-3/4"H x 2-1/4"D
- \_ Weight: 1 lb. 2 oz.
- \_ Power Source: Built-In Rechargeable Ni-MH Battery Pack; 3 AA Batteries (not included); Crank power alone; AC Adapter (not included); AC Adapter recharges built-in Ni-MH battery pack
- \_ Available colors: Metallic Blue, Metallic Red, Sand



## FR300 \$50\*

All-In-One



This all-in-one unit offers functionality and versatility that makes it ideal for emergencies.

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- \_ Built-in power generator recharges the internal rechargeable Ni-MH battery (Included)
- \_ Can be powered from four different sources:
  1. The built-in rechargeable Ni-MH battery that takes charge from the dynamo crank and from an AC adapter (AC adapter not included)
  2. 3 AA batteries (Not included)
  3. The AC adapter alone (AC adapter not included)
  4. The dynamo crank alone, even with no battery pack installed
- \_ Cell-phone charger output jack 3.5mm (various cell phone plug tips included)
- \_ Built-in 2 white LED light source and one flashing red LED
- \_ Weather alert
- \_ Dimensions: 6-1/2"W x 6"H x 2-1/2"D
- \_ Weight: 1 lb. 3 oz.





## S350 Deluxe \$150\*

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- Available colors: Metallic Red, Black ■ ■

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than they were. We all know how the Fed likes to show up and take over the show, but they blew a perfectly good opportunity with Katrina and New Orleans. Too bad... another nail in the Administration's collective political coffin.

## Your Plan

Get that Jump Kit/Severe Weather Kit together **NOW!** Make plans with your family members in case there is an evacuation. Pre-plan escape routes away from your area, get maps and directions, **and be sure everyone knows where to rendezvous in order to get back together should your party become separated.** Take a first aid course; it could save your

life or that of a family member. Get trained in CPR. Make sure you have adequate radio gear, whether it's ham radio transceivers, FRS/GMRS gear, CB radio, whatever. Be sure it all *works*, that there are plenty of spare batteries, and that *everyone* in the family can use it!

Research your local Fire/PD/EMS/Public Service frequencies and load them into a couple of portable scanners. Keep the frequencies current and, again, be sure that everyone in your group can use the equipment. A properly employed scanner could save your life by alerting you to impending trouble/problems on your way out of the disaster area. Include a NOAA All Hazard Radio programmed with the local

SAME (Specific Area Message Encoding) frequencies. This will give you up-to-the-minute, spot-on information needed to ensure your safety and keep you ahead of storm developments.

If you are a ham radio operator and want to become involved in EmComm, **get trained!** Join a local ARES/RACES organization in your area and take the ARRL Emergency Communications courses (ARECC) on their website ([www.arrl.org](http://www.arrl.org)). Assemble your Jump Kit and be ready to deploy quickly in support of whichever served agency your local group supports. Be sure to read Kirk Kleinschmidt's article on page 23 for tips on how you can help!

Hurricane Katrina and the unfolding events of this disaster serve to reinforce the need for everyone to take responsibility for his or her own personal safety and make detailed preparations in the event of a large scale disaster and possible evacuation of the area. Although we talked previously about guns and lawlessness, I leave it to you to decide whether or not your Jump Kit/Evac-kit should include some type of weapon, up to and including a firearm.

Our country's Second Amendment guarantees all law-abiding Americans the right to keep and bear arms. However, firearms have their own special caveat. Firearms present a double-edged sword. While they can be a great comfort to you personally, and you can use them to protect yourself and family, they also have the potential to be taken *from* you and used against you. In any event, I doubt seriously that you will be allowed inside any shelter with a weapon, whether or not it is a firearm, a large knife, or a Louisville Slugger. That being said, I know my personal feelings on the matter and I do not intend to be a victim of any violence directed at me by lawless brigands bent upon my personal destruction.

Referring to the U.S. Marine Corps guide to gun fighting: "Never arrive at a gun fight with a pistol whose caliber does not start with a '4'!"

## Please Help

That's it for this installment of "Homeland Security." The victims of Hurricane Katrina need your help. Please contact your local Red Cross or Salvation Army and find out how you can provide assistance, including monetary assistance, to these folks.

As always, remember: Preparedness is not optional. ■

<p><b>TERRORISM FORCES US TO MAKE A CHOICE. WE CAN BE AFRAID. OR WE CAN BE READY.</b></p>	<div style="border: 2px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;"><b>READY</b></div> <p><b>WWW.READY.GOV</b> <b>1-800-BE-READY</b></p> 
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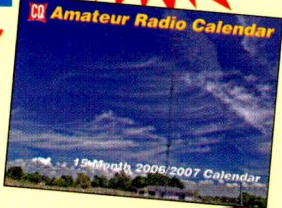
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# Public Service Comms: Needed Now More Than Ever

## *It's Our Duty To Help When Needed—Here's How*

by Kirk Kleinschmidt, NTØZ

If the recent deluge of worldwide natural disasters hasn't assured you that cell phones, non-ham personal communication devices, and even satellite data phones haven't made ham radio obsolete when it comes to providing public safety and disaster communications, I don't know what it would take!

During Hurricane Katrina, Rita, and the recent Asian tsunami, government and even military comm systems went down, and when they did, low-tech, grassroots ham operators, from within the affected area and from without, picked up the slack and performed their duty.

Yes, duty. It's not called the Amateur Radio Service for nothing, you know!

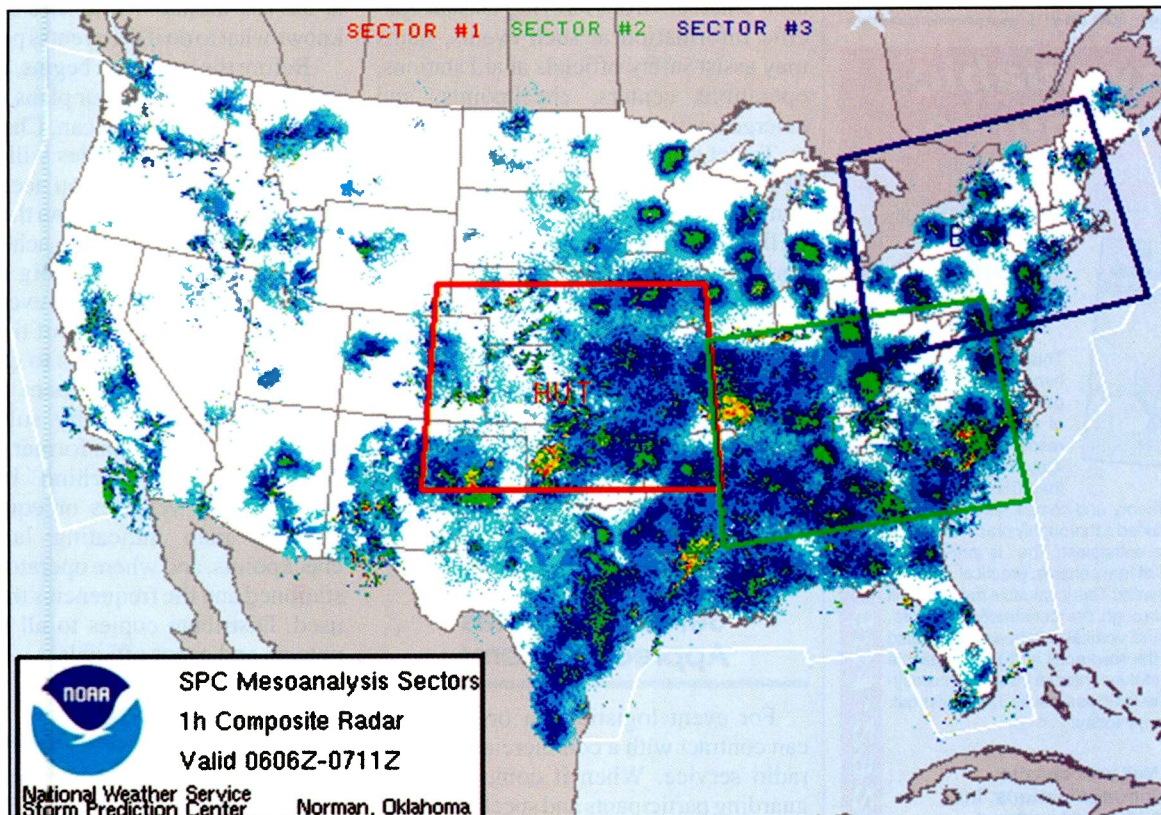
You see, hobby aspects aside, the reason why governments worldwide assign precious spectrum resources to "hobbyists"

when they could sell them to the highest bidder is because we can still get the job done when nobody else can. We're also volunteers, which is a friendly way of saying "fanatic!" And when the poopie hits the fan, the fanatics will do their thing...fanatically.

### Proving The Point

And it doesn't take a global disaster to prove the point. There are many reasons why public service agencies at the local, state, and federal levels still rely on hams to take up the slack in disaster situations.

First, high-tech solutions don't always work as advertised. Many disaster teams have found this out the hard way. Terrestrial



*This image is from the NOAA/Skywarn Storm Prediction Center at [www.spc.noaa.gov/exper/mesoanalysis/](http://www.spc.noaa.gov/exper/mesoanalysis/). Notice that NOAA's facility in Norman, Oklahoma, is right in the map's "hot zone."*

cellular coverage areas look saturated from a bird's eye view, but *on the ground* and especially out in the boonies, it's a different story. During a plane crash in Long Island, for example, rescue workers' cell phones were unusable because of coverage gaps. During California's unending series of earthquakes and fires, cell phones and even public safety trunked radio systems failed (completely or partially).

Second, served agencies everywhere will always welcome and rely on the services of trained, expert volunteers—hams—to assist with communications. This lets agencies focus their efforts on

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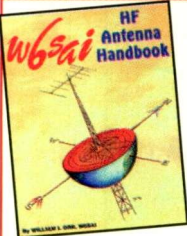
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***“Unless you're a trained emergency professional (many police officers, firefighters, EMTs are hams) your responsibility is to stay out of the way and simply furnish communications.”***

lifesaving and the disaster at hand. And now that public-safety minded hams are equipped with cell phones, VHF/UHF handhelds, miniature HF rigs for voice and data, and even tiny, on-location TV transceivers (all backed by available Internet-to-radio links), we can offer voice, visual, and data connections over a huge range of frequencies, and we can summon droves of volunteer helpers on and off site.

How hams *perform* their duties has been changing and evolving to keep pace with technology, but served agencies will always use and appreciate trained, prepared amateur radio volunteers. The first step, then, for new hams is to obtain the training and experience necessary to do a good job under real emergency conditions.

### Public Service 101

I've been talking globally here, but providing comms at public events like parades and races is a long-held amateur radio tradition. Although FCC rules prohibit amateurs from relaying certain specific information at such events, hams may assist safety officials at aid stations, operations centers, checkpoints, and emergency vehicles.

To get started, all you need is a handheld transceiver. Most public service communications are handled on VHF and UHF because few activities (other than perhaps the Iditarod dog sled race in Alaska) spread out beyond repeater range. Two meters is most popular, but other bands are also used.

If you're a member of a ham radio club, you've probably already been asked to help out at public events. If you aren't in a club yet, or if your club hasn't engaged in such activities, ask around on the air and check the local nets to hook up with service-minded hams in your area.

### Served Agencies Appreciate Hams

For event logistics, an organization can contract with a commercial two-way radio service. When it comes to safeguarding participants and spectators from accidents, confusion, and injuries, however, amateur radio provides a corps of

experienced, volunteer communications experts with unique equipment and coverage capabilities. Hams can switch frequencies with more agility than public-safety officials or commercial operators. This makes it possible to communicate on several specialized nets simultaneously, on multiple repeaters and on several bands—a plus for any event. When you add TV and data capabilities, hams provide a welcome and attractive package to event organizers.

### Be Prepared

The most important element to consider in public service communications is recruiting dependable volunteers. Keep a list of names, callsigns, and phone numbers and give each of the volunteers a copy of the list so they can learn who's who if they don't already know each other.

Confirm participation with each person just before the event. Enlist backup operators to fill in for people who cancel at the last minute. Make sure everybody knows what to do if the event is postponed.

Before the operation begins, meet face to face to coordinate your plans. Use simplex frequencies if you can. Check to see if your chosen frequencies will interfere with other activities. If you need to use a repeater, get permission from the repeater group before you use the machine.

To avoid snags on the big day, take your fellow hams and an event representative to the site ahead of time. Walk the route with your radios to check signals and pinpoint dead zones or potential trouble spots (utility substations, power-company transformers, urban “office canyons,” behind hills and around noisy vehicles or equipment). Draw a map indicating landmarks, checkpoints, and where operators will be stationed and the frequencies that will be used. Distribute copies to all ham volunteers and event officials.

### Focus

Large events may require nets on different bands. Each net will have one operator to serve as net control station (NCS). Once the operation begins, the



NCS is in charge. He or she generally works from a fixed location; others are deployed at strategic locations, whether fixed, on foot, or mobile. The radio crew works directly with event sponsors, authorities, or served agencies, and the hams' task is easy: they simply communicate. They don't make vital decisions, issue commands, or furnish aid or advice.

Unless you're a trained emergency professional (many police officers, firefighters, EMTs are hams) your responsibility is to stay out of the way and simply furnish communications. Unless you're briefed and authorized to do so, don't give answers or advice to spectators or participants. There should be event workers stationed where needed, and questions should be referred to them. It's not up to you to tell runners that refreshments are available at the staging point, for example, even if you overhear race officials saying so. Don't second-guess procedures; hams shouldn't interpret rules or direct participants to do anything unless event officials have requested that they do so for safety reasons.

### Be Prepared

Your job is to help safeguard participants and spectators at an event. You'll gain valuable experience in case you're needed in an emergency. You'll also take advantage of an opportunity to showcase amateur radio at its best, serving your community with dignity and courtesy. Event organizers, participants, spectators, neighbors, news reporters, public safety officials, and others are watching you. Also remember the people listening on scanners. Common sense and planning will help you perform admirably.

When you provide communications services for a public event, here are some DOs and DON'Ts to keep in mind:

#### DO:

- Know your capabilities and limits (equipment and people).
- Show up on time and be ready to work.
- Transmit only when necessary.
- Dress appropriately and carry an umbrella, hat, sunblock, jacket, or other necessities to protect yourself and your rig from the elements.
- Set a good example when representing the Amateur Radio Service.
- Have fun!

#### DON'T

- Be pushy or come across with a know-it-all attitude.
- Promise anything you can't deliver.
- Answer questions unless you have explicit permission to do so.
- Make frivolous or confusing remarks on the air.
- Leave your post unless you notify the NCS and receive acknowledgment.

The ARRL's *Public Service Communications Manual*, previously hard-copy only, is now online. Point your web

browser to [www.arrl.org/FandES/field/pscm/sec1-ch1.html](http://www.arrl.org/FandES/field/pscm/sec1-ch1.html) to check it out. Also, be sure to read through the *Special Events Communications Manual*, which lives at [www.arrl.org/FandES/field/spevman/](http://www.arrl.org/FandES/field/spevman/). Last, but certainly not least, point your web browser to [www.skywarn.org/](http://www.skywarn.org/) to learn about Skywarn, a nationwide association of hams who help out and work in conjunction with the National Weather Service.

There are many ways to serve as a ham. The important part is, to steal a phrase, to "think globally and act locally." ■

## When Disaster Strikes...



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## Capitol Hill And FCC Actions Affecting Communications

### Federal Grant Approved To Support Katrina Communications

A \$100,000 grant supplement has been provided by the Corporation for National and Community Service (CNCS) to help underwrite the efforts of U.S. radio amateurs providing communications in states impacted by Hurricane Katrina. It will help fund "Ham Aid," a recently launched program by the American Radio Relay League that helped organize amateur radio's support of disaster communications after the hurricane's catastrophic landfall in August.

"For the first time in ARRL history, we will be able to reimburse some of the expenses that hams incur in response to disaster," said Mary Hobart, K1MMH, who is the League's chief development officer. "We only wish that we could justify an expense reimbursement program like this every time Amateur Radio Emergency Service (ARES) volunteers are called upon to help in a disaster or emergency, sometimes placing themselves in harm's way."

"In addition to providing emergency communications within and outside the affected areas," the League said in a statement, "ARES members and individual radio amateurs are supplementing the communications needs of emergency management and relief agencies, including the American Red Cross and The Salvation Army."

It's only due to the "scope of the unprecedented and tragic Katrina disaster that CNCS agreed to support dedicated amateur radio volunteers," Hobart said. "But we'd like to think of this grant as a token of appreciation and recognition of amateur radio's value in past emergencies and disasters, such as 9/11." She added that the ARRL's Ham Aid program already has received some substantial private donations. Along with the CNCS grant, the funds will allow the League to "support our field organization as never before," Hobart said.

According to the League, the CNCS grant "is effective for operations established and documented as of Sept. 1, 2005 and the aid is earmarked for Hurricane Katrina deployments only at this point. Guidelines are being established that will permit volunteers who have been involved in bona fide field support operations on or after Sept. 1 to provide communication support to apply for a reimbursement voucher on a per diem basis."

CNCS funds may also help sustain Ham Aid and "help to rebuild the emergency communications capabilities in Louisiana, Mississippi and Alabama to ensure that the Gulf Coast is prepared, should disaster strike again," according to the ARRL. The CNCS grant is an extension of the ARRL's three-year Homeland Security training grant, the League said. It has "provided certification in emergency communication protocols to nearly 5,500 amateur radio volunteers over the past three years."

### Radio Amateurs Play Critical Role In Katrina Victim Rescues

A combination of cell phone calls and amateur radio communications resulted in the rescue of many people trapped by

floodwaters following the onslaught of Hurricane Katrina. Reports in the September 2 edition of the American Radio Relay League's *ARRL Letter* described several of the incidents, which supplemented rescue efforts by state and federal authorities, including the following:

Unable to get through an overloaded 911 system, one of (15 people stranded on a New Orleans rooftop) called a relative in Baton Rouge. That person called another relative, Sybil Hayes in Broken Arrow, Okla., whose 81-year-old aunt Helen Elzy was among those clinging to the roof along with other family members.

Hayes called the American Red Cross chapter, which contacted the Tulsa Repeater Organization. Using the Red Cross chapter's well-equipped amateur station, TRO member Ben Joplin, WB5VST, was able to relay a request for help on Salvation Army Team Emergency Radio Network (SATERN) net on 14.265 MHz via Russ Fillinger, W7LXR, in Oregon, and Rick Cain, W7KB, in Utah back to Louisiana, where the ARES net contacted emergency personnel who rescued the 15 people and got them to a Red Cross shelter.

...SATERN National Net Director Jim Adams, WA0SLB, reports he got a call on the net August 29 from Bill Simpson, KE4WRH, seeking help in locating two elderly men trapped in their attic in Gulfport, Mississippi, with the water rising. The stranded men called Simpson because they remembered that he was a radio amateur.

"After receiving the traffic, I tried to get a station on frequency who could deliver the message to authorities, but no stations were on," Adams recounted. He called Quentin Nelson, WA4BZY, in Georgia, who is SATERN's national health-and-welfare director, and Nelson was able to contact Salvation Army Capt John Robbins, who, in turn, got in touch with Mississippi State Patrol. Authorities were able to rescue the two men.

Adams says the net handled at least two other messages relating to individuals trapped in attics with the water rising.

Fillinger, a SATERN net controller, also was part of the mix August 29 when the net got word of a family of five trapped in an attic in Diamond Head, Louisiana. The family used a cell phone to call out, but it's not known whom they contacted initially. Bob Rathbone, AG4ZG, in Tampa, says he checked the address on a map and determined it was in an area struck by a storm surge.

"Acting on a sudden inspiration, he called the U.S. Coast Guard search-and-rescue station in Clearwater, explained the situation and relayed the information. Rathbone said he was rewarded an hour later by a call from the South Haven Sheriff's Department in Louisiana, which informed him a rescue operation was underway.

"Another search-and-rescue operation I ran with involved three people stuck on a roof, and one was a child," he said. The person was able to send a text message from a cell phone to a family member in Michigan. Once again, the U.S. Coast Guard handled the call.

"Ham radio works when all else doesn't," he concluded.

### Contract Awarded For Assembly Of Air Defense Radio

A contract of up to \$5.5 million has been awarded to Comtech Telecommunications Corp., for production of an integrated radio frequency assembly used in Enhanced Position Location Reporting System (EPLRS) UHF radio. According to an item in September on the Internet site Tech Web, the military uses the EPLRS radio for air defense by gathering data from various systems in battle areas and delivering it to combat forces.



The production includes a high-power RF amplifier and UHF radio frequency assembly integrated into a single unit. High-speed, connection-free networking adapts automatically to prevent jamming and line-of-sight limitations of UHF communications, Tech Web reported.

## FCC Names Interim OET Chief

Bruce Franca has been named by FCC Chairman Kevin Martin to be acting chief of the Office of Engineering and Technology, the Commission has announced. Franca, who joined the FCC in 1974 and has served as deputy OET chief since 1987, has been closely involved in the FCC's broadband over power line (BPL) initiative.

## Florida CBer Cited For Alleged Illegal Operation

A Notice of Apparent Liability for Forfeiture has been issued by the FCC to a Florida man who it alleges "operated a Citizens Band radio station without commission authorization" and refused to allow inspectors to examine his station.

Russell A. Sims, Jr., of Brooksville, faces a fine of \$17,000. In its allegation, the FCC stated that "on Nov. 1, 2004, in response to an interference complaint, the Tampa Field Office of the commission's Enforcement Bureau sent Mr. Sims an Official Notice via certified and regular mail, restricting the hours of operation of his CB station." The order limited his operation to between 9 a.m. and 1 p.m.

"In response to another interference complaint," FCC documents said, "agents from the Tampa office investigated CB activity in Mr. Sims' neighborhood. On Jan. 28, 2005, at approximately 7:15 p.m., agents, using mobile direction finding equipment, positively identified the source of a radio signal on 27.215 MHz, CB Channel 21, as a ground plane antenna located at Mr. Sims' residence."

The FCC alleged the radio transmissions continued until approximately 9 p.m., "when the agents requested to inspect the CB station owned and operated by Mr. Sims." Agents reported that Sims refused to allow them to inspect his CB station and that he stated "he was using an illegal linear amplifier to get better coverage." ■

## OUR READERS SPEAK OUT

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](mailto:popularcom@aol.com).

## Helping Brandon

Dear Editor:

Brandon Williams wrote ["Our Readers Speak Out," Sept. 2005 *Pop' Comm*] that he would like to start a net on Family Radio Service (FRS) Channel 8 and in the same letter asked for feedback regarding his proposal. I think it's a novel idea but question why he selected, out of 14 possible choices, Channel 8 as his net's primary channel. I am presuming that he is referring to 467.5625. Family Radio Service users are legally limited to only 1/2 watt maximum power output. I, therefore, suspect, depending on terrain and other conditions, that not many people can be expected to check in to the net.

I offer to Mr. Williams the suggestion that he consider one of the first seven FRS channels for his net. The General Mobile Radio Service (GMRS) shares FRS Channels 1 through 7 with the FRS, and a GMRS licensee is permitted 5 watts of output power on those frequencies (as opposed to .5 watts). This way, if Mr. Williams is heard acting as net control, he can have licensed GMRS users check in from much further away. A good article that details how this can work can be found in Gordon West's "Radio Resources" column in the October 2004 *Pop' Comm* (pages 76-8). See also Alan Dixon's "On-the-Go Radio" column in the February 2004 *Pop' Comm* for a look at a great GMRS/FRS base station set-up.

Best wishes to Mr. Williams and his Central PA Radio Group.

Gregory S. Hatzis  
via e-mail

## Ham Sandwich

Dear Editor:

Everybody has an opinion, that's for sure, but I'm floored by the way some people think (Tom Ciciora's letter in the October *Pop' Comm*). As you observed, until a problem in another area of the world hits home, it's not as striking or real. As you and your staff have said repeatedly, we're living in different times than just a few years ago. Like you, I am

a law-abiding citizen who happens to enjoy my radio hobby. I also believe that you shouldn't have to be a licensed ham in order to use a wideband receiver (scanner) when mobile. Overzealous law officers should remember that we're on their side; license or not. And as for Mr. Ciciora, don't blame a national publication for doing an excellent job of bringing this and other problems to light.

George Calhoun  
Tennessee, via e-mail

## Boxing His Stuff

Dear Editor:

One of the reasons I like *Pop' Comm* is that the equipment reviews are good and different from other magazines. They're also fair and honest. The latest one on the Otterbox case in October helped me decide on which case to buy...probably their 6010, which you dunked in your kitchen sink. Thank you for lots of good information I can't get anywhere else!

Robert Harmon  
via e-mail

## Understanding Software-Defined Radio

Dear Editor:

I'll get right to the point. Joe Cooper's "Computer-Assisted Radio Monitoring" column is the best! His series on software-defined radio is easy to understand and opened my eyes to a new world of radio. He's right: it is the future of radio, so the geezers had better get on board or, as you have said, take up knitting.

Your "Tuning In" talks are also very thought provoking and relevant to a changing radio hobby and society. We sure are a different country than when I was a youngster growing up in Arkansas.

Wade Johnston, aka Nightrider  
via e-mail

Dear Wade:

Thanks for your note on Joe's column. It's an otherwise complicated subject, but you're right, it *is* the future of radio. Time to move on and "get with the program" as they say.

# Happy Holidays!

## Pop'Comm Suggestions For Santa!

Over the years, it's become a bit of a tradition that we take the December issue to review some of the new products that you may be interested in adding to your wish list for the holiday season. So let's jump right in with some suggestions for Santa!

### A New Radio?

Topping our list might be the Uniden Bearcat BC-246T that we've reviewed this month (see "Technology Showcase"). Much excitement has been generated around the new breed of digital-capable scanners, including models from both Uniden and RadioShack. These represent top-of-the-line scanners and will serve you well in almost any area, conventional *or* trunked. If you're not running into digital signals or trunked systems already, you will soon. They're spreading as quickly as budgets will allow for upgrades.

Realize that there *are* signals that even these new super receivers can't decode, so it may not be the answer to all of your problems. Anything that is encrypted will not be received, in addition to some proprietary digital systems (EDACS digital, for instance). If all this is Greek to you, you should check with someone in your area to find out what will work.

Also new is the RadioShack PRO-2055 that stores up to 1,000 frequencies, has an alphanumeric display, and can be used as a base or mobile scanner. As of this writing it's \$229.99 at your favorite RadioShack store.

There are many others, but be sure the specs work for you before you plunk down your hard-earned money.

### At Issue: Frequency Coverage And Steps

Another issue that's starting to become a factor in scanner choice is frequency coverage. Some years back, the FCC quietly approved the 764 to 776 and 794 to 806 band for public safety operation, providing there were no television stations in that area. Slowly, the TV stations have been moved and new licenses are starting to be issued in those frequency ranges. Most of our present equipment does not cover those ranges.

Frequency steps is another factor that will make some of us upgrade sooner rather than later. Newer services are being approved that use narrow FM, meaning that more channels can be crammed into the same available frequency space. A good example of this is the Family Radio Service (FRS), which is sandwiched between the General Mobile Radio Service (GMRS) business frequencies. As time goes by, this will happen (and already has been happening) in the public safety bands, too. Currently, the so-called splinter frequencies are only being approved for mobile and low-power uses, but that will change as technology and equipment are upgraded.

If your scanner can receive 154.830 and 154.845, you will probably be able to hear both those channels just fine if they go to narrowband mode. You'll probably have to turn the volume



Unwrapping a nice new box would be fun! Check out the review of the BC-246T in the "Tech Showcase" this month on page 46 and watch "ScanTech" for more info coming soon!

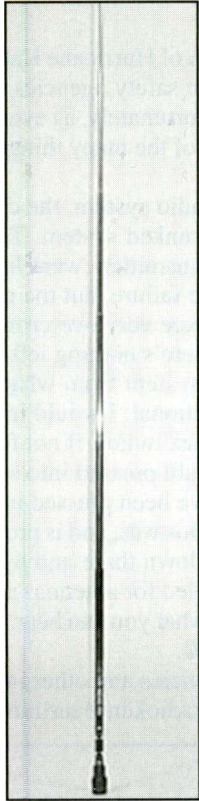
up as the narrower bandwidth will give the appearance of being a weaker signal to your traditional radio. But if there's something on the splinter frequency, 154.8375, you may or may not be able to hear that activity. A lot will depend on how close the transmitter is to your radio, and if there's a simultaneous transmission on either of the adjacent channels.

We're in the very early stages of this conversion, but it will start to happen in areas of the country where frequency space is at a premium. Over time, all public safety and probably all mobile radio services will adopt digital narrowband modes and your old radio (pre-digital) will become obsolete. You can probably relax for a little while, but perhaps Santa's open to suggestions!

### Start Transmitting!

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





*This new Comet telescoping antenna might be just what you need for the holidays!*

However, what I had in mind for your wish list was a study guide for one of the radio amateur exams. Getting your ham license has become a very good idea for scanner listeners in many states, and having a transmitter handy, just in case something happens, is never a bad idea either. Getting a license has never been easier and it can be the beginning of a whole new aspect of the radio hobby that you hadn't thought of. Many study guides are available from all sorts of sources, including RadioShack, the American Radio Relay League, and *Pop'Comm's* own Gordon West's Radio School! Check them out and have your license to transmit by spring!

## Antennas

Scanner nuts can never seem to have enough antennas. Of course, on a handheld, they're easy to change so swapping back and forth can be advantageous for various conditions or frequencies of interest. Base users can also gain some mileage by changing antennas from time to time. Perhaps you've been using a model that you're not quite satisfied with, or perhaps you've got a second scanner that could use a little signal boost. On the other hand, if you're hearing all that you

care to, a new antenna is probably not a good choice.

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

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

NGC Comet Antenna's AH-W100RX is a dedicated receive/scanner antenna that covers 70 to 900 MHz, and the telescoping element is pre-marked so you can adjust it to the length you want for best reception. Fully extended it's 40 inches; collapsed it's only eight inches. It comes with a BNC connector. Check out the company's website at [www.cometantenna.com](http://www.cometantenna.com).

All antennas, not just those for handhelds, are built for particular frequency ranges. The telescoping system that I mentioned above has the advantage of having adjustable length, which also means adjustable frequency response. I tend to use ham antennas for my scanners because they are so widely available, and because they are close to the frequency ranges I'm interested in scanning. You may be able to get significant performance increases on a single band by using commercial antennas built for just that frequency range, but you are quite likely to sacrifice bandwidth (the ability of the antenna to perform over a wide range of frequencies).

On a handheld, that may not be a major concern, depending on the intended use for the antenna. For instance, if you mostly listen to stations in the 154 to 158 range, finding a commercial antenna that operates in that range will probably improve performance. You may not hear much outside that range, however, so you'll have to assess the frequencies you listen to. Trunktracker users who listen mostly to the trunked system in their city tend to

benefit considerably from an antenna designed for the 800-MHz range.

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

## Staying Safe: Weather Radio

If you live in an area of the country that's subject to severe weather you should have a weather radio. The recent hurricane season is good evidence of just how important this can be. Don't forget the batteries to run it, either, and check them out from time to time. My recommendation is to check them when the clock switches to or from daylight saving time in the spring and fall, just like you're supposed to check your smoke alarm.

Many of today's scanners include a weather mode. Almost all of them will

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*The Uniden BC-246T with new Trunktracker III technology would make an excellent gift from Santa. Just send him your copy of this month's Pop'Comm with the picture circled (just a suggestion).*

certainly receive the frequencies that can just be put into a memory and locked out. However many of the new radios, particularly at the high-end also include the SAME (Specific Area Message Encoding) codes so you can tell the radio the specific area you're interested in. A weather radio with SAME is much more likely to stay on than one without—the alerts for areas you're not interested in do get annoying. Of course many stand-alone weather radios have this feature, too.

## Other Accessories

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

Speakers can also be tailored to the voice range that you listen to on your

## Monitoring Katrina

We were all dismayed as the images of the aftermath of Hurricane Katrina began to fill the media. Of course, the focus of all the public safety agencies in the area became dealing with the widespread devastation. Unfortunately, as events unfolded it became clear that communications were just one of the many things that were not working well.

While I don't have detailed information on their radio system, the city of New Orleans police appear to have been on an EDACS trunked system. That system became almost useless immediately as towers and transmitters were knocked off the air. Ultimately, a generator is being blamed for the failure, but the net result is that only a very limited number of channels, which were very overcrowded, were available. When the whole base transmitter is gone, there's nothing left to operate. The Ambulance service, while a part of the trunked system from what I can tell, was able to keep at least some communications operational. I would imagine that they were probably equipped with VHF or UHF simplex radios, if not for dispatch then at least for other purposes, and those were no doubt pressed into service.

Just about every available radio also appears to have been pressed into service. Everything from CB to FRS to spare business band radios was, and is probably still, in use in some kind of coordination effort. If you're down there and trying to listen, the best advice I can offer is to keep your eyes peeled for antennas and put that scanner into the "search" mode. Tune around and see what you can hear. The trunked system operates between 866.33750 and 868.92500.

If you have local/regional Gulf information, frequencies and other information, let's share it with our readers. You can contact me at [radioken@earthlink.net](mailto:radioken@earthlink.net).

scanner. Sometimes, depending on the radio you have, just a bigger speaker will make the audio a bit easier to listen to. Sometimes you might want one of the communications speakers available from the major retailers for a variety of applications. Often, however, just getting the speaker pointed out into the room rather than at the ceiling or floor can make a huge difference in what you hear.

RadioShack has a few speakers that work well for scanner applications. I have been using the RadioShack Minimus 0.3 (40 to 1254, now discontinued) with some success for years. While not the best possible speaker, it does serve the purpose of getting the audio out into the room, and is cheap and small enough that a number of them can be used without making a major dent in shelf space.

Also have a look around at some of the not-so-usual sources. Sure, RadioShack carries a full line of speakers and accessories. However, with the computer boom, many computer stores and non-specialty stores also carry some cheaper amplified speakers that may be just the ticket for your scanner. Amplified speakers can give your scanner a boost in audio that is particularly helpful with many handhelds.

Keep in mind that you don't need a real high-fidelity speaker to reproduce the voice information that most of us listen to on our scanners. In fact, a high-fidelity

speaker may work against you. These speakers will often have a "whine" or ringing sound to them. This isn't anything wrong with the speaker, but rather the speaker's attempt to reproduce some of the CTCSS or tone squelch tone that your scanner is allowing through to the audio amp. It's annoying to listen to, but doesn't hurt anything either.

Finally, external speakers can be used to separate the audio. That is, if you have more than one radio, simply using your ears to determine where the sound is coming from can help you distinguish what radio is active. External speakers can be mounted in the ceiling or walls, or can just be placed at opposite ends of a desk. The idea is to put them in spots that will allow you to hear the difference!

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



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

Other audio accessories that I get asked about with some regularity are audio filters. For shortwave listeners, these are a great help, depending on your receiver's capabilities. However, for scanner listeners, I don't think they are quite as useful. In my opinion, you'll get much more mileage out of a pure amplified speaker (which I think is how a lot of scanner listeners wind up using filters anyway). If you also listen to shortwave you might also find a use for one, and then you can hook it to your scanner to see how well it works. Some units, including the TimeWave 599+, have dual receiver inputs!

By the way, if you're into shortwave listening, I can highly recommend the Timewave device if the price doesn't put you off. MFJ also has a nice DSP filter that's worth a look; I've heard good things about it, though I've never actually used one.

## Update Your Library

Periodically, it's a good idea to update the reference guides you use for radio listening. Shortwave broadcast listeners are

quite used to buying a new edition of *the World Radio TV Handbook* or *Passport to Worldband Radio* just about annually as there are many changes from year to year. Scanner listeners, however, tend to get comfortable with the list of frequencies that are programmed into their radio and forget to look around.

If it's been a while since you picked up a copy of *Police Call* or *Monitoring America*, you might want to have another look. Especially since Gene Hughes has announced that *Police Call* will no longer be published, I'd recommend you grab one or two ASAP before they're all gone. It comes with a CD that includes the whole country, even though the printed book is still regional. There's a lot of information in there,

## 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 for this month will be **155.760**. Let me know what you can hear. Even if you don't hear anything on that frequency in your local area, you can still enter with that information! We'll put them all in the drawing when it comes up!

Send entries via regular mail to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126, or via e-mail to [radioken@earthlink.net](mailto:radioken@earthlink.net). "Frequency of the Month" entries must have the frequency in the subject of the e-mail, or on the outside of the envelope in order to be processed and entered correctly.

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Get it while you can. If you haven't updated your frequency reference guides for a while it's a good idea. Police Call will no longer be published, but the last ones are still an excellent reference. It comes with a CD that includes the whole country, so you get a lot more than just the book. It's available at RadioShack.

even if you are just updating your local listings! It had a great run—since 1963!

## Don't Forget To Scan!

Holiday scanning can be interesting, too. Police, fire, and ambulance services all tend to be busy this time of year with the increased activity and traffic problems. People are stressed and, well, you get the idea!

One of the first things you should do is plug in the frequencies for your local mall, if you don't already have them in your scanner. Even small shopping centers have maintenance people and security for the holidays and they all use radios.

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

Another good place to look is the FRS and MURS frequencies, particularly within individual stores (larger stores all have security staff of their own these days).

Equipment operating on these channels is widely available to anyone. They are required by definition to operate at low power levels, and while it's sufficient to carry the signal within a building, you may not be able to hear them unless you are close by.

Larger shopping centers will have dedicated frequencies, possibly several channels to keep security and maintenance functions separate. Two of our local centers even use repeaters, which makes listening all the easier since you can hear both sides of the conversation.

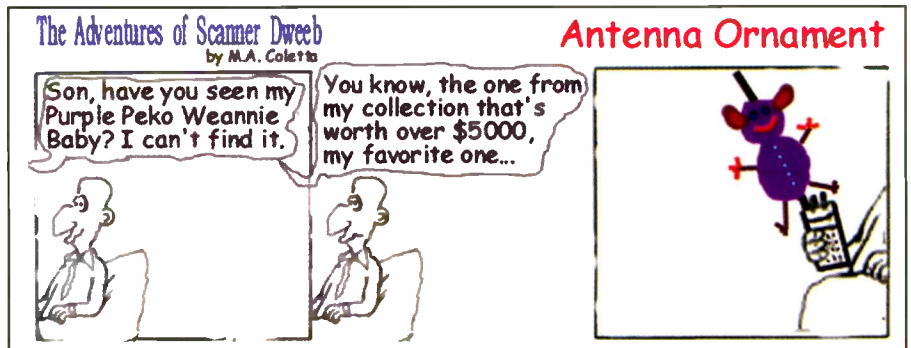
It's occasionally very entertaining listening, and still pretty interesting the rest of the time. Most of the security officers and others heard on the radio are not professional communications specialists, to say the least. And during the holidays, there are likely to be a number of part-time staff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

I do make a point to watch employees with radios. It's clear that some of the stores have put some effort into training proper radio procedures, while others are hoping that the employees will have seen *Smokey and the Bandit* often enough to get the idea—it shows.

Our particular mall also runs into parking problems around the holidays, and a whole detail of folks is dedicated to solving that problem and transporting staff and guests to other off-site parking. And to say the least, security is tighter and there are likely to be more problems in general during the holiday shopping season with so many people coming and going, and unfortunately more opportunities for unscrupulous types to take advantage as well. Check it out.

If you don't have the frequencies already, it's a fun challenge to identify them. If you can't find anything listed at all, or don't have access to the frequency directories, go have a look around the store or mall you're interested in. See if you can spot any antennas on the roof, or if you can spot someone using a handheld radio. In the good old days, you could tell just by how long the antenna was on the handheld transceiver what frequency band they were operating on. That information was very helpful to narrow the search. However, today's modern antennas, particularly on portables have many shapes and sizes and don't always correlate well to the band they're designed for. Perhaps you can find a friendly mall employee who'll let you look at the radio itself. Sometimes they have meaningful labels (sometimes even the frequency itself), but sometimes not.

Good hunting – and Happy Holidays!





# Our November Winner: Congratulations To Jerry Clement Of Calgary, AB, Canada!



Canada's Jerry Clement enjoying another day in his radio shack.

*Pop'Comm* reader Jerry Clement, VE6AB, tells us,

Radio! Is there anything else? I have been involved in radio, one form or another, since I was 10 years old, growing up in southern Saskatchewan, where I received my first radio, a four-transistor battery-powered portable. I was hooked from that point. I would fall asleep at night, tuning the dial and trying to pull in broadcast stations from distant locations with my headphones on, so as not to wake my parents who would say "shut it off."

From that first radio (which I lament parting with), I was always on a quest to acquire the ultimate receiver with which to work the world. Over the years I discovered there were ways to communicate with distant stations I could receive on my shortwave receiver. For me it was CB radio, shortly after it had come into existence. I acquired a Browning Golden Eagle sidebander, and enjoyed chasing skip with it (another radio I should have kept: however, I know where this one is).

The years flew by and different radios have come and gone, some good, some so-so, but always enjoyable. I have also enjoyed owning various scanners over the years and always have one nearby.

In 1992, I finally acquired my ham ticket, then upgraded it to a code license so I could get on the HF bands. I discovered amateur radio satellites several years ago and enjoy this mode as well. These days I do not go anywhere without my ICOM R20, which has a superb receiver in it that rivals some of my base receivers (hooked to a good antenna, of course).

I also enjoy building antennas and putting them on the air to see if I can improve my station. I tune them with my Autek analyzer, which no station should be without.

My quest continues, striving for supremacy on the radio waves. "Is there anything else?"

*Popular Communications* invites you to submit, in about 300 words, how you got started in the communications hobby. Entries should be typewritten, or otherwise easily readable. If possible, your photo should be included.

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

The person whose entry is selected will receive a one-year gift subscription (or one-year subscription extension) to *Popular Communications*. Address all entries to: "V.I.P. Spotlight," *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801 or e-mail your entry to popularcom@aol.com

## Pop'Comm December Survey Questions

### I use a scanner to: (mark all that are appropriate)

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

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

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

### I currently use this number of scanners:

23. One.....	23
24. Two to four .....	24
25. Five to seven.....	25
26. More than seven.....	26

# Winter DX Is At The Door, Plus Exotic Longwave Propagation!

The autumn DX season is in full swing! Listeners throughout the Northern Hemisphere are enjoying mediumwave DX. Shortwave DX has been hot, too, especially on the mid- to low-HF bands from early evening until late at night, and then again from early morning through high noon. And now, along comes winter!

December 21 marks the start of winter. At 1835 Universal Time in the Northern Hemisphere, the sun will be at its lowest point in the sky, making the shortest daylight period of the year. This is the winter solstice, the longest night of darkness, creating the peak of the seasonal DX window on the shortwave bands as well as on the mediumwave band.

Long hours of darkness make for a less energized ionosphere. Since the *D* layer of the ionosphere is less ionized during the winter, mediumwave and shortwave frequencies are less absorbed, so they can be better propagated by the *E* and *F* layers. Additionally, the seasonal decrease in weather-related noise makes it easier to hear the weaker DX signals on the lower frequencies. With thunderstorms few and far between, storm-related static and noise is greatly reduced.

Seasonally, the geomagnetic activity tends to quiet down during the winter months. The most active geomagnetic seasons are centered on the two equinoxes, in the spring and autumn. Combined with the seasonal decrease in geomagnetic activity,

the 11-year solar cycle geomagnetic activity is continuing its downward trend toward the end of the current cycle, which will occur sometime at the end of 2006 or during the start of 2007. This results in more stable and reliable propagation on the shortwave spectrum, especially on the lower frequencies.

December is well enough past the autumnal equinox and the associated peak auroral activity to support transpolar propagation. With this overall reduction of geomagnetic activity and the decrease of radio signal absorption comes more stable high-latitude propagation. Mediumwave DXers enjoy catching broadcast station transmissions from over the North Pole. Shortwave DXing over high-latitude paths becomes exciting, even if the higher frequency bands are be dead. This situation can also improve the propagation of radio waves below 500 kHz and the mediumwave broadcast band.

Mediumwave (MW) is used to denote the frequencies between 530 kHz and 1750 kHz. The low-frequency (LF) range is the band of frequencies between 30 kHz and 300 kHz. Very long frequencies (VLF) are those ranging between 3 kHz and 30 kHz. Medium frequencies (MF) range from 300 kHz to 3000 kHz. Radio waves in the low and very low frequency (LF and VLF) spectrum propagate differently than those of medium frequencies and above. Between 300 kHz and 520 kHz, the lowest part of MF and just below the MW broadcast band, the char-

## 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 ( $K_p > 5$  or  $A_p > 20$ ) 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 fre-

quencies 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 December 2005 - Flux = 76, Created by NW7US

UTC	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
TO/FROM US WEST COAST																									
CARIBBEAN	17	14	11	11	10	10	9	9	9	9	9	9	9	8	13	17	18	19	20	20	20	20	20	20	19
NORTHERN SOUTH AMERICA	25	22	17	14	14	13	13	12	12	12	12	11	11	11	15	22	24	26	27	27	28	27	27	26	26
CENTRAL SOUTH AMERICA	24	21	15	14	14	13	13	12	12	12	12	11	11	11	17	22	25	26	27	28	28	27	27	26	26
SOUTHERN SOUTH AMERICA	26	24	21	15	14	14	13	13	12	12	12	12	11	11	21	24	25	26	27	28	28	28	28	27	27
WESTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	8	8	10	11	10	10	9	8	8	8	8	8	8
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	9	10	9	9	9	8	8	8	8	8
EASTERN NORTH AMERICA	19	16	12	12	11	11	10	10	10	10	10	10	10	10	14	18	20	21	22	22	22	22	21	20	20
CENTRAL NORTH AMERICA	11	10	8	7	6	6	6	6	6	5	5	5	5	5	5	8	10	11	12	12	12	12	12	12	12
WESTERN NORTH AMERICA	6	6	5	3	3	3	3	3	3	3	3	2	2	2	2	2	5	5	6	6	6	6	6	6	6
SOUTHERN NORTH AMERICA	19	17	14	11	11	10	10	10	9	9	9	9	9	9	15	18	19	20	21	21	21	21	21	20	20
NORTHERN AFRICA	9	8	8	8	8	8	8	8	8	8	8	8	8	8	11	13	14	15	11	10	9	9	9	9	9
CENTRAL AFRICA	10	9	9	9	8	8	8	8	8	8	8	8	8	8	8	10	12	13	14	13	12	11	11	11	11
SOUTH AFRICA	17	12	11	11	11	10	10	10	10	10	9	9	9	9	13	17	18	19	20	20	20	20	19	18	18
MIDDLE EAST	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	10	10	10	9	9	9	9	8	8	8
JAPAN	16	16	15	14	12	10	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	11	14	16
CENTRAL ASIA	16	16	15	14	12	10	9	9	9	8	8	8	8	8	8	8	8	8	10	10	10	10	11	16	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	7
THAILAND	15	15	14	13	11	9	9	9	8	8	8	8	8	8	8	8	8	8	10	10	10	10	10	10	10
AUSTRALIA	24	25	25	23	20	15	14	13	13	12	12	12	12	12	12	11	15	15	14	16	19	21	23	20	20
CHINA	14	14	14	12	10	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
SOUTH PACIFIC	26	27	25	23	19	15	14	14	13	13	12	12	12	12	12	11	13	15	17	19	21	23	24	25	25
TO/FROM US MIDWEST																									
CARIBBEAN	19	13	12	12	11	11	11	10	10	10	10	10	10	16	20	22	23	24	24	24	24	23	22	21	21
NORTHERN SOUTH AMERICA	21	18	14	13	12	12	12	11	11	11	11	10	10	16	21	23	25	25	26	26	26	26	25	23	23
CENTRAL SOUTH AMERICA	22	16	15	14	13	13	13	12	12	12	12	11	11	20	24	25	27	28	28	29	28	28	27	25	25
SOUTHERN SOUTH AMERICA	25	21	16	15	14	14	13	13	12	12	12	12	15	22	23	24	25	26	27	28	28	28	28	27	27
WESTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	10	13	14	14	13	13	11	9	9	8	8	8	8
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	8	11	13	13	12	9	9	9	8	8	8	8	8
EASTERN NORTH AMERICA	13	9	9	8	8	8	8	7	7	7	7	7	8	13	14	15	16	16	16	16	16	16	15	14	14
CENTRAL NORTH AMERICA	6	5	4	4	3	3	3	3	3	3	3	3	3	4	6	7	7	7	7	7	7	7	7	7	7
WESTERN NORTH AMERICA	11	10	8	7	6	6	6	6	6	5	5	5	5	5	8	10	11	12	12	12	12	12	12	12	12
SOUTHERN NORTH AMERICA	13	11	8	8	7	7	7	7	6	6	6	6	6	6	10	12	14	15	15	15	15	15	14	14	14
NORTHERN AFRICA	10	9	9	9	8	8	8	8	8	8	8	8	8	12	14	16	16	17	17	16	12	12	11	11	11
CENTRAL AFRICA	10	9	9	9	8	8	8	8	8	8	8	8	8	12	14	15	16	17	17	13	12	12	11	11	11
SOUTH AFRICA	16	14	14	13	13	12	12	12	12	11	11	11	21	23	25	26	27	27	27	27	26	24	22	22	22
MIDDLE EAST	8	8	8	8	8	8	8	8	8	8	8	8	9	13	14	15	12	10	9	9	9	9	8	8	8
JAPAN	15	14	12	10	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	9	14	15
CENTRAL ASIA	15	14	12	9	9	9	9	8	8	8	8	8	8	8	8	10	10	10	10	10	10	10	10	10	15
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
THAILAND	14	12	10	9	9	9	8	8	8	8	8	8	8	8	8	11	11	10	10	10	10	10	10	10	10
AUSTRALIA	24	25	22	18	15	14	13	13	13	12	12	12	12	11	11	16	15	15	14	17	19	21	23	20	20
CHINA	12	12	9	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
SOUTH PACIFIC	27	25	22	16	15	14	13	13	13	12	12	12	12	12	11	16	16	16	18	20	22	23	25	26	26
TO/FROM US EAST COAST																									
CARIBBEAN	14	10	10	9	9	9	8	8	8	8	8	8	12	16	17	19	19	20	20	20	19	19	18	16	16
NORTHERN SOUTH AMERICA	18	15	14	13	12	12	11	11	10	10	10	10	14	18	20	22	23	24	24	24	24	23	22	21	21
CENTRAL SOUTH AMERICA	18	17	16	15	14	14	13	13	12	12	12	12	20	22	24	26	27	28	28	29	28	27	26	23	23
SOUTHERN SOUTH AMERICA	22	19	17	16	15	14	14	13	13	12	12	12	18	20	22	24	25	26	27	28	28	28	27	26	26
WESTERN EUROPE	8	8	8	8	8	7	7	7	7	7	7	7	13	14	15	15	15	15	14	13	10	9	9	8	8
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	8	8	8	8	8	8	8
EASTERN NORTH AMERICA	5	4	4	4	4	3	3	3	3	3	3	3	6	7	7	8	8	8	8	8	8	8	7	7	7
CENTRAL NORTH AMERICA	13	10	9	9	8	8	8	8	7	7	7	7	9	14	15	16	17	17	17	17	17	16	15	15	15
WESTERN NORTH AMERICA	19	16	12	12	11	11	11	10	10	10	10	10	10	10	14	18	20	21	22	22	22	22	21	20	20
SOUTHERN NORTH AMERICA	15	11	10	9	9	8	8	8	8	8	8	8	8	12	15	17	18	18	19	19	19	18	18	17	17
NORTHERN AFRICA	11	10	10	10	10	10	10	10	10	10	10	10	15	18	20	21	22	22	21	20	17	13	12	12	11
CENTRAL AFRICA	11	10	10	10	10	10	10	10	10	10	10	10	15	19	20	21	22	23	21	18	13	12	12	11	11
SOUTH AFRICA	15	14	13	13	13	12	12	12	12	11	19	23	26	27	28	28	28	28	28	28	27	25	23	16	16
MIDDLE EAST	9	9	9	9	8	8	8	8	8	8	8	10	14	16	17	17	18	17	13	12	11	11	11	10	10
JAPAN	12	10	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	13	14	14
CENTRAL ASIA	11	9	9	9	8	8	8	8	8	8	8	8	8	11	11	10	10	10	10	10	10	10	10	13	13
INDIA	8																								

acteristics of propagation is a mix between those of the lower HF spectrum and those of LF.

## The Exotic Realm Of Longwave Propagation

When you begin tuning your radio just below 530 kHz, you will likely hear lots of noise, but also you'll catch repeating Morse code transmissions. These CW transmissions consist of one-, two-, or three-letter groups, repeated continuously. These are known as non-directional beacons (NDB), and are being transmitted from fixed locations for the purpose of navigation.

For instance, a pilot uses a directional antenna and a radio to get a bearing on one of these beacons. The pilot can then reference a navigational chart for the exact location of the beacon heard. Noting that spot on the map, the pilot can then tune to another beacon and locate that point on the map. Drawing lines from those two fixed points, at the angle discovered by the directional antenna, the pilot can find the aircraft's location as being the point where the two lines intersect. If a third and fourth beacon are vectored, the aircraft's location can be pinpointed with even greater confidence.

These LF beacons exist all over North America and in many other countries in Europe, Asia, and elsewhere. Beacon hunting DXers set up long wire antennas hoping to hear beacons from across the globe. In addition to the NDB activity, there are longwave broadcasts and more modern digital data transmissions used also for navigation. How well the DX can be heard depends on the propagation of radio waves in this part of the radio spectrum.

## Low Frequency, The Birthing Ground Of Radio Communication

At the dawn of modern radio communication, the inventor of wireless telegraphy, Italian-born Guglielmo Marconi, experimented with a fascinating apparatus created by Heinrich Rudolf Hertz (the man whose name is now used whenever we talk about frequency, as in kilo-Hertz). Marconi was inspired by the idea that telegraph signals could be sent far enough through the air by means of Hertzian waves for such a system to have commercial value. By 1896 he was able to

hear one of his transmitted telegraph signals two and a half kilometers away.

After a period of several years filled with experimentation and trials of new antenna systems, he was able to span the Atlantic Ocean with his crude wireless telegraph spark transmitter. He continued to build larger and larger antennas, causing the main transmitted frequency to move down into the low-frequency spectrum. By October 1902 his transmissions from Poldhu in Cornwall, England, were roughly 272 kHz. His initial station at Table Head in Nova Scotia in December 1902 was a massive structure made up of 400 wires suspended from four huge wooden towers. Leads from these wires were brought together in an inverted cone at the point of entry into the transmitter building. The frequency was 182 kHz. By 1904 he created an antenna with the frequency was 70 kHz. By late 1907 he was using a frequency of 45 kHz.

Amateur radio operators were eventually banished to frequencies above 1500 kHz, because the general consensus was that those frequencies were useless. Low-frequency radio was the backbone of all serious communication.

## Propagation Below 500 kHz

As we've explored in this column in past months, the ionosphere plays a crucial role in the propagation of HF signals. Does the ionosphere play any role in the long-distance reception of longwave radio waves?

Remember, the ionosphere is made up of electrons and ionized particles. Earth's atmosphere is mostly filled with molecules having few free electrons. Radio wave transmission loss in the ionosphere is directly related to the collision frequency between electrons and molecules. At the very *bottom* of the ionosphere, the highest loss occurs, because this is where the highest electron collision frequency occurs. This part of the ionosphere, the region known as the *D* layer, is sometimes referred to as the conducting layer.

Contrary to popular belief it is *always* present. In the daytime it is pretty dense and thick, starting at about 70 kilometers above the Earth. At night, however, because the sun can no longer directly energize the ionosphere, the *D* layer shrinks and becomes thinner, and starts at about the height of 90 kilometers. Some think that the *D* layer is just a thin film, at times, right at the bottom of the *E* layer, instead of being a distinct separate region.

During the daylight hours, the *D* region is very absorbent of high frequencies, preventing long-distance propagation below 10 MHz. At night, the *D* region loses its ionization enough that HF radio waves pass through with much less loss. However, even at night, LF signals are mostly absorbed.

Then how can any propagation exist for LF signals? At the bottom edge of the ionosphere, the resistance is *so high* that LF signals don't enter the ionosphere at all, but are actually reflected back toward the Earth. In addition, the ground also reflects these signals.

These reflections then can cause skips of the LF signal at the height of the bottom of the *E* layer. If the transmission is strong and the noise floor low, several skips can be traveled by the radio signal, allowing LF DXers to reap exotic signals from hundred to thousands of miles away.

If the *D* layer is influenced by wind shear, it is possible for clouds of ionized particles to form. These sporadic-*D* (*D*s) clouds act much like the sporadic-*E* (*E*s) clouds, except that the *D*s clouds reflect LF signals and absorb HF radio waves, while the *E*s clouds could refract HF and VHF signals. *D*s propagation of LF can really open up a DX window on NDB and other LF transmissions, far beyond the normal range for these signals.

It makes sense, then, that nighttime listening of longwave DX is better than mid-day listening. The daytime hours are filled with more noise from static in the atmosphere, but more importantly, the height of the reflective layer at longwave frequencies is much higher during the night, causing longer skip of the sky-wave component of the signal. There are other factors, but this serves as an overview of the way DX can be heard on these low frequencies.

## What To Listen For, And When

If you have a radio that can tune below 520 kHz, you'll want to start listening for more distant beacons later in the afternoon or early evening, as the line between daylight and darkness gets closer to your location. You will first hear stations to your east, and then as the night progresses, stations to the north, south, and west will begin to be heard. Finally, just before and through local dawn, stations toward the west become strong. This is very similar to the characteristics of the mediumwave broadcast band.



At 500 kHz, you will find an international ship calling and distress frequency for maritime communications in Morse code. Since 1999, however, it is rarely used since ship and shore communication stations are no longer required to monitor this frequency for calls. But, from 500 to 540 kHz, miscellaneous beacons and stations can be heard, like the 518-kHz maritime safety and navigation information data transmission.

Using frequency shift keying (FSK), the system is known as NAVTEX. It transmits weather bulletins as well as notices of missing and overdue vessels. In the United States and Canada, low-powered road and traffic information broadcasts are offered on 530 kHz. There are quite a few hobbyists who enjoy hunting for these transmissions.

From 430 to 500 kHz, you used to be able to hear two-way Morse code communications between ships at sea and shore stations. Again, because the requirement is no longer in place for maritime use of Morse code, the stations have mostly disappeared.

### Don't Despair— There's LOTS Of DX!

Now we come to the segment where there's a lot of potential DX to harvest. Between 200 to 430 kHz you'll find the NDB navigation signals that are endlessly repeating their CW callsigns. Most of the NDB stations you'll hear are from Canada and the United States, while more distant ones exist in Europe, South America, the Caribbean, and Asia. You'll want to get access to listings of known beacon station IDs or callsigns. Check out <http://www.lwca.org/sitepage/lfutil/index.htm> for this kind of information.

An interesting segment of the longwave spectrum is from 160 to 190 kHz. Unlicensed experimental transmissions are allowed in the United States, if the transmitter power is restricted to 1 watt and the maximum antenna length including the transmission feed line is no longer than 50 feet. What makes this even more exciting is that any mode of transmission can be used. This segment is named the "lowfer" band, and these unlicensed stations have been heard several hundreds of miles away under favorable conditions.

Another broadcast band exists between 155 and 281 kHz in Europe and some of Asia. This is the longwave band. Using one million watts or more of power, European longwave stations target entire

European nations, like England or Germany, with reliable signals 24 hours a day. When conditions are favorable these broadcasts can be heard in the Eastern United States and Canada during the winter months. The best time to try for these signals is from local sunset to about 0600 UT. It might also be possible to hear the few longwave Asian stations, like the ones in Asiatic Russia. The best listening post would be on the west coast of North America beginning an hour or so before local sunrise.

Below the longwave band, from 150 to 175, you'll hear raspy signals transmitted by the United States Air Force Ground Wave Emergency Network (GWEN). This is a data network that would provide communications in the event of a nuclear war.

Then, below 155 kHz, where the sky-wave propagation finally fails, you'll hear signals that might have traveled for thousands of miles via groundwave. If the transmission is made with enough power, over salt water, reception is possible. However, signals at 50 kHz and lower can penetrate seawater very well, which is why submarine communication is done here. The U.S. Navy's "Omega" navigation system is found on 10.2, 12, and 13.6 kHz. The Russian navy operates a similar system on 15.62 kHz. The U.S. Air Force has a FSK-based communications system on 29.5 and 37.2 kHz. This system was established to provide a backup

in case nuclear explosions rendered the ionosphere useless for propagation. Miscellaneous FSK-based stations are found here for direct communications with submarines and naval forces.


As you will find, there can be plenty of exotic DX during the winter months down below the mediumwave AM broadcast band. You just need a decent receiver that can tune these frequencies and an indoor loop antenna designed for these bands, or a very long wire antenna and a good earth ground. There are many pages on the Internet where you'll find information on these stations, equipment, and logs from other DXers. A good starting point would be [www.lwca.org/](http://www.lwca.org/).

## HF Propagation

Because the Earth is closer to the sun during the winter, the density of ionospheric ionization in the Northern Hemisphere is expected to increase more rapidly after sunrise than during other seasons. At the same time, static and atmospheric noise levels will be at seasonally low values during the month. This is a recipe for stable HF propagation openings on the lower frequencies, as well as for short strong periods of propagation on the higher shortwave bands.

Fairly good DX openings are expected on 19 and 16 meters, remaining open toward the west during the early evening. Nineteen meters will be the hottest day-

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time band, while 22 and 25 meters will be a close second. These start with early morning openings in all directions until about an hour or two after sunrise, and then remain open into one place or another through the day until early evening. When conditions are good (days with low geomagnetic and higher solar sunspot activity), 22 through 16 meters will likely remain open towards the south and west from early evening until about midnight.

The best bands for around-the-clock DX will be 31 and 25 meters. Twenty-five meters continues to be an excellent band for medium distance (500 to 1,500 miles) reception during the daylight hours, with longer distance reception (up to 2,000 to 3,000 miles) possible for an hour or two after local sunrise, and again during the late afternoon and early evening.

From midnight to sunrise, 41 and 31 meters promise some of the hottest nighttime DX during December. The first DX openings should be toward Europe and the east during the late afternoon, then move across the south through the hours of darkness, while remaining open into most parts of the world. Just after sunrise, openings will be more in a westerly direction. Low seasonal noise will make DXing a pleasurable endeavor.

For short-skip openings during December, try 90 through 41 meters during the day for paths less than 250 miles, and 90 down to 120 meters at night for these distances. For openings between 250 and 750 miles, try 41 meters during the day, and both 90 and 120 at night. For distances between 750 and 1,300 miles, 22 through 31 should provide daytime openings, while 41 down to 90 will be open for these distances from sunset to midnight. After midnight, 90 meters will remain open out to 1,300 miles until sunrise. Try 31 and 41 meters again for about an hour or so after sunrise. For openings between 1,300 and 2,300 miles, openings will occur on 22 through 16 meters, with fewer on higher bands, during the daylight hours. During sundown to midnight, check 22 through 41 meters for these long-distance openings, and then check 41 down to 90 meters after midnight until sunrise. Try 41 and 31 meters again for an hour or so after sunrise.

DX openings on 120 and 90 meters during the hours of darkness and into sunrise, with considerably decreased static levels, are a sure bet during the longer hours of darkness in the northern latitudes. Look for openings toward Europe and the south from the eastern half of the

United States and towards the south, the Far East, Australasia, and the South Pacific from the western half of the country. Ninety meters should peak towards Europe in a generally easterly direction around midnight, then open in a generally western direction with a peak just after sunrise. The band should remain open towards the south throughout most of the night.

## Propagation On VHF And Above

Quite a bit of meteor shower activity is expected this month, and this should result in improved conditions for meteor-scatter openings on the VHF bands for distances up to about 1,000 miles. When a meteor burns up in the atmosphere, its intense heat creates an ionized trail, making it possible for radio signals to propagate off the trail much like they would off of the ionosphere. The annual Geminid meteor shower, which will appear from December 7 to December 17, will peak on December 14. The maximum hourly rate typically reaches 80.

Geminids is a great shower for those trying the meteor-scatter mode of propagation, since one doesn't have to wait until after midnight to catch this shower. The radiant rises early, but the best operating time will be after midnight local time. This shower also boasts a broad maximum, lasting nearly one whole day, so no matter where you live, you stand a decent chance of working some VHF/UHF signals off a meteor trail.

A secondary seasonal peak in *Es* ionization should also result in some short-skip openings on low VHF between distances of about 800 and 1,300 miles. A rare occurrence of aurora during days of stormy geomagnetic activity is possible, providing some unusual short-skip openings on low VHF.

There is considerably less likelihood for transequatorial VHF openings during December, but look for a possible opening between the southern states and locations deep in South America. The best time to look for these is between about 8 and 11 p.m. local time.

## Current Cycle 23 Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 90.7 for August 2005, down a bit from July's 96.6.

The 12-month smoothed 10.7-centimeter flux centered on February 2005 is 98.5, down from January's 100.3. The predicted smoothed 10.7-centimeter solar flux for December 2005 is about 76, give or take about 17 points.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for August 2005 is 36.4, down from July's 39.9. The lowest daily sunspot value during August 2005 was 16, occurring on August 10. The highest daily sunspot count for August was 69 on August 2. The 12-month running smoothed sunspot number centered on February 2005 is 34.0. A smoothed sunspot count of 16 is expected for December 2005, give or take about 12 points.

The observed monthly mean planetary A-Index (*Ap*) for August 2005 is 16, the same as for July. The 12-month smoothed *Ap* index centered on February 2005 is 14.6, about the same as January's 14.7. Expect the overall geomagnetic activity to be quiet during most days in December, with a slight possibility of a major geomagnetic storm during the month.

## I'd Like To Hear From You

Let me know how you fare in hunting beacons and other signals on the low frequencies. I would love to share your propagation observations on the low-frequency spectrum, so please write an e-mail to me, or drop me a letter ("The Propagation Corner," P.O. Box 213, Brinnon, WA 98320-0213). Don't forget to share a bit about the radio equipment and antenna you use for your LF DXing.

You can join in with others in discussing space weather, propagation, and LF, MW, SW, 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 using a cell phone or other WAP device, 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 that you have noticed. Do you have questions about propagation? I look forward to hearing from you. Happy signal hunting! ■



# Radio Fun And Going Back In Time

**Q.** When was the shortest news broadcast ever?

**A.** Well, nobody can be sure because records of that sort just aren't being kept. The BBC, which was to later develop a well-deserved reputation for complete news coverage, did however, do a real short one. On Good Friday in 1930 they announced "There is no news this evening." A piano recital followed.

**Q.** What was the longest running off-shore pirate radio station and how long was it on the air?

**A.** Israel has a long history of clandestine broadcasting dating back to before it became a nation. The longest running pirate station was probably it. The ship *Peace* anchored three miles off Tel Aviv in 1971. It had a 75-kW transmitter and a 160-foot antenna mast. *Radio Peace* went on the air April 15 with Casey Kasem's "American Top 40."

In 1991, because of the Gulf War, *Peace* moved out to 10 miles from the Israeli coast. On November 11, 1993, the station closed down playing "Give Peace a Chance" and was scuttled by her owner, primarily because of financial problems. The owner believed he had contributed substantially to peace in the Middle East when the Rabin government signed an agreement with the Palestinian Authority.

Because of the tremendous popularity of Radio Peace, the Israeli Broadcasting Authority had to revamp and "update" its formats to reach the younger audience Radio Peace had attracted during her 22-year-long run.

**Q.** In all the war movies they show POWs with radios in the prison camps. Weren't the Germans very good at finding radios?

**A.** They sure were. And having a radio receiver in a prison camp was a death sentence. The prisoners, however, took extreme care not to be caught with the only thing that could bring them real war news. Radio receiver operators in the camps were specially trained and very careful men.

A fine example was Jimmy Yule. In 1936 Yule was commissioned into the Royal Corp of Signals. In 1939 he went with

the 15th Infantry Brigade to Norway. When the German invasion made the 15th withdraw, they left behind the 23-year-old Signals Officer. By 1943, Jimmy had developed some bad habits, and the Germans labeled him a chronic escaper. For this, Yule was sent to Colditz Castle in Czechoslovakia, a prison camp for bad boys. There Jimmy learned the art of being a POW radio operator.

French POWs had brought a commercially made radio receiver into the Castle piece by piece and reassembled it in the rafters under the Castle roof. When the French prisoners were moved out of the Castle, they left the radio in a secret room for the British prisoners. Every night one of two radio teams would go to the secret room and a special team called "putter inners" would open the room to let the team in, then reseal the room so its existence could not be detected.

Jimmy would tune the radio to the BBC in London and adjust the dial as the nighttime signal drifted back and forth on the dial. (The BBC was easy to pick up at night but does have some drift at that range.) His partner was a journalist captured while accompanying a Commando raid against St. Nazair, France. The journalist would write down all the news stories, sports scores, and everything else the prisoners wanted to know.

A half hour later the "putter inners" would come and take them out, erasing all signs of the coming and going. During the half hour all Germans in the castle were carefully watched. A radio receiver with an amplifier circuit can be detected, which is why the radio operators only stayed on for a half hour. ■

## Looking Back...

### Five Years Ago In Pop'Comm

Terry Brennan and Sean Sullivan were jointly awarded a U.S. Patent for trunked scanning—you can read the "rest of the story" in the December 2000 *Pop'Comm* in an article called, "Conquering EDACS: The Official Behind-The-Scenes Story." And the Big Radio of the time, Grundig's Satellit 800, was reviewed in depth by Ken Reiss. Ken reported "How you'll perceive the 800 seems to have a bit to do with what receiver you're coming from, and the type of listening you do."

### Ten Years Ago In Pop'Comm

One interesting "new" item we reported on in 1995 was the MFJ Enterprises MFJ-9420, 20-meter SSB travel radio, which is still around today and popular among low-power radio enthusiasts! As we're now nearing the end of the solar cycle, interestingly *CQ* unveiled *The NEW Shortwave Propagation Handbook*, saying, "Those signals are just around the bend, getting stronger for upcoming Solar Cycle 23."

### Twenty Years Ago In Pop'Comm

Secrets and mysteries were highlighted in the December 1985 *Pop'Comm*, including a report by Tom Kneitel, "Inside The CIA's Secret Radio Paradise." It included a rare look at Tom on page 19! The ICOM IC-R7000 was new, with a price of \$899. Also new was a "Slim Line" cell phone from AudioTel, the CMT-500, which retailed for a mere \$2295—yes, that decimal point is to the right of the "5."

## Did This Really Happen?

Now here's one for you. When I first started to learn about radio, I heard that during World War II and the early years of the Cold War our weather stations, radio transmissions from northern Alaska were often cut off from the continental United States by atmospheric conditions. Although unable to get their coded weather reports out reliably, the weather stations sent them anyway. The weather reports, always of significant military value, would be picked up by the Russians and decoded.

The Russians would send the decoded reports to Moscow for evaluation. The German interceptors would pick them up and retransmit the decoded-decoded messages through their system. British intercept stations would then pick up the German traffic, decode it and turn it over to the Americans who would telex it to Washington. There it would be stamped TOP SECRET before being evaluated by the meteorologists.

I've heard this from several sources and have never had anyone say, "It didn't happen that way." Did this sort of thing really take place or is it one of those legends that grew up over time among people who handle classified material? If any of you have any info on this, I'd really like to know.

# 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	UTC	Freq.	Station/Country	Notes
0000	6060	Radio Nacional, Argentina	SS	0200	9965	Voice of Armenia	Armenian
0000	11665	Radio Prague, Czech Republic via Ascension	SS	0200	7210	Radio Minsk, Belarus	
0000	13710	Radio Canada Int.		0200	4780	Radio Cultural Coatan, Guatemala	SS
0000	11885	Radio Cairo, Egypt		0200	15075	All India Radio	HH
0000	11690	Radio Vilnius, Lithuania	LL	0200	15495	Radio Kuwait	AA
0000	15385	Radio Exterior de Espana, Spain		0200	9575	Radio Med-Un, Morocco	FF
0000	7440	Radio Ukraine Int.		0200	15747	SLBC, Sri Lanka	
0030	11760	Radio Havana Cuba	SS	0200	17800	Deutsche Welle, Germany relay, Sri Lanka	RR
0030	11690	Radio Okapi (Dem. Rep.)	FF	0200	3320	Radio Sondergrense, South Africa	Afrikaans
0030	4052.5	Radio Verdad, Guatemala	SS	0200	6536	Radiodifusora Huancabamba, Peru	SS
0030	13605	All India Radio		0200	4985	Radio Brazil Central	PP
0030	13700	RDP Int., Portugal	PP	0200	6160	CKZN, Canada	
0030	9440	Radio Slovakia Int.	SS	0200	6215	Radio Baluarte, Argentina	SS; (irr.)
0030	12133	AFN/AFRTS, Florida		0230	7160	Radio Tirana, Albania	
0030	5890	Radio Thailand, via USA		0230	9865	Radio Farda, USA	Farsi
0030	12055	Vatican Radio	unid	0230	9795	Radio Budapest, Hungary	
0030	9605	Vatican Radio	PP	0230	6973	Galei Zahal, Israel	HH
0100	11500	Radio Bulgaria	SS	0230	13760	Voice of Korea, N. Korea	SS
0100	9675	Radio Cancao Nova, Brazil	PP	0230	9780	Republic of Yemen Radio	AA
0100	3310	Radio Mosoj Chaski, Bolivia	QQ	0230	9860	Voice of Russia, via Vatican	
0100	7345	Radio Prague, Czech Republic		0300	6010	La Voz de tu Consciencia, Colombia	SS
0100	5910	Marfil Estereo, Colombia	SS	0300	4919	Radio Quito, Ecuador	SS
0100	9805	Radio Farda, USA	Farsi	0300	3279	La Voz del Napo, Ecuador	SS
0100	9870	Radio Budapest, Hungary	HH	0300	4819	La a Voz Evangelica, Honduras	SS
0100	3249	Radio Luz y Vida	SS	0300	7110	Radio Ethiopia	Amharic
0100	9375	Voice of Greece	Greek	0300	4910	Radio Zambia	
0100	6190	Deutschlandfunk, Germany	GG	0300	4915	Radio Nacional Macapa, Brazil	PP
0100	9400	Radio Bulgaria	SS	0300	7200	Radio Omdurman, Sudan	AA
0100	11800	RAI Int., Italy	II	0300	6940	Radio Fana, Ethiopia	Amharic
0100	9480	Radio Rossii, Russia	RR	0300	9685	Channel Africa, South Africa	vern
0130	9700	Radio Bulgaria		0330	4990	Radio Apinte, Suriname	DD
0130	4885	Radio Difusora Acreana, Brazil	PP	0330	4965	The Voice, Zambia	
0130	6030	Radio Marti, USA	SS	0400	3255	BBC relay, South Africa	
0130	9870	Radio Austria Int.		0400	4930	VOA relay, Botswana	
0130	3340	Radio Misiones Int., Honduras	SS	0400	4976	Radio Uganda	
0130	9345	Kol Israel	HH	0400	6600	ZBC, Zimbabwe	vern
0130	4800	Radio Buenas Nuevas, Guatemala	SS	0430	5985	RTV Congolaise, Congo (Rep.)	FF
0130	6010	Radio Sweden, via Canada		0430	7150	Radio France Int., via Ascension	FF
0130	7125	Russian Int. Radio, via Moldova	RR	0430	6185	Radio Educacion, Mexico	SS
0130	9830	Voice of Russia	SS	0430	3345	Channel Africa, South Africa	
0130	9745	Radio Romania Int.	SS	0430	9580	Int. Radio of Serbia & Montenegro	
0130	9737	Radio Nacional, Paraguay	SS	0430	7275	RTV Tunisienne, Tunisia	AA
0130	6175	Voice of Vietnam, via Canada		0500	7255	Voice of Nigeria	



UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0500	4955	Radio Nacional, Angola	PP	1300	17880	China Radio Int., via Mali	FF
<b>0530</b>	7290	VOA relay, Sao Tome		1300	12010	Radio Australia, via Singapore	
<b>0600</b>	4915	GBC/Radio Ghana		<b>1400</b>	15140	Radio Sultanate of Oman	
0600	7125	RTV Guineenne, Guinea	FF	1400	9590	FEBC, Philippines	unid
0600	4760	ELWA, Liberia		<b>1500</b>	9385	KSDA/Adventist World Radio, Guam	
0600	6900	Turkish Meteorological Station, Turkey	TT	<b>1600</b>	9795	KNLS, Alaska	RR
<b>0630</b>	4845	Radio Mauritanie, Mauritania	AA	1600	11690	Radio Jordan	
<b>0700</b>	9525	Star Radio, Liberia, via Ascension		<b>1730</b>	11635	Radio Jamahiriya, Libya, via France	EE/FF
0700	9645	Radio Bandeirantes, Brazil	PP	1730	15070	Radio Pakistan	Urdu
0730	4810	XERTA/R. Transcontinental, Mexico	SS	<b>1800</b>	17705	Voice of Greece, via Delano	Greek
<b>0800</b>	6020	Radio Victoria, Peru	SS	1800	12005	RTV Tunisienne, Tunisia	AA
<b>0830</b>	12065	Radio Tikhy Okean, Russia	RR	<b>1830</b>	15400	BBC relay, Ascension Is.	
<b>0900</b>	4765	Radio Rural Santarem, Brazil	PP	1830	15380	RAI Int.. Italy	II
0900	5025	Radio Rebelde, Cuba	SS	1830	15345	RTV Marocaine, Morocco	AA
0900	6020	Radio Australia	Pidgin	1830	15120	Voice of Nigeria	EE
0900	3290	Voice of Guyana		<b>1900</b>	15325	Radio Canada Int.	FF
0900	11580	KTWR/Trans World Radio, Guam	CC	1900	15475	Africa Number One, Gabon	FF
0900	9885	Radio New Zealand		1900	15640	Kol Israel	FF
<b>0930</b>	6135	Radio Santa Cruz, Bolivia	QQ	1900	15085	VOIRI, Iran	FF
0930	9540	Radio Japan/NHK	SS	1900	15505	Radio Kuwait	AA
0930	9595	Radio Nikkei, Japan	JJ	1900	15560	RDP Int., Portugal	PP
0930	11735	Pyongyang Broadcasting Station, N. Korea	KK	<b>1930</b>	15630	Voice of Greece	Greek
0930	4955	Radio Cultural Amuata, Peru	SS	<b>2000</b>	15435	Emirates Radio, UAE	AA
0930	4939	Radio Amazonas, Venezuela	SS	2000	15465	Radio Romania Int.	SS
0930	6115	Radio Union, Peru	SS	2000	11735	Radio Tanzania-Zanzibar	Swahili
<b>1000</b>	5054	TIFC/Faro del Caribe, Costa Rica	SS	2000	13680	Radio Nacional, Venezuela, via Cuba	SS
1000	6010	Radio Mil, Mexico	SS	<b>2030</b>	17680	Voz Cristiana, Chile	SS
1000	9650	Voice of Korea, N. Korea	KK	2030	11655	Radio Nederland	
1000	15725	KHBN, Papua		2030	12085	Radio Damascus, Syria	AA
1000	9840	Voice of Vietnam		<b>2100</b>	6205	Radio Tirana, Albania	
1000	7120	Wontak Radio Light, Papua New Guinea	vern	2100	7160	Radio France Int., via South Africa	FF
1000	12085	Voice of Mongolia		2100	6155	Radio Austria Int.	GG
<b>1030</b>	9515	Radio Novas de Paz, Brazil	PP	2100	11965	Star Radio, Liberia, via Ascension	
1030	5910	Bible Voice, England, via Russia	CC	<b>2130</b>	13610	Radio Damascus, Syria	
1030	9965	KHBN, Palau	CC	2130	11865	Voice of Germany, via Portugal	
1030	2310	ABC No. Terr.. Service, Australia		<b>2200</b>	15345	Radio Nacional, Argentina	SS
<b>1100</b>	17650	China Radio Int.	CC	2200	7460	Radio Nacional de la RASD, Algeria (cland.)	SS
1100	5040	Radio Myanmar, Myanmar (Burma)	Burmese	2200	12050	Radio Cairo, Egypt	AA
1100	17715	Voice of Turkey	CC	2200	7320	Radio Jamahiriya/V of Africa, Libya, via France	AA/EE
1100	17760	BBC Relay, Thailand		2200	17850	Radio Exterior de Espana	SS
<b>1130</b>	17630	Africa Number One, Gabon	FF	2200	11730	VOA relay, Morocco	
1130	3385	Radio East New Britain, Papua New Guinea		2200	15600	Radio Taiwan Int., via Florida	
1130	4890	NBC, Papua New Guinea		2200	17740	VOA relay, Philippines	
<b>1200</b>	9580	Radio Australia		<b>2230</b>	9915	BBC relay, Cyprus	AA
1200	11555	KWHR, Hawaii		2230	9925	Creation Radio, via Germany	Croatian
1200	5020	Solomon Is. Bc Service		2230	21740	Radio Australia	
1200	9465	KTWR/Trans World Radio, Guam	unid	2230	5005	Radio Nacional Bata, Equatorial Guinea	SS
1200	11665	Central Bc System, Taiwan	CC	2230	21455	HCJB, Ecuador	SS
1200	15350	Voice of Turkey	TT	2230	9935	VOIRI, Iran	AA
1200	4871	RRI-Sorong, Indonesia		2230	9870	BSKSA, Saudi Arabia	AA
<b>1230</b>	15515	Radio France Int Relay, French Guiana	FF	<b>2300</b>	13650	China Radio Int., via Cuba	SS
1230	13625	Radio Free Asia, USA, via No. Marianas	unid	2300	13735	Radio Free Asia, USA, via No. Marianas	Vietnamese
1230	9525	Voice of Indonesia	Indonesian	2300	11980	China Radio Int.	
1230	13580	Radio Sweden		<b>2330</b>	5030	RTV Burkina, Burkina Faso	FF
1230	9650	KBS World Radio, South Korea		2330	7135	RTV Marocaine, Morocco	AA
1230	5965	RTV Malaysia	vern	2330	13755	VOA relay, Thailand	
<b>1300</b>	15400	YLE/Radio Finland	Finnish				

# New, Interesting, And Useful Communications Products

## Palstar AT-AUTO 1500-Watt Automatic Antenna Tuner

The Palstar AT-AUTO Antenna Tuner features a power rating of 50 to 1500 watts, can handle a single-tone carrier continuously, and has a wide Z range on 160 to 10 meters, with limited Z range on 10 meters. Tuning times are estimated at less than 6 seconds with heavy-duty processor-controlled stepper motors. Data in/out is DE-9P compatible with ICOM, Yaesu, Kenwood, and TenTec. The display is a two-line large print display that allows you to read the status of antenna feed, frequency, and memory (100 channels).



Palstar's new AT-AUTO 1500-watt automatic antenna tuner features a power rating of 50 to 1500 watts.

Also integrated into the AT-AUTO is Palstar's top-of-the-line PM2000A wattmeter (a \$149 value), which allows you to measure and display forward power, reflected power, and SWR simultaneously. The meter can display either peak or average power readings and has 300- and 3000-watt range settings.

Palstar offers a three-year limited warranty on the AT-AUTO Antenna Tuner, priced at \$1095 which was scheduled to begin shipping in November 2005. For more information contact Palstar at <http://www.palstar.com> or phone them at 800-773-7931.

## MFJ Whip Tuner/Artificial Ground

The new Whip Tuner/Artificial Ground from MFJ Enterprises gives you an instant 80- to 10-meter 150-watt antenna. The MFJ-1644 costs \$149.95 and all



The new MFJ-1644 Whip Tuner/Artificial Ground instantly gives you 80 to 10 meters on a 150-watt antenna.

you need to do is add the short whip and counterpoise wire and instantly get an effective portable all-band 3.5- to 30-MHz antenna. The tuner/artificial ground operates from 30 to 10 meters with included 4.5-foot telescoping whip antenna and counterpoise assembly. You can add a longer whip/random wire and external loading coil for more efficient operation, especially on 80 to 30 meters. A 12-foot whip, hamstick, or Hustler antenna will all work great. It features a standard 3/8 x 24 female connector for whip antennas and wing-nut for counterpoise.

The new MFJ-1644 is covered by MFJ's "No Matter What" one-year limited warranty. To order, get a free catalog, or for your nearest dealer, call 800-647-1800; or write to MFJ, 300 Industrial Park Road, Starkville, MS 39759; or visit them online at <http://www.mfjenterprises.com>.

## Improved MFJ SWR/Wattmeter

MFJ also just sent us information on the company's improved SWR/wattmeter, the MFJ-815C, indicating that it now reads true peak or average power on a large illuminated three-inch cross-needle meter and has a TrueActive peak reading circuit. It covers 1.8 to 30 MHz and reads true peak/average forward and reflected power simultaneously. The unit offers 3000 and 300-watt forward and 600/60-watt reflected power ranges and reads SWR from 1:1 to 8:1. Connectors are SO-239 on a black aluminum cabinet that measures 3.5 x 6 x 4.5 inches (HWD).



MFJ Enterprises MFJ-815C now reads true peak or average power on a large illuminated three-inch cross-needle meter.

The MFJ-815C is priced at \$89.95. For more information, contact MFJ Enterprises at 300 Industrial Park Road, Starkville, MS 39759, phone them at 800-647-1800, or visit them online at [www.mfjenterprises.com](http://www.mfjenterprises.com).

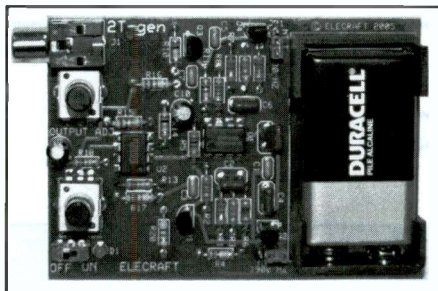
## Elecraft Introduces 2T-gen Two-Tone Test Generator

How do you know how clean your HF/VHF SSB transmitter or linear amplifier is? When are you overdriving your amplifier? And is it causing interference to adjacent hams? One of the most important performance measurements to determine transmitter linearity is the two-tone Intermodulation Distortion (IMD) test.

Elecraft's new 2T-gen is a two-tone test oscillator designed to provide a standard 700-Hz and 1900-Hz audio source for testing of SSB transceivers and linear amplifiers. Linearity impacts both SSB fidelity and the amount of SSB splatter that causes adjacent channel interference. Results of two-tone IMD tests can be found in almost every ARRL review of new transceivers and power amplifiers.

The 2T-gen is battery operated and provides sufficient output level (0-200 mV) to be connected directly to the microphone connector of almost any transceiver. Transmitter linearity can then be determined by observing the transmit signal two-tone envelope on an oscilloscope or station monitor, useful for both confirming proper transmitter operation and determining proper drive level for linear amplifiers. For more exacting IMD measurements, the transmitter's two-tone





The new Elecraft 2T-gen is a two-tone test oscillator designed to provide a standard 700-Hz and 1900-Hz audio source for testing SSB transceivers and linear amplifiers.

output can also be measured using a spectrum analyzer.

The 2T-gen is quite small (the PC board is just 2.5 by 3.5 inches (WL). Dual- and single-tone outputs can be selected, and both output level and balance between the two tones can be adjusted. The 2T-gen's harmonic distortion is -55 dB or better. It draws just 3 mA from its on-board 9-volt battery and includes a low-current power-on LED indicator. Rubber feet are also included so the unit can be used on the workbench. The 2T-gen is available now, and is priced at \$59. For further details visit the company's website at [www.elecraft.com](http://www.elecraft.com).

## Cobra's 200 GTL DX 10-meter Amateur Transceiver

An interesting new item from Cobra Electronics, Inc. is the 200 GTL DX. It's billed as a "full-featured AM/FM/SSB/CW 10-meter amateur radio with Nightwatch illumination." The unit features 30 watts RF power (100 watts SSB), dual finals, six-digit frequency counter, echo control, roger beep, SWR calibrating system, antenna warning indicator, high- or low-power operation, and analog meter.



The Cobra 200 GTL DX is Cobra's full-featured AM/FM/SSB/CW 10-meter amateur transceiver, which has a maximum SSB output of 100 watts.

Priced at \$318.95, the 200 GTL DX measures approximately 3 x 7.8 x 11 inches (HWD) and weighs 6.39 pounds. According to the Cobra website, it's available in stores only.

For more information, contact Cobra online at [www.cobraelectronics.com](http://www.cobraelectronics.com).

## Uniden Announces Industry's First GPS-Enabled Scanner

Uniden America Corporation just announced a new mobile digital scanner, the Bearcat BCD996T. This model introduces the first-ever GPS-enabled scanner, allowing the product to automatically select nearby radio systems for scanning. The BCD996T also offers APCO 25 digital capability, allowing consumers to monitor the activities and signals of city and government service departments.

The GPS-enabled feature offered by the BCD996T provides automatic system selection, which permits the scanner to turn system reception on or off depending on the user's location, and allows the user to define the scanner display to show location-based information. In addition, when a GPS unit, not included with this scanner, is connected to the BCD996T, it will alert at areas of special interest, such as dangerous intersections, school zones, or general points of interest.

Uniden's BCD996T scanner will not permit users to monitor sensitive, encrypted signals from national and local security services.

The Bearcat BCD996T also offers Close Call™ RF Capture Technology, Dynamic Memory Management, Fire Tone-Out, and Multi-site programming as well as 6,000 channels and a frequency range of 25 MHz to 1.3 GHz (excluding cellular and UHF TV frequencies). This new model is slated to hit retail shelves in spring 2006 and carries a MSRP of \$849.99.

"The BCD996T, the first GPS-enabled model in the scanner industry, is another milestone in the evolution of scanning," said Paul Opitz, product manager at Uniden America Corporation. "These new features will provide an efficient way for agencies that need compatibility in multiple geographic areas to use the scanner without having to reprogram the equipment for each location."

An extended list of features is available on the Uniden America Corp. website ([www.uniden.com](http://www.uniden.com)). When contacting Uniden, please tell them you read about it in *Popular Communications*. ■

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# The Uniden Bearcat BC-246T Scanner

Uniden has been hard at work in the last year producing updated models of many of the old standbys. The BC-246T represents a super replacement for the handheld trunktracker radios that have been very popular with scanner enthusiasts since the BC-235 was introduced a few years back.

## The Basics

First, as a receiver, the 246T is very capable. Not quite continuous coverage, but most of the important stuff is there: 25 to 54 MHz, 108 to 136.975 air, 137 to 174, 216 to 224, 400 to 512, 806 to 956, less cellular, and 1240 to 1300. The notable missing section is the 224 to 300 military air band, so if you're interested in those communications, this won't be your radio. Outside of that, and the new 700-MHz band (most other radios don't cover this either except for continuous coverage receivers) that's just coming into use in some busy areas of the country, the coverage is quite good.

The radio is a bit smaller than previous trunktracker's from Uniden. At 2.72 inches wide by 4.6 inches tall, it fits comfortably in almost any hand and fits into many pockets a lot more comfortably than previous generations, too. Plus, Uniden has finally given us what some people have been requesting for a very long time: AA batteries. The 246T is not the first radio to come out with this feature, but it's a welcome addition to any radio. The 246T requires only two AA batteries. If rechargeables *are* used, you can charge them in the radio with the supplied AC adapter. You are cautioned NOT to install alkaline batteries while the charger is in use.

## A New Control

The 246T includes a new control which they refer to as scroll control and a side-mounted (where Push-to-Talk buttons would be on a transceiver) menu and function keys. These controls add a lot of functionality to the receiver and help to make programming quite a bit easier once you get used to where menu items are located. You also use the scroll control to set alpha tags on channels and trunked system IDs. You can choose how you want the backlight to react; you can have it stay on when you press the light button for 10 or 30 seconds, have it light whenever you press a key, or have it light when the squelch breaks.

The 246T also includes a PC interface and Uniden software is available for download. Software for programming a radio with this much memory and alpha tagging is almost required. The Uniden application is now available for download and I'm sure third party applications will provide support soon.

## Trunktracker III

The BC-246 is a Trunktracker III, or third generation trunktracker receiver, with lots of cool features even if you don't need



*The Uniden BC-246T with Trunktracker III. This small handheld may change the way you think about scanning - and trunking!*

the trunktracking bits. This is not a minor upgrade to the previous generation of trunktrackers, but rather a whole new way to look at scanning.

For instance, the 246T features dynamically allocated memory; that is to say that you don't have banks and channels, but rather a "pool" of channels to use as you see fit. Uniden claims the radio can have as many as 2,500 channels, but that's unlikely. More reasonable is a claim of 1,600 for typical usage. Why the difference? Every feature that you use requires just a little bit of extra memory. For example, say you use alpha tags on your channels, they require a little more memory than a channel without them. Still, 1600 channels isn't shabby at all and you can divide them up however you see fit. Nice!

The way you get around banks and channels is that you store "systems." A system is a group of frequencies that belong together in some way. You can assign each system to a "quick key" that works something like a bank used to if you'd like quick access to turn the system or systems on or off. Multiple systems can be assigned a single key, so it can be a bit tricky to think through the programming. The radio can store up to 200 systems and each trunked system can have up to 200 IDs (the chan-





*The 246T, as well as several other new Uniden handhelds, are using AA batteries. Either alkaline or rechargeables can be used, but the manual warns against plugging the unit into the power supply if non-rechargeable batteries are installed.*

nels of a trunked system) associated with it. There's lots of storage space in the 246T if you plan it well.

The 246T comes pre-programmed with 400 channels including control channels for many trunked systems across the country. It includes the 25 most populated counties in the country, which unfortunately doesn't include St. Louis County, so I was unable to vouch for the accuracy of the data. I did get to try it for a couple of days in the Chicago/Cook County area, and the receiver did find several systems on its own—very cool, especially for the scanner enthusiast who is new to trunked systems.

You may be able to get up and running to at least begin to hear something just by scanning these preprogrammed channels even if you're not in the right area as the frequencies are used all over the country. Don't get excited if the radio says you're listening to Los Angeles if you're in New York though; it's not *that* sensitive, you've just recycled somebody else's frequency in your area.

## Other Features

The 246T also includes, as have many of the high-end scanners of late, CTCSS (Continuous Tone Code Squelch System) and DCS (Digital Code Squelch). These make listening a lot more pleasant as the receiver is much more resistant to interference from pagers and other strong signal overloads with these features in place. More and more public safety and business communications are using one or the other of these (you don't use both, however) to make their life easier, and it helps us as well. To help with searching, the radio includes a Pager Screen that will skip known pager systems during a search operation or using the Close Call feature. There is also a data block feature that has been on many previous Uniden products and works reasonably well.

You'll also find a host of system level settings related to trunking, which give you a lot of control over your listening to a particular system. Having the choice on many of these settings is a welcome addition to the trunktracker software. First

up is the iCall setting, which allows you to choose whether or not Individual Calls (from one unit directly to another) are scanned. The default is off, but you have the option to turn it on. Having it off is particularly useful in the search mode if you don't want the receiver stopping often for insignificant traffic.

There is a feature to make the scanner beep if any traffic is received with the Emergency Alert function set. The default setting is off, as the emergency buttons get triggered by mistake all the time, but if you're really into following a particular system, I can see where this would be a great feature to have.

System hold time dictates how long the scanner waits after a conversation has ended before moving on to the next system; not the next channel, but the next *system* in your scanner lineup. You can set a lengthy delay on systems that you're interested in following closely, hoping that a reply will be received. Unfortunately, this control is going to require quite a bit of experimentation as you can easily get things out of balance so that you wind up listening to only one system.

There is a per-channel attenuator set through the menu controls, but there is also an attenuator that can be assigned to a trunked system if necessary. If you're close enough to a transmitter (the one you're listening to, or another one that's causing interference), having the ability to attenuate the trunk system may be a welcome change. Once again, just having the choice is a most welcome feature.

## Summary

The Uniden BC-246T represents a significant advance in the state of trunktracker receivers. This is truly a workhorse radio for those needing trunked systems, and will be an excellent performer for conventional systems as well. Getting it programmed to get the most out of your listening will take some time, and fiddling with the settings takes time too, but isn't that what a hobby is about? The PC interface and software will take a lot of the pain out of that process.

This radio is a very versatile receiver with a lot of control over how it operates and how you interact with the stuff you're listening to. Check it out! At a street price of around \$230 to \$250, this may well be the scanner for your holiday wish list! Keep an eye on our "ScanTech" column for more detailed information and a how-to program guide coming soon! ■



*The Volume and Squelch controls are co-located marked with the red lines, and the new Scroll Control is to the right. Turn to select an item, then push it in to enter the selection. The data cover and power jacks are visible at the right edge.*

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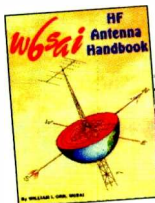


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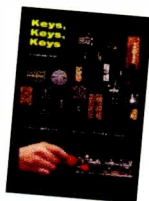
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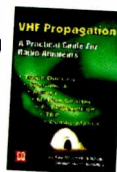


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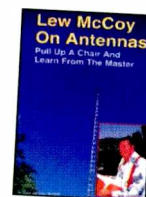
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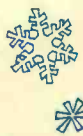
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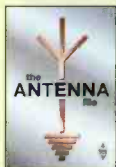


RSGB. © 2001, 320 pages. Choose from dozens of simple transmitter and receiver projects for the HF bands and 6m, including the tiny Oner transmitter and the White Rose Receiver. Ideal for the experimenter or someone who likes the fun of building and operating their own radio equipment.

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



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



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by Ian Poole, G3YWX. RSGB, 2002 Ed., 128 pages. This great book investigates the exciting area of VHF and UHF antennas. VHF and UHF bands provide an exciting opportunity for those wishing to experiment, while the antenna sizes at these frequencies do not occupy great amounts of space.



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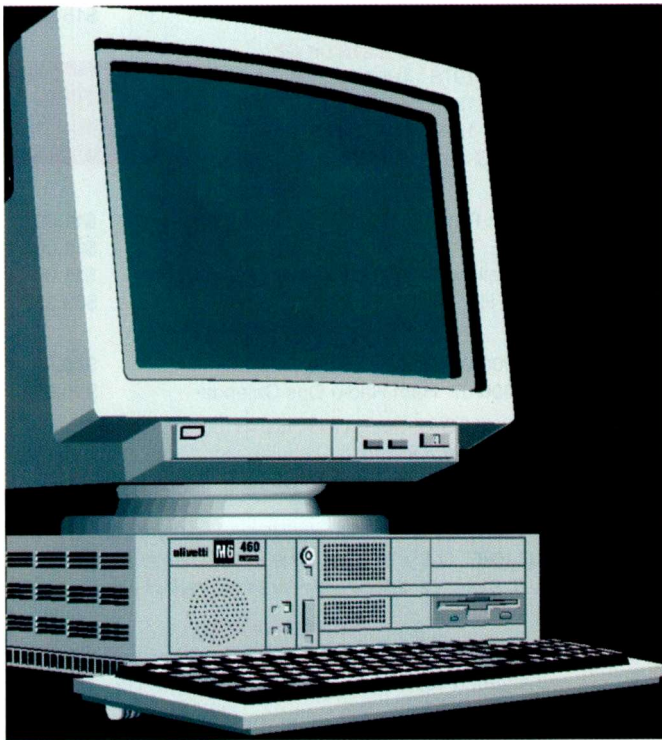
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# Software-Defined Radio—Part VI: Getting Involved With SDR, What's Next?



Over the past five columns I've provided a detailed overview of a new technology called Software-Defined Radio, or SDR, that will completely change the way radios are built and used during the 21st Century. While the primary users of this new technology are to be found among military and commercial operators, a small number of SDRs are now available that are either in kit form or fully assembled. Last month I introduced you to three of those products: the Universal Software Radio Peripheral (USRP) by Ettus Research, the SDR-1000/ROE by Flex Radio, and the SDR-14 by RFSpace.

Building on this background, this month I'm going to take a closer look at the ways in which you can use each of these SDR products as a platform for creating your own custom digital signal processing (DSP) software control and detection programs. (If you need a refresher, go back and review the material already presented in the previous issues of *Pop'Comm*.)

## A Virtual Homebrew

One benefit of this new radio technology is that it offers some real opportunities to get back into creating your own custom radio monitoring station. I'm sure that most of you have noticed the virtual disappearance of "hands-on" projects in radio hobby magazines over the past 10 years. This is due to the great changes that have taken place in electronic hardware through the expand-

ed use of integrated circuitry and printed circuit boards. These developments, while making conventional electronic equipment smaller, more "feature-rich" and dependable, have also made hands-on construction of radio projects exceptionally difficult. However, thanks to computer programming, the creation of "virtual" circuitry can be surprisingly easy, even for the average computer user.

Certainly there is always going to be a learning curve whenever a new technology is encountered, but just as people mastered the coils, capacitors, and vacuum tubes of the 1920s, those who take the time can master the programming techniques that exist behind programming terms such as "DLL," "Event Procedures," "Methods," and "OCX." In doing so, they will become the new radio pioneers of the 21st Century.

## Software Programming For SDR

Let's assume for a moment that you already know how to build software using popular programming languages such as Microsoft VisualBasic or some flavor of C+. Now, how do you set out to learn how to create a program for one of the three SDR platforms that I've mentioned?

Well, frankly, you need three things to be successful in any type of software programming project: communication, programming information, and inspiration. Let me just briefly explain what I mean by each of these points.

First, by communication I mean having direct access to the stakeholders who are working toward a similar software-programming goal. You will generally find this through published articles, books, and online discussion groups. By programming information, I mean the protocols you need to actually write the computer software that will tell a computer how to connect to and control an SDR. Since a protocol is a set of rules or standards that governs the way in which a computer communicates with an SDR, only the manufacturer of the SDR can provide this information. Finally, without inspiration there is simply no motivation for an individual to invest the necessary time and energy needed to make a software program work properly. Inspiration will come from those who have the imagination to look at SDR technology and see "the big picture" of how it will change the way that we use radios in the future.

Not surprisingly, when you take a look at the three SDR products I've described so far, you'll find these three elements were the basis of their development. Now let's take a look at each product from a software programmer's point of view, outlining where you can get communication, programming information, and inspiration for each of them.

## USRP

As I outlined in last month's column, the USRP costs a reasonable \$450 and contains the necessary analog-to-digital



FlexRadio Systems' website ([www.flex-radio.com](http://www.flex-radio.com)) offers the computer programmer a great deal of support for writing custom software for the SDR-1000 or to assist in the upgrade of the PowerSDR software supplied with the SD radio. This is thanks to the company's full support of an open source (GNU public license) software policy.

The screenshot shows the FlexRadio Systems website. On the left is a vertical navigation menu with buttons for: HOME, PRODUCTS, SPECIFICATIONS, SOFTWARE, TESTIMONIALS, PRICING, ARTICLES, RESOURCES, FORUM, DOWNLOAD, and CONTACT. The main content area features the FlexRadio Systems logo and the tagline 'Software Defined Radios'. Below the logo, it says 'The time now is Mon Aug 22, 2005 2:55 pm' and 'FlexRadio Systems Forum Index'. A table lists forum categories with their respective topic and post counts.

Forum	Topics	Posts
<b>General</b>		
Announcements Official FlexRadio Systems announcements including Hardware, major Software releases, and other items of interest.	24	75
Open Discussion Talk about radios. Talk about life. Talk about anything you like here (but please do not advertise unrelated products or websites -- we do not need cigars or Russian women).	263	938
User Success Stories Give us some details on your success stories related to the SDR-1000, or ham radio in general.	51	277
General Help / FAQ (coming soon) Post here for general help with the radio. Users helping users is a part of our success	...	...

(A/D) converters needed to build an SD radio. You will also need to purchase up to four daughterboard RF front-ends, for \$50 each, that will enable you to tune, or transmit, from 50 MHz to 800 MHz (others daughterboards are now being developed for other frequency ranges). The boards are available through online purchase from Ettus Research of Mountain View, California ([www.ettus.com/](http://www.ettus.com/)).

One of the virtues of SDR technology is that the hardware component is of very simple construction, and the USRP is a very good example of that. All you need to do is unpack it, plug in the daughterboards, plug the power supply into an AC wall socket, plug the unit into a LINUX-based PC, and then download the firmware into the unit. You need only to keep an eye on an indicator LED on the USRP that flashes when the unit's CPU is processing information properly, and is "off" when it's not.

Things do get a bit tricky, though, in the actual installation of the software into your computer, which is not at all like the "plug-and-play" environment of Microsoft Windows. Rather than simply running an installation wizard that does most of the work, you must "build" the software, starting with a proper installation of LINUX itself. This where the communication, programming information, and inspiration formula comes into play. Fortunately all of the stakeholders involved with USRP technology, from the manufacturers to the end users, have set up a very good support network.

## Thank GNU

The starting point—and really the heart and soul of amateur SDR technology—is the GNU (pronounced ghu-noo) Radio project, which was founded by Eric Blossom and Matt Ettus in 1998 (see [www.gnu.org/software/gnuradio/](http://www.gnu.org/software/gnuradio/)). The purpose of the project is very straightforward: to ensure that everyone has free access to SDR technology that government interference in the free distribution of SDR software is legally challenged.

The GNU Radio project has its roots in earlier efforts by software programmers to prevent big corporations such as IBM and Microsoft, to name only two, from having near complete control over computer technology through the restrictive application of copyright laws to software programming. The two primary organizations that have worked to realize this idea are the

Free Software Foundation ([www.fsf.org/](http://www.fsf.org/)), and its public arm, the GNU project ([www.gnu.org](http://www.gnu.org)).

The GNU principle of open source, freely distributed software has gained great acceptance in the amateur radio community. For instance, as we'll see later Flex Radio Systems, maker of the SDR-1000, freely distributes its software and source-code using the GNU General Public license system developed by the Free Software Foundation.

So, basically you need to go to the GNU Software Radio URL at [www.gnu.org/software/gnuradio/](http://www.gnu.org/software/gnuradio/) and follow the instructions found there. All the software, documentation, and links to other sites that are connected to the project are found there as well. One of the best sites for support has been set up by Michael Gram, KD7LMO, who provides an excellent overview of the software installation process from the ground up ([www.kd7lmo.net/ground\\_gnuradio\\_install.html](http://www.kd7lmo.net/ground_gnuradio_install.html)).

Michael's website can also help you find that all-important component of inspiration. There you'll find described his application of the USRP and GNU SDR software as part of a high-altitude balloon project, where amateur radio VHF/UHF repeaters and ATV cameras are taken up to altitudes of 100,000 feet or more (you should see the video pictures that he gets at 18 miles up!). Truly, it's inspiration at its best!

Additional user-supplied support is offered through GNU Radio Wiki ([comsec.com/wiki?GnuRadioWiki](http://comsec.com/wiki?GnuRadioWiki)), which provides FAQs, step-by-step how-to articles, public forums, and reading lists. If you take your time and read through all of the material and ask questions, your chances of success will improve.

## FlexRadio SDR-1000/ROE

If you want to develop software for SDR technology using Microsoft Windows as your operating system platform, your best bet is the SDR-1000/ROE, offered by FlexRadio Systems of Austin Texas ([www.flex-radio.com](http://www.flex-radio.com)).

The entire software component of this product (called PowerSDR), including the source code, is available for free from the company's website under a GNU General Public License. This website contains a wealth of information on all things relating to SDR technology as well as to developing application software for the product.

Gerald Youngblood, AC5OG, who developed the SDR-1000/ROE and is president of FlexRadio Systems, actively encourages open source software development for his product. This means that anyone who follows the criteria for submitting revised code can see their improvements, or even new features, released as a new version of the software. To facilitate this open source approach, the FlexRadio website contains an extensive library of articles on the SDR-1000/ROE plus links to DSP-related websites and resources. It also offers 22 online forums for discussing a wide variety of hardware and software issues.

What's also nice about the site is that all versions of the software have been archived so you can go back and see exactly how the software has evolved, how problems were overcome, and how new features were installed. You can also download release notes, documentation, and WAV files that you can use to test the software without actually owning the hardware component. So even if you don't own the SDR-1000/ROE, you can still experiment with the software component and use it as a starting point for learning programming.

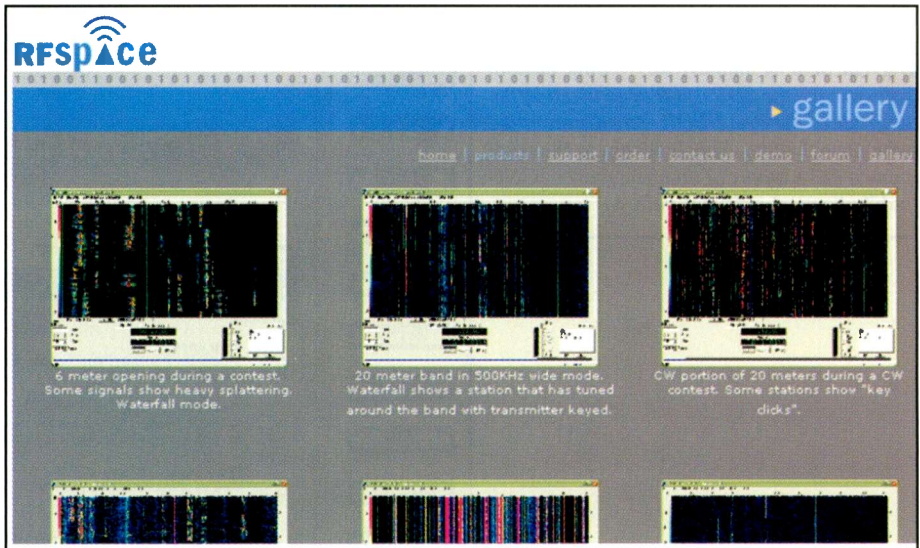
Interestingly, this particular SDR is programmed using Microsoft Visual Studio.Net. That software programming tool is going to be the starting point for the next series of columns that I'll be doing with the goal of showing you how to either create a custom user interface or to modify an existing software program, such as PowerSDR.

The key point is that if you just want to see what it is that software programmers do, you can take a tour through the FlexRadio website. Then, if you're serious about trying software programming (or improving upon existing skills), start going through the resources presented at that site in detail.

## SDR-14

The SDR-14 from RFSpace ([www.rfspace.com](http://www.rfspace.com)) is more than a simple communications receiver. It can be best described as being a FFT (Fast Fourier Transform)-based spectrum analyzer and digital receiver, where FFT refers to a procedure for calculating discrete frequency components from sampled time data.

Still, the SDR-14 is as true an SDR as it is a "black box" that sits outside your personal computer, and is primarily a high-speed analog-to-digital (A/D) converter. This means that it converts a broad



The RFSpace website ([www.rfspace.com](http://www.rfspace.com)) primarily outlines the product features of the SDR-14 in its primary function as an FFT spectrum analyzer. You can use this site to download the documentation required for writing your own custom software package so you can use the SDR-14's radio monitoring features to their fullest extent possible.

spectrum (0 to 30 MHz) of RF signals into digital data and then processes that digital signal into the required *I* and *Q* format using a direct digital (D/D) converter.

The *I* and *Q* digital data created within the SDR-14 are sent to your personal computer via a USB 1.1 connection. All the spectrum display and detection functions are then performed on the personal computer using a Microsoft Windows-based DSP software package that comes with the SDR-14, called SpectraVue.

Unlike FlexRadio Systems, RFSpace has taken a more conventional approach, as the SpectraVue software package is usable in applications other than as the control and demodulation software for the SDR-14. Because SpectraVue is not provided as an open source software product the source code, as well, is not made available for change or modification as it is with the Power SDR software supplied with the SDR-1000.

However, having said that, the independent development of third party software for the SDR-14 is encouraged by RFSpace and the information required to do that is made freely available on a different website (see <http://www.moetronix.com/files/sdr14interface-spec003.pdf>). This documentation provides you with a detailed overview of how the SDR-14 transfers information back and forth between the "black box" and the computer using the USB port. With this information someone proficient in computer software programming can plug in the appropriate values into their code and create a custom software program.

Again, even if you do not want to try computer programming, it's well worth your while checking out RFSpace's and Moetronic's websites. You can download the SpectraVue program along with a number of WAV files. You can run those WAV files through the SpectraVue program to see how various modes of communication are managed, just as if you had the SDR-14 hooked up to your computer. Current examples provided in those files include satellite captures and a ham radio Earth/Moon/Earth (EME) echo, the 40-meter CW band during field day operations, and DRM (Digital Radio Mondiale) from CBC shortwave.

In addition to the downloadable documentation and software, there is also an online discussion group on the RFSpace webpage that focuses on programming issues. There is also a Yahoo group dedicated to the SDR-14 that has approximately 65 members, allows you access to Moe Wheatley, AE4JY (the designer of the "black box"), as well as a number of people who are active in developing their own software for the product.

Over the next series of columns we'll take a closer look at the interface specs to show you how to plug that information into a custom computer software program that meets your personal requirements.

## Next Time

So now that I've given you an overview on exactly what SDR is and how its hardware and software components work, the next task will be to begin learn-



ing how to write computer software. To help you do this, I'm also going to show you how to get free legal versions of software for programming in C+ and Visual Basic from our good friend Bill Gates.

Remember that there is a bit of a learning curve involved in becoming proficient in software programming. I'm not going to be able to teach you *everything* you will need to know. All I can do is point you in the right direction, and then you're going to have to invest a little time and effort to make it all work.

Don't forget that you can e-mail me with any questions or pictures you may have of your own computer-assisted monitoring station or stories about how you've built and run it at [carm\\_popcomm@hotmail.com](mailto:carm_popcomm@hotmail.com). As mentioned before, I cannot answer general questions on computers, but will be more than happy to help you with any issues raised in the columns.

I have also placed a list of the columns I've done over the past two years, along with a summary of the content online. Please note that my personal webpage has moved to a new URL at [www3.sympatico.ca/joe\\_in\\_ey](http://www3.sympatico.ca/joe_in_ey). On that website, I've also included instructions on how to purchase back issues of *Popular Communications*.



## GNU Radio

the gnu software radio

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News

- **October 11, 2004 - GNU Radio 2.2 now available**
- For additional details see <http://comsec.com/wiki?GnuRadio2.X>.
- **July 12, 2004 - GNU Radio 2.x Alpha available for testing**
- Today we made the first alpha release of the GNU Radio 2.x series. It's now available for testing. For additional details see <http://comsec.com/wiki?GnuRadio2.X>.
- **April 8, 2004 - GNU Radio 2.x feature list**
- There's a bottom to top rewrite of GNU Radio underway. For a preview of

The GNU radio project homepage ([www.gnu.org/software/gnuradio/](http://www.gnu.org/software/gnuradio/)) may not seem to have a great deal of information, but looks can be deceiving. Once you start exploring the site by clicking on its links, you're directed to a wealth of software resources and documentation that can help you build an SDR UHF/VHF receiver and transmitter (50 to 800 MHz), as well as a high-definition television receiver that you can operate through a LINUX-based computer.

Please also remember our troops overseas and give them your support. As I mentioned, the "Any Service Person" mail program has been suspended for security reasons, so instead refer to the U.S. Department of Defense's official

webpage, "Defend America." They have a section found at [/www.defendamerica.mil/support\\_troops.html](http://www.defendamerica.mil/support_troops.html) with an amazingly wide range of practical and useful ways you can directly help.

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# FRS And CERT Challenges: Unlicensed Radio Operators Are Vital At The Neighborhood Level!

Throughout the country, Community Emergency Response Teams (CERT) regularly use Family Radio Service (FRS) for short-range block coverage, General Mobile Radio Service (GMRS) for multi-block coverage, and ham radio 2 meters and 440 MHz to take local area radio traffic over to the Emergency Operation Center (ECO) radio room. With so many city public safety agencies getting in on the CERT funding from Homeland Security, ham operators, GMRS system owners, and FRS radio operators have a great opportunity to integrate within the city disaster preparation plan.

"We took our city training one step further and developed our own neighborhood safety and preparedness two-session course, with neighborhood radio communications conducted on both ham radio as well as Family Radio Service," comments Diane Hill, KG6WBN, director of the Neighborhood Safety & Preparedness Corps.

"Our neighborhood safety and preparedness course, under the supervision of Costa Mesa Emergency Services, was so well received by our local neighborhood blocks, the city came up with a prestigious training room to host a free ham radio class for everyone interested in emergency communications," adds Paul Hill, KG6WBO, communications director of the Neighborhood Safety Corps.

I have personally conducted this class, and we packed the room! But our challenge is the Family Radio Service equipment and marginal range. Many CERT class graduates and neigh-

borhood safety and preparedness team leaders were fast to find out the following FRS follies:

- FRS UHF range is minimal in tree-lined neighborhoods
- Confusion on no-license use of combo FRS/GMRS equipment
- GMRS license will not authorize community disaster preparation
- Communications between non-family members prohibited
- Ridiculous manufacturers' claims of five-mile and eight-mile range
- Confusion with tone signaling, roger beeps, and private channels

One emergency group in downtown Los Angeles advised it was impossible to find FRS-only, 14-channel equipment *without* the higher-power GMRS frequencies included. No one wanted to risk an FCC rule violation, so they did not purchase the FRS/GMRS combo equipment.

Regardless, the tie-in of ham radio operators and already-licensed GMRS operators, like local REACT teams, worked well in relaying block-to-block radio reports heard over FRS. "The big problem is keeping the hams and professional GMRS REACT teams regularly working down at the FRS block level," comments Bill Alber, WA6CAX, who heads up volunteer emergency communications in the San Francisco Bay area.

"The hams quickly tire of the incessant racket on FRS, so we lose them [FRS] as a valuable resource in our weekly training nets," adds Alber.

## Broken Promises?

Another big problem is *how* the city may actively use its CERT volunteers.

"CERT members get dropped like a hot potato after their 24 hours of instruction CERT class is finished," comments Tom Love, a Midwest GMRS operator. He's outspoken about how many cities may *promise* volunteers will work closely with police and fire on the big one, but have few or no plans to actually call up CERT members to help out in an actual emergency.

Tom Redler, N6DCL, a CERT volunteer, encountered this same dilemma when he asked his local fire department how they might use their local CERT-trained volunteers. "Hams and CERT members using FRS and GMRS frequencies are not within our emergency communications plan—we could not use any radio traffic not officially listed in our emergency communications response," Redler was told by one fireman in the Los Angeles area.

"CERT training is good, but there should be no false illusion of ever a green-vested CERT member responding to, and assisting with, fire and police activities in most cities throughout the country," adds Tom Love.

And I also echo, acknowledge, and shake my head about the

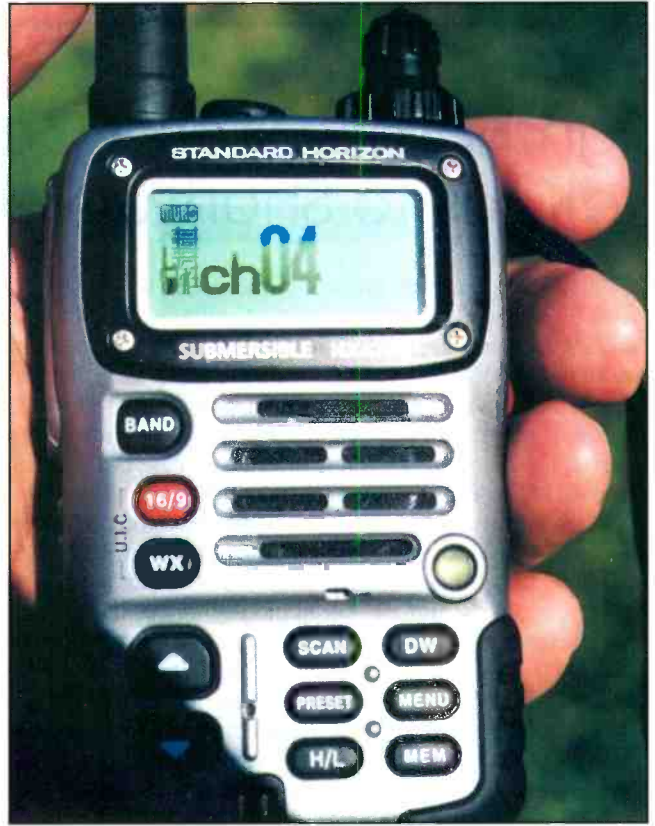


MURS range out on the desert was over 10 miles!





*A small homebrew MURS 153-MHz beam extends range and can cut down on interference.*



*The Standard Horizon submersible HX470S is a triband handheld that operates on Marine, FRS, and MURS channels.*

entire CERT training tied into the support of your local emergency agency. Rather, valuable CERT training might let you set up your own neighborhood safety and preparedness team.

After two years of working FRS as well as GMRS (KAE8689), I found that there's better low-cost equipment to get the job done, where signals will go miles, not yards.

### Enter MURS

"Multi-Use Radio Service (MURS) 10-channel, 2-watt, VHF handhelds with rechargeable battery pack cost under \$129, fully programmed including voice scrambling," comments REACT Area Coordinator (Southern California), Bob Leef, KB6DON. This brand of handheld radio, Model NT-10, is from well-respected TEKK Communications and is FCC-authorized for Part 95.

MURS radios are permitted 2 watts of power output at the antenna jack, and a remote antenna is permitted if it is no more than 60 feet above the ground or 20 feet above the roof or tower structure on which it is mounted. A MURS station running low-loss coax to a moderately elevated ground plane antenna system could easily enjoy a five- to 10-mile range to communicate with other MURS operators running just the little TEKK handheld and rubber duck—at least, technically.

**Table. Multi-Use Radio Service Band**

Channel 1	151.820 MHz
Channel 2	151.880 MHz
Channel 3	151.940 MHz
Channel 4	154.570 MHz
Channel 5	154.600 MHz

In downtown areas, would-be MURS operators are encouraged to first scan the five MURS frequencies (see **Table**) to find one less congested with fast-food or low-power industrial radio traffic. If there are some open MURS channels in your area, bring in a pair of TEKK handhelds, five consecutive channels of MURS with one subaudible tone for encode and decode programmed in, plus five redundant MURS channels with an alternate encode/decode CTCSS tone. While CTCSS won't magically open a crowded channel, it will at least hush on-channel racket, except for those similar MURS units with the same subaudible tone.

Bob Leef says folks may call him for more technical suggestions at 949-770-9501. You can also look up the technical specs on the equipment at [www.tekkinc.com](http://www.tekkinc.com) and learn more about MURS at <http://groups.yahoo.com/group/murs-open>, along with the FCC webpage at <http://wireless.fcc.gov/services/personal/murs>.

### Encouraging Your City To Take Advantage Of CERT

Encourage your city to take greater advantage of its investment in CERT volunteer training. Although I suspect CERT grant money is running out—until we have another big national incident—radio volunteers, like you and me, can take all of our city-sponsored training and practice for an emergency incident where our auxiliary communications will come in loud and clear when city systems get overloaded to the max.

Continue to develop your own disaster preparedness program based on ham, GMRS, and license-free radio systems, and continue to train. Be ready—you might actually get a real call down.

# Lighthouse Of The Caribbean Returns To Shortwave!

These days there are probably times when we all feel that our shortwave world is about to collapse around us. It seems that every month we report on some international broadcaster announcing a serious cutback or the complete cessation of their shortwave activity. But just as often, we have the pleasure of reporting that some old friend, silent on the bands for years, has returned. The most recent such case is TIFC Faro del Caribe, “**The Lighthouse of the Caribbean**” in Costa Rica, which has re-occupied its old spot on **5055** (slightly variable). After some initial tests, the station should be on its regular schedule of 0000 to 0400 and 1000 to 1600. Early receptions did not feature very strong signals, but hopefully that will change as seasonal conditions improve. Reception reports go to Apartado 2710, 1000 San Jose, Costa Rica, e-mail: [radio@farodelcaribe.org](mailto:radio@farodelcaribe.org). TIFC joins Radio Misiones Internacional (3340) and La Voz Evangelica (4819), both in Honduras and both recently returned to shortwave.

Another returnee is **Radio 8 de Setembro in Descalvado**, Brazil, which emits a mere 250 watts on **2490** and is scheduled from 0800 to 0200, all in Portuguese. You’ll have to listen long and hard to bag this one, which is almost never reported outside its home country. Another returning Brazilian—this one only in the expectation stage—is **Radio Integracao, 4765**, in Cruzeiro del Sul.

We mentioned earlier that the **All India Radio** regional stations in the 90-meter band were moving to 60 meters and were due to have made the change at the end of October. If things happened as planned, here’s how it should have sorted out: AIR-Bhopal moved from 3315 to **4870**, AIR-Shimla from 3223 to **4980**, AIR-Gangtok from 3390 to **4810** and AIR-Delhi from 3365 to **5020**. As it happens we’re in a good time of the year for reception of the lower frequency AIR regionals, so now’s the time to go hunting!

The **West Africa Democracy Project** (WADR), based in Dakar, Senegal, is now broadcasting to the West African region, promoting democracy, open society, government accountability, and so on. Initial broadcasts of this new service were on **17555** via Rampisham, England, at 0800 for an hour each day. That’s an awful time/frequency pairing for us, but it has probably changed by now. WADR’s programs will also be carried by a number of local stations in the target area. The service can be reached at P.O. Box 16650, Dakar, Senegal, or via e-mail at [wadr@wadr.org](mailto:wadr@wadr.org).

**Kenya Broadcasting Corporation** has discontinued its “morning” broadcast (0300 to 0700) on **4915**, a move which leaves us out of options for this one. Even when it was active, the KBC was rarely noted in North America.

## Reader Logs

Remember, your shortwave broadcast station logs are always welcome. But please be sure to double or triple space items, list them by country, and include your last name and state abbrevi-

STAR radio is a FM & SW network serving Liberia & the sub region of West Africa. It is operated in partnership with the Hironelle Foundation - Media for Peace & Human Dignity, a non governmental organization of journalists based in Switzerland. STAR radio aims to contribute to the restoration of peace in the region by providing professional, independent & reliable information.

Hironelle Foundation  
Rue traversière 3  
CH-1018 Lausanne  
Switzerland

**STARradio**  
Liberia

in partnership with **Fondation Hironelle**  
Media for Peace & Human Dignity

OSL for Richard A. D'Angelo

We are pleased to certify your reception of STAR radio, Liberia

Date: 16 July 2005  
Time: 21-21:21 UTC  
Frequency: 14865 kHz  
Signature: Mr. Darcy Christian, STAR radio Program Officer

For more information: [www.hironelle.org](http://www.hironelle.org)  
[info@hironelle.org](mailto:info@hironelle.org)

*Rich D'Angelo has already QSLed Liberia's Star Radio, aired via Ascension Island.*

ation after each log. 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. Also, here's the usual line begging for a photo of you in your shack. You've thought about sending one in—why keep putting it off? “GIG” readers are interested in seeing what you look like, especially you regular contributors!

Now, it's like, well, I mean, you know...the logs!

**ALASKA**—KNLS, 9795 in RR with EE rap and pop. ID at 1659 and off. (MacKenzie, CA)

**ALBANIA**—Radio Tirana, 6115 in EE at 0150 with financial news, poetry. (Wood, TN) (t) 6115//7160 in unid language to close at 0258. (Burrow, WA) 6115 at 0247, 6205 in Albanian at 2111, and 7160 in EE to ECNA at 0230. (DeGennaro, NY)

**ANGUILLA**—University Network, 11775 with Gene Scott tapes at 2038. (Charlton, ON)

**ARGENTINA**—Radio Nacional, 6060 in SS at 0951. (DeGennaro, NY) 0016. (Charlton, ON) 15345 with live sports coverage in SS at 0211. (Brossell, WI) Radio Diaz, 5400 LSB at 0226 with man and woman in SS hosting program of Latin rhythms. Two short and one long time pip at TOH and apparent ID. (D'Angelo, PA) (*This is an irregular feeder broadcast.—gld*)

Radio Continental, 5400 LSB in SS at 0145 with SS talk, music. (Alexander, PA) (*ditto, see above—gld*)

**ARMENIA**—Voice of Armenia, 9965 in Armenian to South America at 0208. (DeGennaro, NY)

**ASCENSION ISLAND**—BBC Relay, 15400 to West Africa at 1844, 17830 to West and Central Africa at 2008 and 21470 to South Africa at 1853. (DeGennaro, NY)

**AUSTRALIA**—Radio Australia, 5995 in Pidgin at 1040, 6020 in Pidgin at 1043, 9475 to SE Asia at 1137, 9580 to the Pacific at 0925 and 9590 to the Pacific at 1130. (DeGennaro, NY) 5995 with news at 1100 and 15515 with live soccer at 0218 and 12010 via Singapore at 1310. (Brossell, WI) 6020 in Pidgin at 0900. (Barton, AZ) 9580 at 1747, 15240 at 0347 and 21740 at 2255. (MacKenzie, CA) 12080 at 2050. (Charlton, ON) 15240 at 0635 with Australian Rules football



## Help Wanted

We believe the "Global Information Guide" consistently presents more short-wave broadcast loggings than any other monthly SW publication! (This month we processed 405 loggings!)\* Why not join your fellow SWLs, let us know what you're hearing, and also become eligible for our monthly shortwave book prize! Send your logs to "Global Information Guide," *Popular Communications*, 25 Newbridge Rd., Hicksville NY 11801-2953. Or e-mail them to Editor Harold Ort at popular-com@aol.com, or to your "GIG" columnist at gdex@genevaonline.com (please see the column text for basic formatting tips.) Come join the party—we look forward to hearing from you!

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

and 15515 with Aussie rules football at 0428. (Wood, TN) 0932. (Barton, Philippines) ABC Northern Territories Service, Tennant Creek, 2325 very weak at 1146. (Strawman, IA) Voice International, 13635 with music and talk at 1628. (Barton, AZ)

**AUSTRIA**—Radio Austria Int., 6155 in GG with music discussion at 2103 and 13730 in GG to Europe at 1007. (DeGennaro, NY) 9870 in EE at 0053. (MacKenzie, CA) 0100 with IS, ID. (Charlton, ON) 0155 with Report From Austria, multi-lingual IDs and IS. (Brossell, WI)

**BELARUS**—Radio Belarus, 5970 at 0200 sign on with inst. Music, multi-lingual

## Abbreviations Used In This Month's Column

*	— before or after a time (time the station came on or left the air)	LSB	— lower sideband
(l)	— after a frequency (lower sideband)	LV	— La Voz, La Voix
(p)	— presumed	NBC	— National Broadcasting Corporation (Papua New Guinea)
(t)	— tentative	ORTB	— Office de Radiodiffusion et Television du Benin
(u)	— after a frequency (upper sideband)	PBS	— People's Broadcasting Station
v	— variable	PP	— Portuguese
//	— in parallel	PSA	— public service announcement
AA	— Arabic	QQ	— Quechua
ABC	— Australian Broadcasting Corporation	RCI	— Radio Canada International
AFN	— Armed Forces Network	Rdf.	— Radiodifusora. Radiodiffusion
AFRTS	— Armed Forces Radio TV Service	REE	— Radio Exterior de Espana
AIR	— All India Radio	RFA	— Radio Free Asia
Anmt(s)	— announcement(s)	RFE/RL	— Radio Free Europe/Radio Liberty
Anncr	— announcer	RNZI	— Radio New Zealand International
AWR	— Adventist World Radio	RR	— Russian
BSKSA	— Broadcasting Service of Kingdom of Saudi Arabia	RRI	— Radio Republik Indonesia
CC	— Chinese	RTBF	— RTV Belge de la Communate Françoise
Co-chan	— co-channel (same frequency)	Relay	— transmitter site owned/operated by the broadcaster or privately operated for that broadcaster
Comml(s)	— commercial(s)	relay	— transmitter site not owned by the broadcaster
CP	— Bolivia, Bolivian	SCI	— Song of the Coconut Islands (transition melody used by Indonesian stations)
CRI	— China Radio International	s/off	— sign off
DD	— Dutch	s/on	— sign on
DJ	— disc jockey	SIBC	— Solomon Is. Broadcasting Corp.
DW	— Deutsche Welle/Voice of Germany	Sked	— schedule
EE	— English	SLBC	— Sri Lanka Broadcasting Corporation
ECNA	— East Coast of North America	SS	— Spanish
f/by	— followed by	TC	— time check
FEBA	— Far East Broadcasting Association	TOH	— top of the hour
FEBC	— Far East Broadcasting Company	TT	— Turkish
FF	— French	TWR	— Trans World Radio
GBC	— Ghana Broadcasting Corp	Unid	— unidentified
GG	— German	USB	— upper sideband
GMT	— Greenwich Mean Time	UTC	— Coordinated Universal Time (as GMT)
HH	— Hebrew, Hungarian, Hindi	UTE, ute	— utility station
HOA	— Horn of Africa	Vern	— vernacular (local) language
ID	— station identification	(via)	— same as "relay"
II	— Italian, Indonesian	VOAS	— Voice of America
Int	— international	VOIRI	— Voice of Islamic Republic of Iran
IRRS	— Italian Radio Relay Service	WCNA	— West Coast of North America
IS	— interval signal	ZBC	— Zimbabwe Broadcasting Corporation
JJ	— Japanese		
KK	— Korean		



# radio hoa-mai

www.radiohoamai.com • Voice of Hoa-Mai Foundation

To: Richard A. D'Angelo

We are pleased to confirm your reception report of our programs. It has been checked and found to be correct.

Date: June 12, 2005 on 11555 kHz. at: 1300 UTC

We appreciate your interest and hope you will continue to enjoy our programs and tell other about us, including the Vietnamese in your areas. For more information about our efforts to the cause of restoring democracy and human-rights in Vietnam, please frequently visit our web sites.

Again we thank you for your kind concern and support.

Sincerely Yours,

Trinh Ngoc Anh



Radio Hoa-Mai is one of several broadcasts pushing for democracy in Vietnam. This one is aired over KWHR, Hawaii on 11555kHz. (Thanks Rich D'Angelo)

ID and start of EE segment with ID, schedule, mailing address and news. (D'Angelo, PA) 7210 in EE to Northern Europe at 0225. (DeGennaro, NY)

**BOLIVIA**—Radio San Miguel, Riberalta, 4905 in SS at 0923. (DeGennaro, NY) Radio Santa Cruz, Santa Cruz, 6134.8 with talk and music, ID 0934. (DeGennaro, NY) Radio Mosoj Chaski, Cochabamba, 3310 with talks in QQ at 0040. (DeGennaro, NY) Radio Eco, Reyes, 4409.7 with ID at 0055 and music. (Wilkner, FL)

**BRAZIL**—(all in PP) Radio Nacional Amazonia, 6185 at 0910 and 11780 at 2344. (DeGennaro, NY) 11780 at 0059. (Charlton, ON) 0930. (Barton, Philippines) 1030. (D'Angelo, PA) 1112. (Brossell, WI) Radio Nacional Macapa, 4915 at 0230. (Clapshaw, WA) Radio Educacao Rural, Tefe, 4925 with hints to housewives at 0040. (DeGennaro, NY) Radio Clube do Para, Belem, 4885 with religious message at 0853. (DeGennaro, NY) Radio Alvarado, Londrina, 4865 with prayers and responsive readings at 0735. (Wood, TN) Radio Anhanguera, Araguaia, 4915 at 0901. (DeGennaro, NY) Radio Cultura Ondas Tropicasi, Manaus, 4845.2 at 0029 with guitar. (DeGennaro, NY) 0140 with love songs and ballads. Sign off anmts at 0153. (D'Angelo, PA) Radio Roraima, Boa Vista, 4875 with ID at 0932, religious message. (DeGennaro, NY) Radio Senado, Brasilia, 5990 with local news and notices at 1003. (DeGennaro, NY) Radio Congohas, Congohas, 4775 with music, talk and commls at 0911.



Spain's REE always seems to have fancy QSLs. This one was received by Robert Charlton in Ontario.

(DeGennaro, NY) Radio Brazil Central, Goiania, 4985 at 2338 and 0905. (DeGennaro, NY) 0440. (Clapshaw, WA) Radio Clube Paranaense, Curitiba, 6040 with songs at 0143. (Brossell, WI) 0928. (DeGennaro, NY) Radio Marumby, Florinapolis, 9665 at 1025 with woman anncr and phone-ins. (DeGennaro, NY) Radio Rio Mar, Manaus, 9695 with sign on at 1000. (DeGennaro, NY) Radio Aparecida, Aparecida, 6135 with religious message at 0903 and 9630 at 0920. (DeGennaro, NY) Radio Gaucha, Porto Alegre, 6025 at 0857 with religious message. (DeGennaro, NY) Radio Cancao Nova, Cachoeira Paulista, 4825 with music at 0839 and 9675 at 0957 with ID. (DeGennaro, NY) 0120 with talks. (Brossell, WI) Radio Difusora, Londrina, 4815 with music and talk at 0935. (DeGennaro, NY) Radio Missoes da Amazonia, Obidos, 4865 with religious talk at 0926. (DeGennaro, NY) Radio Rural, Santarem, 4765 with music, news, commls at 0918. (DeGennaro, NY) Radio Difusora da Amazonas, Manaus, 4805 with talk on local subjects at 0920. (DeGennaro, NY) Radio Educacao Rural, Campo Grande, 4754 with religious message at 0929. (DeGennaro, NY) Radio Novas de Paz, Curitiba, 9515 with religious message at 1040. (DeGennaro, NY) Radio Universo/Radio Tupi, Curitiba, 6060 with religious message at 0920. (DeGennaro, NY) Radio Difusora Acreana, 4885 with talks at 0138. (Brossell, WI)

**BULGARIA**—Radio Bulgaria, 7500 at 2110 in EE to Western Europe, 9400 in SS to Central America at 0134, 9700 in FF to ECNA at 0135, 9715 in BB to ECNA at 0029, 11500 in SS to S. America at 0142, 11700 in FF to Western Europe at 1116 and 13800 in SS to Europe at 2104. (DeGennaro, NY) 9400 in SS at 0110 and 11700 with news at 0200. (Brossell, WI) 11500 in SS at 0005. (Charlton, ON) 0100 in SS. (Wood, TN)

**BURKINA FASO**—Radiodiffusion TV Burkina, 5030 at 2356 with light inst music, FF talk alternating with flute, ID and closing anmts at 2359 f/by anthem. (D'Angelo, PA)

**CANADA**—Radio Canada Int., 11825 in SS to the Americas with news at 2332, 13710 with Canadian news at 0010, 13725 with SS to the Americas at 0004, 15325 in FF at 1902 and 17765 in FF at 1858; into EE at 1900. (DeGennaro, NY) 13710 at 0008 and 17765 at 2002. (Wood, TN) 17800 at 1305 with Sheila Rogers hosting. (Charlton, ON) CKZN, St. John's, 6160 with domestic news at 1056. (DeGennaro, NY)

**CHILE**—Voz Cristiana, 5960 in SS at 0900, 6110 in PP at 0928, 15585 in SS at 0156 and 17680 in SS at 1845. (DeGennaro, NY) 11745 in SS at 0048 and 17680 at 2040. (Wood, TN) 11745 in SS at 0057 and 17680 in SS at 2220. (Charlton, ON) 17680 in SS at 2203. (MacKenzie, CA)

**CHINA**—China Radio Int., 6040 via Canada at 1047, 6200-Beijing at 1100, 7285-Beijing at 2025, 11790-Urumqi at 2024, 13600-Urumqi at 0130, 17490-Kashi at 1050 and 17650-Kashi in CC at 1105. (DeGennaro, NY) 7360-Kunming in unid language at 1610. (Foss, Philippines) 9570 in EE at 0030, 9580 at 0126, 11855 via Canada in CC at 1240 and 15260 in EE at 1310. (Charlton, ON) 11900 with current events at 1600. (Barton, AZ) 11980-Kunming at 2348 in EE and into CC in the new hour. (D'Angelo, PA) 17880 via Mali in FF at 1310. (Brossell, WI) China Music Jammer, 11945 against BBC-Thailand at 1254. (Brossell, WI)

**CLANDESTINE**—Radio Free Asia, 13625-Saipan in Asian language at 1244. (Brossell, WI) 13670-Saipan in CC at 2323, 13735-Saipan in VV at 2325 and 15130-Saipan in CC at 0344. (MacKenzie, CA) Radio Marti, 6030 with baseball in SS at 0133. (Wood, TN) Radio Farda, 9805 in Farsi at 0117. (Wood, TN) 0146. Also 9865 in Farsi at 0152. (DeGennaro, NY) 9865 in presumed Farsi at 0240. (Brossell, WI) Radio Nacional de la RASD, Western Sahara, 7460 in SS at 2041. (DeGennaro, NY) IBC Tamil, 7315 via Germany in Tamil at 0020 to 0100 close. (D'Angelo, PA)

**COLOMBIA**—LV de Guaviare, San Jose Guaviare, 6035 with talk, ID at 0937. (DeGennaro, NY) 0009 with LA vocals, SS talk, ID, ads. (D'Angelo, PA) LV de tu Conciencia, Puerto Lleras, 6009.8 with music and talks in SS at 0955. (DeGennaro, NY) 0308 with SS talks, anmts and ID. Parallel on 5910. (D'Angelo, PA)

**CONGO** (Dem. Rep.)—Radio Okapi, 11690 in FF at 0030. QRM from VOA-Thailand and China Music Jammer. (Alexander, PA) RTV



## Pirate Radio Mailables

To help you reach some of the pirate stations we report on each month, whether you wish to contact them for QSLs, general information, or just to send a report on their programming, here's the latest contact information.

*Belfast*, Box 1, Belfast, NY 14711  
*Blue Ridge Summit*, Box 109, Blue Ridge Summit, PA 17214  
*Elkhorn*, P.O. Box 69, Elkhorn, NE 68022  
*Huntsville*, Box 11522, Huntsville, AL 35814  
*Lone Pine*, Box 929, Lone Pine, CA 93545  
*Lula*, Box 24, Lula aGA 30544  
*Merlin*, Box 293, Merlin, ON, N0P 1W0, Canada  
*Pittsburgh*, Box 25302, Pittsburgh, PA 15342  
*Providence*, Box 28413, Providence, RI 02908  
*Wellsville*, Box 422, Wellsville, NY 14895

Congolaise, 5985 with man in FF and Afro pop heard at 0448. Several mentions of Brazzaville. (Wood, TN)

**COSTA RICA**—Faro del Caribe (t) 5054.6 at 0108 with snips of audio, some talk, mostly music. Low modulation level. (D'Angelo, PA) 0952 with bits of ID and postal address. (Wilkner, FL) University Network, 11869 with Gene Scott at 1950. (Wood, TN)

**CROATIA**—Voice of Croatia, 9925 via Germany in Croatian at 2246 and 13830 (direct) in Croatian to Europe at 2111. (DeGennaro, NY) 9925 with ID at 0209. (Brossell, WI)

**CUBA**—Radio Havana Cuba, 9600 in SS at 0054, 11760 in SS at 1122 and 11800 in SS at 1130. (DeGennaro, NY) 11705 in SS at 1310. (Charlton, ON) 11760 in SS at 0043. (Wood, TN) Radio Rebelde, 5025 in SS at 0048. (Charlton, ON) 0938. (DeGennaro, NY)

**CYPRUS**—BBC Relay, 9410 at 0110. (Brossell, WI) 9915 in AA at 2248. (DeGennaro, NY)

**CZECH REPUBLIC**—Radio Prague, 6200 in SS at 0211. (Brossell, WI) 6200 at 0106, 7345 in SS at 0206, 9440 in SS at 0032, 9870 in Czech at 0240 and 11665 via Ascension in SS at 0011. (DeGennaro, NY) 7345 with EE features at 0004. (Wood, TN) 0319 on family recreations in Czech Republic. (MacKenzie, CA) 0125 on a Czech architect and 11665 via Ascension in SS at 0009. (Charlton, ON)

**ECUADOR**—HCJB, 6048, nominal 6050, at 0445 in SS with flute and orchestral music, pips and sign off anmts at TOH. (Wood, TN) 6050 in QQ at 1050, 6125 in QQ at 0905, 9745 in QQ and SS at 2345 and 12020 in PP to Brazil at 0029. (DeGennaro, NY) 9745 in SS at 0012 and 12005 in EE at 1244. (Charlton, ON) 11920 in PP at 2308, 12040 in German at 2312 and 21455u in SS at 2250. (MacKenzie, CA) La Voz del Napo, Tena, 3279 in SS at 0036. (DeGennaro, NY) 0705 with prayers and the Rosary. Sounded like a continuous loop broadcast. (Wood, TN) Radio Quito, 4919 at 0308 with SS talks, ID, anmts, features. Nice "Radio Quito, la voz de capital" IDs. (D'Angelo, PA)

**EGYPT**—Radio Cairo/Egyptian Radio, 7260 with news at 0229, music. ID at 0245 and into an interview. (Burrow, WA) 7270 in AA at 2019, 9515 in SS at 0131, 9990 in EE at 2237, 11755 in AA at 2350, 11885 in EE at 2320, 12050 in AA at 2152 and 15375 in EE at 2041. (DeGennaro, NY) 12050 with Mideast music to 2230 when chimes, ID and into presumed news in AA. (Barton, AZ) 11885 at 0004 and 12050 in AA at 2215. (Charlton, ON) 15425 weak with Mideast music at 1936. (Wood, TN)

**ENGLAND**—BBC, 5975 on castles in the UK at 2345. (Wood, TN) (No longer from Antigua, now inactive.—gld) 6195 via Antilles at 1011, 11680 in AA at 1804, 11865 at 1127, 15255 at 1910, 17585 at 1100 open and 17885 via Ascension at 1920. (DeGennaro, NY) 15190 at 1257. (Charlton, ON) Bible Voice, 5910 via Russia with ID, URL and into CC at 1100. (Barton, AZ)

**EQUATORIAL GUINEA**—Radio Nacional, Bata, 5005 monitored at 2215 with Afro pops and SS talk, ID at 2255 f/by lengthy NA. (Alexander, FA)

**ETHIOPIA**—Radio Ethiopia, 7110 at 0259 sign on with IS, talk in vernacular at 0300, HOA music at 0305. Weak to poor with parallel 9704 also weak. (Alexander, PA)

**FINLAND**—YLE/Radio Finland, 11755 in Finnish to Europe at 1820 and 15400 in Finnish to ECNA at 1228. (DeGennaro, NY) 1300 with IS, ID and presumed news in Finnish. (Brossell, WI)

**FRANCE**—Radio France Int., 7135 in Romanian at 2004, 7160 in FF at 2123, 11815 in PP at 2030, 11845 in FF to North Africa at 1000, 11995 in FF to Africa at 1953, 15300 in FF to Africa at 1827. 15605 to West Africa at 1836 and 17570 in FF to ECNA at 1148. (DeGennaro, NY) 7150 via Ascension in FF at 0448 and 17850 in FF via South Africa at 1310. (Brossell, WI)

**FRENCH GUIANA**—Radio France Int. Relay, 15515 in FF at 1257. (Charlton, ON)

**GABON**—Africa Number One, 9580 at 2155 with FF pops, time pips at 2200, ID and news in FF. (D'Angelo, PA) 15475 in FF at 1830 and 17630 in FF at 1304. (Charlton, ON) 17630 in FF at 1304. (Brossell, WI) 15475 in FF at 1849 and 17630 in FF at 1151. (DeGennaro, NY)

**GHANA**—GBC/Radio Ghana, 4915 with domestic service in EE at 2320. (DeGennaro, NY)

**GERMANY**—Deutsche Welle, 6000 via Sri Lanka at 2215. (Barton, Philippines) 7105 in RR to Asia at 0148, 9495 in AA at 2010, 9545 in GG at 0928, 9640 via Canada in GG at 0045, 11865 via Portugal in GG at 2327, 13720 via Sri Lanka in RR at 0142 and 15205 in EE to Africa at 2058. (DeGennaro, NY) 11865 via Portugal at 2152. (Charlton, ON) 2348 in GG. (MacKenzie, CA) 17800 via Sri Lanka in RR at 0222. (Brossell, WI) Deutschlandfunk, 6190 in GG at 0101. (DeGennaro, NY) Deutschland Radio, 6005 in GG at 0054. (DeGennaro, NY)

**GREECE**—Voice of Greece, 9375 at 0107. (Brossell, WI) 7450 at 2034, 7475 at 2045, 9375 at 0025, 9420 at 0123, 11645 at 0943, 15630 at 1936, 17565 via Greenville at 2018 and 17705 via Delano at 2012. (DeGennaro, NY) 7495 at 0131, 15630 at 1857 and 17705 via Delano at 1807. (Charlton, ON) (All were in Greek—gld)

**GUAM**—KSDA/Adventist World Radio, 9385 in EE/Tagalog at 1711. (MacKenzie, CA) KTWR/Trans World Radio, 9465 in Asian language at 1216. (Brossell, WI) 13630 in CC at 2216. (Barton, AZ)

**GUATEMALA**—Radio Verdad, 4052.5 in SS at 0010. 250 watts. (Wilkner, FL) 0444 in SS with religious songs. (Brossell, WI) Radio Buenas Nuevas, 4799 in SS at 0118 with music and studio audience. (Wood, TN) Radio Cultural, Coatan, 4780 in SS at 0204. (Brossell, WI)

**GUINEA**—RTV Guineenne, 7125 with domestic service in FF monitored at 2106. (DeGennaro, NY) 2226 with highlife vocals, ID, long talk in FF. Good until a Russian signed on at 2300. (D'Angelo, PA)

**GUYANA**—GBC, 3291v at 0900 with anncr and pop music, ID, sermon at 0940. They seem to be struggling to return to the air. (Wilkner, FL)

## 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 banned 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.

RFA is headquartered in Washington, DC with offices in Asia and correspondents throughout the world. Please listen to our programs and learn more from our website at [www.rfa.org](http://www.rfa.org).



**Richard Richter**  
President, Radio Free Asia  
1996 - 2005

Here's a recent QSL from Radio Free Asia.

## In Times Past...

And now for a bit of fun. We'll give you a blast from the past here each month; perhaps a logging or station tidbit from the *Pop 'Comm* shortwave history book. Here's one for the memory books...

**ECUADOR**—Radio Atalaya, HC2AU, in Guayaquil, on 4605 in SS at 0330. Fair level with slight QRM on September 2, 1959. (Dexter, IA)

**HAWAII**—KWHR, 11555 with Jack Van Impe sermon at 1225. (Brossell, WI) WWVH, 15000, alone on the frequency at 0850. (Barton, Philippines)

**HONDURAS**—La Voz Evangelica, 4819 with EE religious programming on local Sunday evening with "Back to God Hour" at 0322. Fair but with CODAR QRM. (D'Angelo, PA) 0720 with SS preacher, address and website at bottom of the hour. (Wood, TN) 0730 with religious programming. (Clapshaw, WA) 0912 with religious programs in SS. (DeGennaro, NY) La Voz de Misiones/Radio Misiones Int., 3340 at 0340 with soft SS religious vocals. Brief religious drama and ID at 0401. (D'Angelo, PA) 0050 with ID at 0058. (Wilknor, FL) 0119 with music. (DeGennaro, NY) Radio Luz y Vida, San Luis, 3250 with SS religious messages at 0108. (DeGennaro, NY)

**HUNGARY**—Radio Budapest, 6025 in II to Italy at 2042 and 9590 in EE to NA at 0059. (DeGennaro, NY) heard on 9795 with ID at 0235 and program on democracy in Hungary. (Brossell, WI) 9870 with news in HH at 0100. (Charlton, ON)

**INDIA**—All India Radio, 10330-Bangalore in Hindi to South Asia at 0201, 11620 same at 1046, 11740-Panaji (Goa) in Hindi to SE Asia at 2357 and 12025-Panaji in Hindi to West Asia and Mideast at 1816. (DeGennaro, NY) 11620-Bangalore with Burmese service at 1255. (Strawman, IA) 13605 (Bangalore) in EE at 0042 and 15075 (Bangalore) in unid language at 0340. (MacKenzie, CA) 15075 in Hindi at 0218. (Brossell, WI)

**INDONESIA**—Voice of Indonesia, 9625 in II at 1240. (Maxant, WV)

**IRAN**—VOIRI, 7205 in EE to Western Europe at 2007, 9655 in SS to Spain and South America at 0042, 9905 in SS to South America at 0214, 9935 in AA to North Africa at 2243 and 15085 in FF to Europe at 1919. (DeGennaro, NY) 9495 with addresses, filler music, ID and anthem at 0230. (Burrow, WA)

**ISRAEL**—Kol Israel, 9345 in HH at 0205. (Brossell, WI) 9345 at 0130, 11535 in HH at 2035, 11600 in SS at 2040 and 15640 in EE at 1909. (Charlton, ON) 9345 in HH to Western Europe at 0143, 11590 in EE at 1743, 15640 in FF at 1928 and 17535 in HH at 1142. (DeGennaro, NY) 9390 in HH at 1734. (MacKenzie, CA) Galei Zahal, 6973 in HH at



0139. (Charlton, ON) 0233. (Wood, TN) 0236. (DeGennaro, NY)

**ITALY**—RAI Int., 7130 opening in SS at 2110 and off at 2130, 9840 in II to South America at 2253, 11765 via Ascension in TT at 0200, 11800 in II to NA at 2341, 15240 in PP to Africa at 2055 and 15380 in II with ID at 1840. (DeGennaro, NY) 11800 in II at 0208. (Brossell, WI) 0055 in EE with sign on and into news. (MacKenzie, CA) 11800 in II at 0107 and 11875 in II at 2055. (Charlton, ON)

**JAPAN**—Radio Japan/NHK, 6120 via Canada in EE at 1054, 9530 via French Guiana in JJ to South America at 0937, 9540 in JJ to WCNA at 0933, 9710 in SS to South America at 1016, 11710 in JJ to SEA at 0954, 11895 via French Guiana in JJ to the Americas at 2159 and 17585 to Europe via UAE at 1059. (DeGennaro, NY) 6145 in EE at 0014 and 11895 via French Guiana in JJ at 2200. (Charlton, ON) 9535 in EE/JJ at 1740, 9660 via French Guiana at 0420, 9835 in JJ at 1750, 13650 in Thai at 2321, 17825 in JJ at 2220 and 21600 via French Guiana in JJ at 1659. (MacKenzie, CA) 13630 to WCNA at 0630. (Barton, Philippines) 11740 via Singapore in CC at 1235 and 13660 in JJ at 1245. (Brossell, WI) Radio Nikkei, 9595 in JJ heard at 0949. (DeGennaro, NY)

**JORDAN**—Radio Jordan, 11690 at 1633 mixing with an RTTY-type signal. Sudden close at 1633. (Barton, AZ)

**KUWAIT**—Radio Kuwait, 9855 in AA to Europe and North America with news at 2300. Also 15495 in AA at 1854 and 15505 in AA at 1856. (DeGennaro, NY) 15495 in AA at 0214. (Brossell, WI)

**LIBERIA**—Star Radio, via Ascension, 9525 at 0845 with interviews, into vernacular talk at 0853, back to EE at 0858 with ID, station jingle and off at 0859. 11965 at 2101 sign on to 2200 close. (Alexander, PA) 9525 at 0755 with sports news f/by same in local language. EE ID at 0800 f/by a program called "People Talk." 11965 at 2100 sign on. (D'Angelo, PA)

**LIBYA**—Radio Jamahiriya, 11635 via France in EE/FF at 1751. (DeGennaro, NY) Voice of Africa feature, 7320 via France at 0222 with ID, headlines. (Alexander, PA) 2209 in AA with music, 2215 with 3 time pips, EE ID, news in EE. (D'Angelo, PA)

**LITHUANIA**—Radio Vilnius, 9875 at 2332 with ID and feature about Internet use in Lithuania and other local news features. Also 11690 at 0053 with features by a man who

spoke very slowly. (Wood, TN) 9875 at 2250 with music and repeated IDs prior to opening. Also 11690 in LL at 0002. (DeGennaro, NY) 11690 heard at 0000 with opening anmts, anthem and into EE. (Barton, AZ) 0025. (Charlton, ON)

**MAURITANIA**—Radio Mauritanie, 4845 with two men in AA at 2331. (DeGennaro, NY) 0050 with Koran and man in AA to 0100 close. (D'Angelo, PA)

**MEXICO**—Radio Educacion, 6185 in SS at 1007. (DeGennaro, NY) 0433. (Brossell, WI) Radio Mil, 6010 with music and SS talks at 1000. (Barton, AZ) 0315. Poor and mixing with the Colombian. But the next morning it was booming in with ID and domestic news. (D'Angelo, PA) Radio Transcontinental, 4810 at 0730 in SS. Poor and hampered by QRM. (Clapshaw, WA) 0815 with music and ID. (Barton, AZ) 1038 with talks in SS. (Brossell, WI)

**MOLDOVA**—Voice of Russia via Moldova, 9665 in SS to ECNA at 0032. (DeGennaro, NY) Russian Int. Radio via Moldova, 7125 at 0040 with pops in EE and RR, RR IDs by man. (Wood, TN) 0150 in RR to ECNA. (DeGennaro, NY)

**MOROCCO**—RTV Marocaine, 7135 in AA to Europe at 2350, 15345 in AA to North Africa at 1830. (DeGennaro, NY) 1956 in AA. (Charlton, ON) Radio Medi Un, 9575 in FF to Europe and North Africa at 0104. (DeGennaro, NY) VOA Relay, 11730 in Greek heard at 2200. (Barton, AZ)

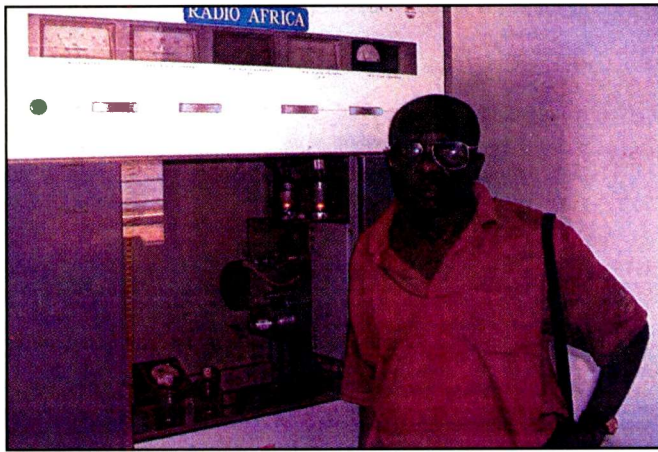
**MYANMAR**—Radio Myanmar, 5040.3 with local music most mornings from 1100—1130. (Wilknor, FL)

**NEW ZEALAND**—Radio New Zealand, 9885 with book review at 0915. (DeGennaro, NY) Excellent with local news at 1230. (Maxant, WV) 11820 at 0508 with weather and political news. (Wood, TN) 15720 with news at 2110. (Barton, Philippines) 2213 with sports news and "Baseline" program. (Burrow, WA) 0017 with feature on drug use in New Zealand. (Charlton, ON)

**NETHERLANDS**—Radio Netherlands, 7325 in SS with feature on Paraguay at 0210. Also 9895 in SS at 2334 and 11655 in DD to Africa at 12755 with change to EE at 1800. (DeGennaro, NY) 9845 with "Newline" at 0008 and 11655 at 2043. (Charlton, ON)

**NETHERLANDS ANTILLES**—Radio Netherlands Bonaire Relay, 6165 on AIDS in Africa at 0430, 9845 with "Vox Humana" program at 0045 and 17810 at 2029. (Wood, TN)





An engineer at Radio Africa, Equatorial Guinea, on 15190.  
(Thanks D'Angelo)

## 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](mailto: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 **Bruce Burrow** in Snoqualmie, Washington, who receives a copy the 2006 edition of *Passport to World Band Radio* from the good folks at Universal Radio, 6830 Americana Parkway, Reynoldsburg, OH 43068. You can write them at that address to request your own copy of the latest edition of their great catalog, or send an e-mail to [dx@universal-radio.com](mailto:dx@universal-radio.com), or give them a jingle at 614-866-4267.

9845 in EE at 0109. (Wood, TN) 9890 in SS at 0235, 11675 to ECNA at 1110 and 17810 to West Africa at 1902. (DeGennaro, NY) 17180 in EE at 1910. (Charlton, ON)

**NIGERIA**—Voice of Nigeria, 7255 in FF to Africa at 2140. (DeGennaro, NY) 15120 in EE at 1847. (Charlton, ON) 1215 with news. (Maxant, WV)

**NORTH KOREA**—Voice of Korea, 9650 in KK to East Asia at 1021. (DeGennaro, NY) 13650 in CC at 0317, //15100. Also 13760 in FF at 0330, //11735, 15180. (Mackenzie, CA) 13760 in SS at 0246. (Brossell, WI) Pyongyang Broadcasting Station, 11735 in KK to East Asia at 0950 beginning sign off procedure. (DeGennaro, NY)

KCBS, on 11680 with vocals at 1633. (Foss, Philippines)

**OMAN**—Radio Sultanate of Oman, 15140 with EE news at 1400, pop-dance-tech-no. Into AA at 1500. (Alexander, PA)

**PAKISTAN**—Radio Pakistan, 11570 at 1734 with music and comment, non-EE. (DeGennaro, NY)

**PALAU**—KHBN, 9965 in CC to Asia at 1023 with presumed religious talks. (DeGennaro, NY) 15725 with Pastor David Chang at 1009. (Foss, Philippines)

**PAPUA NEW GUINEA**—NBC, Port Moresby, 4890 in Pidgin with news, drums, talk at 0954. (DeGennaro, NY) Radio East New Britain (New Britain), 3385 heard at 0954 with EE vocal, talk, ID and into news by woman at 1001. (D'Angelo, PA)

**PARAGUAY**—Radio Nacional, 9737 in SS at 0008. (Charlton, ON) 2306 with two men on politics and local issues. (DeGennaro, NY)

**PERU**—Radio Municipal, 3172.7 with woman in SS and ID, music at 1000. (Wilkner, FL) Rdf. Huancabamba, 6536 with fast-talking man with partial ID, OA vocals and flutes. Off at 0312 without anthem. (D'Angelo, PA) Radio Horizonte, Chachopoyas, 5019.9 at 1004 with OA vocals, man in SS with talk, ID, anmts. (D'Angelo, PA) Radio Cultural Amuata, Huanta, 4955 with SS anncr, religious talks at 0943. (DeGennaro, NY) Radio

Huanta, Huanta, 4899 with music and commercials in SS at 0928. (DeGennaro, NY)

**PHILIPPINES**—Radio Pilipinas, heard on 15270 in Tagalog closing at 0200. (Barton, Philippines) VOA Relay, 9760 with Asian news at 1221. (Brossell, WI) 17740 in EE at 2208. //15290, 17820, 17825. (MacKenzie, CA)

**PIRATES**—Undercover Radio, 6925 at 0129; e-mail: [undercoverradio@mail.com](mailto:undercoverradio@mail.com). Merlin address. (Balint, OH) Ground Zero Radio, 6925 USB at 2253 mentioning the frequency was used by pirate broadcasters and complaints about the FCC. Dave Gunn announcing an encore presentation of Ground Zero Radio. They use the Elkhorn address for reports, not the one mentioned in the repeat broadcast. (Zeller, OH) Robot Radio, 6925u at 2147 with mostly rock, man anncr over the records at times. About a dozen repeated IDs at 2154 and then lost. No address copied. (Zeller, OH) WHYP spoof? 6925u at 0110 with song "Pirate's Life for Me," "California," strange news and commls. A lot of dead air. (Hassig, IL) WHGW (t) 6925u with an old radio drama at 2336, rock and heavy metal. (Hassig, IL) Vox Pop Radio or Truck Driving Radio or Angry Man Radio, 6925u at 0030 with soft rock, urban contemp, novelty country western, "I'm Looking Over My Dead Dog Rover Whom I've Hit With the Power Mower." DJ was "Truck Drivin' Man. (Hassig, IL) The Crystal Ship, 6854.2 at 0035 with various pop and rock, clip from "Casablanca" and mention "Official voice of the blue states republic." Also at 0150 with various numbers and hellfire preacher ranting about rock and roll. (Hassig, IL) KSUR, 6925.5 at 0219 with several NFL football play by play excerpts, ID 0232 and e-mail which appeared to be [radioksur@yahoo.com](mailto:radioksur@yahoo.com). This appears to be the station playing Detroit Lions football audio over music in recent weeks. (Zeller, OH) Pirate Radio Boston, 6874.7 at 0125 with heavy metal ballads (*can there be such a thing?*—*gld*), e-mails from listeners. Reports to [pirateradioboston@yahoo.com](mailto:pirateradioboston@yahoo.com).

(Hassig, IL) Voice of Laryngitis, 6925.6 at 0210 with rambling stories "Pirate Busters" and "Radio Addict." (Hassig, IL) Captain Morgan (t) 6924.3 at 0250 with country rock, *Twilight Zone* theme, muffled during voice anmts and unsteady carrier, which varied with amplitude modulation percentage. (Hassig, IL) Mystery Radio (Euro) 6220 at 0021 with usual format of mostly streaming music and occasional jingle IDs. (D'Angelo, PA) Geico Radio and/or Not Nick Radio, 6925.5 at 0050. At 0059 said "from Geico" but this may or may not have been an ID. At 0101 mentioned "Nick Not Pirate Radio." Mentioned QSLs but no address copied. (Zeller, OH)

**PORTUGAL**—RDP Int., 9715 in PP at 0124. (Brossell, WI) 9715 in PP at 0115 and 21655 in PP at 1828. (Charlton, ON) 9715 at 0025, 11630 at 0016, 13660 at 0022, 13700 at 0014, 15560 at 1845 and 21655 at 1159, all in PP. (DeGennaro, NY) 13700 at 0030, //13660 both in PP. (Wood, TN)

**ROMANIA**—Radio Romania Int., 6040 at 0135 with ID and Romanian folk music. (Wood, TN) 9745 with ID in SS at 0135. (Charlton, ON) 11765 in Romanian at 1829, 11940 in SS at 2044, 15465 in SS at 2016 and 17740 in FF at 1114. (DeGennaro, NY)

**RUSSIA**—Voice of Russia, 7205 with jazz program at 0155. (Wood, TN) 7330 in SS at 0012, 9860 via Vatican in EE at 0245, 11630 in EE at 1830, 11675-Armavir in EE at 1848, 11980-Samara in RR at 1755, 12010 in GG at 1811, 12030 in FF at 1955, 12040 in FF at 1821, 12070 in RR at 0120 and 15455-Armavir in FF at 1801. (DeGennaro, NY) 17635 with news at 0700 and 17660 opening in EE at 1100. (Barton, Philippines) 9830-Armavir in SS at 0157, 9860 via Vatican with a radio play at 0240 and 12055-Chita to 1300 closing. (Brossell, WI) 15555 in EE at 0426. (MacKenzie, CA) Radio Rossii, 9480 in RR at 0115 and 13665 in RR at 1002. (DeGennaro, NY)

**RWANDA**—Deutsche Welle Relay, 11865 in GG at 0010 and 15275 in GG at 2238. (Charlton, ON)

**SAO TOME**—VOA Relay, 7290 with "Jazz America" at 0541. (Wood, TN)

**SAUDI ARABIA**—BSKSA, 9870 in AA at 2257 and 11915 in AA at 2156. (DeGennaro, NY) 11820 in AA at 2034. (Charlton, ON) 17615 with Koran at 1110. (Barton, Philippines)

**SERBIA & MONTENEGRO**—Int. Radio of S&M, 9580 in EE with IS, ID at 0029. (Charlton, ON) 0438 with news. (Brossell, WI)

**SINGAPORE**—BBC Relay, 9510 at 1729. (MacKenzie, CA)

**SLOVAKIA**—Radio Slovakia Int., 5930 in EE to NA at 0118 and 9440 to NA at 0121. (DeGennaro, NY) 9440 in SS heard at 0045. (Charlton, ON)

**SOLOMON ISLANDS**—SIBC, 5019.9 with local news at 1004, island vocals at 1011. (D'Angelo, PA) 9545 in EE heard at 1215, into FF at 1230. (Maxant, WV)

**SOUTH AFRICA**—Radio Sondergrense, 3320 in Afrikaans at 0042. (DeGennaro, NY) 0149 with vocals. (Brossell, WI) Channel Africa, 3345 with African news items at 0426. (Brossell, WI)

**SOUTH KOREA**—KBS World Radio, 9650 with EE features at 1234. (Charlton, ON) 11795 via Canada in SS at 1126 and 15360 via Rampisham, UK in RR at 1833. (DeGennaro, NY)

**SPAIN**—Radio Exterior de Espana, 6055 in SS at 0251, 9535 in SS at 0022, 9620 in SS at 0049, 11680 in SS at 0008, 15110 in SS at 2105, 15290 in EE at 2048, 17560 in AA at 2022, 17715 in SS at 1850, 17760 in SS at 1855, 17850 Costa Rica Relay at 1914 and 21700 in SS at 2001. (DeGennaro, NY) 9535 in SS at 0010, 15170 in SS at 1256 and 15385 in EE at 0033. (Charlton, ON) 15385 in EE at 0010 and 17850 in SS at 2230. (MacKenzie, CA)

**SRI LANKA**—SLBC, 15747 with domestic news in EE at 0202. (DeGennaro, NY) VOA Relay, 12155 in unid language monitored at 1641. (Foss, Philippines)

**SURINAME**—Radio Apinte, 4990 in DD at 0932. (DeGennaro, NY) 0154 with pop vocals, man anncr with DD ID at 0205 and more pops. Brief talk segments again at 0230 and 0300. (D'Angelo, PA)

**SWEDEN**—Radio Sweden, 6010 via Canada in EE at 0355 with frequencies, schedule and sign off. Also 9435 in EE to Asia at 0131, 9800 via Canada at 2247 and 15240 in Swedish at 1157. (DeGennaro, NY) 6010 via Canada with news at 0132 and 15240 at 1258. (Charlton, ON) 13580 on the arts at 1245. (Maxant, WV)

**SYRIA**—Radio Damascus, 12085 in AA at 2053. (Charlton, ON) 13610 in EE at 2142, ID 2148. (DeGennaro, NY)

**TAIWAN**—Radio Taiwan Int., 11935 in RR at 1308. (Brossell, WI) 15600 via Florida at 2205. (Charlton, ON) 2218 ending news. (Burrow, WA) CBS, 11665 in CC at 1228. (Brossell, WI) 15320 in CC at 0430. (Barton, Philippines)

**TANZANIA**—Radio Tanzania-Zanzibar, 11735 at 1800 with EE news and into local language (Swahili) at 1810. IDs heard at 2055, 2058. Off at 2059 without anthem. (Alexander, PA) 1814 in presumed Swahili. (DeGennaro, NY) 2027 with local vocals and woman anncr in Swahili. Closing ID and anmts at 2059 f/by orchestral anthem. (D'Angelo, PA)

**THAILAND**—Radio Thailand, 5890 via Greenville in EE at 0048. (DeGennaro, NY) 0324 with news. (MacKenzie, CA) 0039. Also 9570 at 0005. (Charlton, ON) VOA Relay, 7125 at 1542 with pop vocal, "Border Crossings" program. (Foss, Philippines) 13755 at 2341 in Special English. (MacKenzie, CA)

**TURKEY**—Voice of Turkey, 9460 in TT at 0118, 15350 in TT at 1221 and 17715 in CC at 1109. (DeGennaro, NY) 9560 with Mideast music at 1830. (Barton, Philippines)

**TUNISIA**—RT Tunisienne, 7190 in AA at 2128 and 12005 in AA at 1807. (DeGennaro, NY) 7275 in AA at 0442. (Wood, TN)

**UKRAINE**—Radio Ukraine Int., 7440 at 0008 with news items. (Charlton, ON) 0016 on Ukrainian politics, trade deficit with Russia, etc. (Wood, TN) 0200 in Ukrainian. (DeGennaro, NY) 0259 with IS, ID and into news. (Burrow, WA)

**UNITED ARAB EMIRATES**—Emirates Radio, Dubai, 13630 in AA at 1903. (Charlton, ON) 15435 in AA at 2039. (DeGennaro, NY)

**UNITED STATES**—AFN/AFRTS, 12133 USB at 0033 with news, interview. (Wood, TN) Pan American Broadcasting, 9495 to South Asia via Julich, Germany, with news at 0141. (DeGennaro, NY)



"Radio Tashkent International"

<ino@uztpk.uz>

02/08/2005 06:32 AM

To: <rdangelo@gpu.com>

cc:

Subject: RTI

Dear Mr. Richard A D'Angelo

Warm and amicable greetings to you from Uzbekistan!

Many thanks for your nice letter dated December 22 and the photo of yours and also the information about your family, which we have recently received by post.

We are always glad to hear from our listeners. Is it the first time you write to us?

We appreciate the interest you take in our radio station.

If you have any questions about life in Uzbekistan or the Uzbek view on world affairs just let us know, we'll do our best to answer them in our broadcasts or by post.

Mr. D'Angelo, we are pleased to verify your Reception Report on our broadcast of December 20 with this letter.

We hope that you will continue to listen to our broadcasts and send us your thoughts about them and also will visit our website.

For your listening convenience we are sending you our current frequency schedule.

Yours sincerely,

Correspondence Section,

Radio Tashkent International.

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*Rich D'Angelo got this QSL letter from Radio Tashkent, Uzbekistan.*

**VATICAN**—Vatican Radio, 5885 with IS at 1440 and man anncr. (Barton, AZ) 7250 in SS at 2131, 7305 in SS at 0218, 9605 in PP at 0052, 9650 in Hindi at 0039 and 12055 in Tamil at 0112. (DeGennaro, NY) 7305 in SS at 0310. (MacKenzie, CA) 12055 with IS at 0038 and into unid language. (Wood, TN)

**VENEZUELA**—Radio Nacional, 9550 via Cuba in SS at 2005. (DeGennaro, NY) 13680 via Cuba in SS at 2021. (Charlton, ON) Radio Amazonas, Puerto Ayacucho, 4939 in SS at 0945. (DeGennaro, NY) YVTO time station, 5000 with SS time anmts at 0850. (DeGennaro, NY)

**VIETNAM**—Voice of Vietnam, 6175 via Canada in EE at 0104. (Charlton, ON) 0241 to ECNA and 9840 to ECNA at 1005. (DeGennaro, NY) 7220 at 1600 sign on with ID, news. (Foss, Philippines)

**YEMEN**—Republic of Yemen Radio, 9779.5 at 0315 with possible drama. Some spill from over modulated CRI on 9790. (Strawman, IA) 9780 in AA at 0250. (Brossell, WI)

**ZAMBIA**—Radio Zambia, 6165 at 0235 with fish eagle IS from 0240 and opening choral. Parallel to and slightly ahead of 4910. (D'Angelo, PA) The Voice, 4965 with EE religious programming at 2328. (DeGennaro, NY)

And, once again, order is restored!

Let's do a "circle me!" on each of the following good folk who braved the propagational turmoil and came through with the goods this time: William Hassig, Mt. Prospect, IL; Robert Wilkner, Margate, FL; Joe Wood, Greenbush, TN; Stewart MacKenzie, Huntington Beach, CA; Michael Clapshaw; Port Angeles, WA; Rich Barton, Phoenix, AZ (and on vacation in the Philippines); Robert Brossell, Pewaukee, WI; George Zeller, Cleveland, OH; Rich D'Angelo, Wyomissing, PA; Marty Foss, Guinayangan, Philippines; Bruce Burrow, Snoqualmie, WA; Jerry Strawman, Des Moines, IA; Robert Charlton, Windsor, ON; Ciro DeGennaro, Fuera Bush, NY; Brian Alexander, Mechanicsburg, PA; and Dave Balint, Wooster, OH. Thanks to each one of you!

Until next month good listening—and Happy Holidays! ■



# Buying The Best Mediumwave DX Receiver, And Going Down To The Sea For Enhanced Transoceanic Radio Reception—Part II

In the November edition of “Broadcast Technology,” we learned how mediumwave DXers take advantage of sea gain to receive transoceanic signals found between local broadcast radio frequencies. The clear horizon and high ground conductivity of salt water make coastal locations prime real estate for mediumwave DXing. More outstanding examples of coastal DXpedition loggings follow, but it takes more than a good location to catch these exotic signals. You’ll need a communications receiver capable of separating transoceanic DX from the domestic or local radio signals.

## Mediumwave DX Receivers

With so many communications receivers on the market, deciding which one will best suit the specific requirements for something as highly specialized as mediumwave DXpeditioning might seem difficult. It’s actually quite easy once you know the basics.

One of the most important features to look for is selectable IF filtering. This allows the bandwidth to be narrowed so that signals on frequencies as little as 1 kHz apart can be separated. For example, the average AM radio in the car or home will have a wide bandwidth of 5 to 10 kHz, which is fine for listening to local or strong on-channel transcontinental DX signals. However, try listening to Saudi Arabia on 1521 kHz with WWKB Buffalo or KOKC Oklahoma City on 1520 kHz, and most likely all you’ll hear is a 1-kHz tone or “het” created in the demodulation process (the difference between 1521 and 1520 kHz), because the receiver bandwidth isn’t narrow enough to separate the strong local signals from the weaker transoceanic DX. A narrow filter, typically 2.5 kHz, is needed to separate these signals.

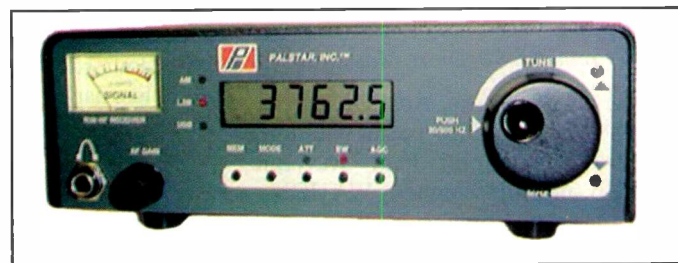
The IF filter specification is important, often referred to as selectivity. Look for a narrow filter specified for its nominal bandwidth at -6 dB, and no more than double its bandwidth at -60 dB. In addition, good sensitivity is necessary to pick up the weakest signals; 1 microvolt ( $\mu\text{V}$ ) or less is excellent, under 1.5  $\mu\text{V}$  is good. Lastly, 12 VDC or internal battery operation is critical for remote DXpedition locations where AC power may not be available.

Passband tuning is another important feature that allows the bandwidth to be shifted up or down to maximize separation. Shop carefully to ensure you get your money’s worth!

The Drake R8A/B communications receiver is by far one of the most popular mediumwave DX receivers in the United States. It has all the necessary features outlined above, and has proved to be an outstanding performer in all sorts of DXpedition conditions. Unfortunately the R8 series was discontinued last year due to problems obtaining outdated components, and retrofitting newer components was considered too costly. Although used Drake R8 receivers are commanding high prices



*The AOR AR7030 is the most popular receiver worldwide for broadcast DXing.*



*The Palstar R30 is a good performer with the filter upgrade.*

on eBay, if you shop carefully you should be able to get one for around \$600.

Probably the most popular DX receiver worldwide is the AOR AR7030, which also possesses all the features necessary for transoceanic mediumwave DXing. Upgrading the AR7030 with Collins IF filtering is recommended for superior performance “between the frequencies.” The upgraded AR7030 is a rather expensive investment at over \$1,600, but it’s well worth it for the serious DXer.

Those on a more modest budget should consider the ICOM IC-R75, not quite at the level of the AOR and Drake receivers, but definitely an above average performer. The R75 features digital signal processing and unique dual passband tuning to customize filter response, at half the price.

The Palstar R30 is another economical receiver that, with a Collins filter upgrade (R30CC model), will get you comfortably in the ballpark.

Of the portable receivers, the Degen DE1103, also known as the Kaito KA1103, has been generating interest among mediumwave DXers. Although not in the same league as AOR, Drake, ICOM, and Palstar, the 1103 is priced right for the budding DXer.

These are just a few of the more popular receivers. Check out the specs when considering any receiver. If the specs meet the requirements outlined here, then you should be good to go



*Cars in position with antennas deployed at Rockport, Massachusetts.*

for a coastal DXpedition. Until then, enjoy reading about what the following DXers reeled in from the ocean.

*Mark Connelly, Rockport, Massachusetts*

The annual Boston Area DXers "DX Clams" event for 2005 began with three DXers—Bruce Conti, Paul Graveline, K1YUB, and Mark Connelly WA1ION—enjoying clam dinners at Woodman's Restaurant in Essex. When dinner was done, it was off to Granite Pier in Rockport to set up antennas and receivers to catch longwave, mediumwave, and shortwave DX starting around 8 p.m. just before local sunset.

Gary Thorburn, who couldn't make it to the dinner, showed up at the pier with his homemade loop antenna. The first transatlantic signal received was Ceuta on 1584 kHz. Other high-band mediumwave signals followed, then activity moved lower on the dial. As is often the case, signals from Spain, Algeria, Morocco, southern France, and other locales near the western end of the Mediterranean Sea were the first to rise to good strengths. Stations from the UK, Germany, and other somewhat more northerly countries began arriving about an hour after sunset.

Not much of a signal was noted from Norway on 1314 kHz, so there was a mild degree of auroral effect involved. Longhaul Africans were mostly covered by stronger signals from Spain. Djibouti on 1431 kHz at about 11,000 km distant was most likely the farthest DX heard. Latin Americans were relatively scarce—a few Venezuelan and Caribbean Islands sta-

tions primarily. Radio Globo on 1100 from Sao Paulo, Brazil, was the most distant Latin American logged. Many 10-kHz spacing channels were quite clogged with domestic interference even before complete darkness. Really good high-latitude conditions would have produced rarer DX; a serious aurora would have done that, too. Still, a decent amount of DX could be heard and the aspect of the group activity always adds to the fun.

**549 Irish Christian Broadcasters, Monaghan, Ireland**, at 0135 likely this with folksy religious vocal; over Algeria and Germany.

**837 Centro Regional da RDP, Pico da Barrosa, Azores**, at 0034 Portuguese newstalk; fair, over France and Spain-Canaries.

**890.98 Chaîne 1, Algiers, Algeria**, heard at 0030 an Arabic male vocal at light audio level.

**945 France Info, Toulouse, France**, at 0117 parallel 1206 with a sad emotional male French vocal; to good peak.

**1098 RNE5 synchros, Spain**, at 0017 Spanish telephone talk, Radio Nacional de Espana mention.

**1100 ZYK694 Radio Globo, Sao Paulo, Brazil**, at 0113 with reverberated Portuguese talk, Globo ID; good, over nulled WTAM.

**1134 COPE synchros, Spain**, at 0109 heard with Spanish talk; clearly audible under the Croatian powerhouse.

**1170 Radio Sawa, Dabiya, United Arab Emirates**, at 0106 a Mideast female vocal; over/under phased WWVA. 1169 Iran not noted at this time.

**1422 Deutschlandfunk, Heusweiler, Germany**, at 0043 parallel 756 kHz with early '50s "cool school" Lionel Hampton-style vibraphone jazz; good, over Algeria.

**1431 Radio Sawa, Arta, Djibouti**, at 0044

with an Arabic female pop vocal; peaking over 1430 WXKS, WNSW, and WENE slop.

**1548 Radio Sawa, Kabd-Kuwait City, Kuwait**, at 0048 a pop Arabic group vocal with strings and drums; loud, way over UK station.

**1584 RadiOle, Ceuta**, heard at 2314 a Spanish vocal on early fade-up; over co-channel SER Spain and slop from 1590 WARV.

**1602 Radio Vitoria, Spain**, at 0050 heard "Mrs. Robinson" by Simon & Garfunkel, Spanish talk, then more pop music; good, over co-channel SER Spain.

**1620 WDHP Fredriksted, St. Croix, U.S. Virgin Islands**, at 2313 accented English talk, reggae music; fair over Boston Haitian pirate, about an hour before sunset.

*Bert New, Reynolds Mansion, Sapelo Island, Georgia*

Although unable to deploy the heavy-duty arsenal of receivers and antennas like the other DXpeditioners, Bert still enjoyed the effect of sea gain while vacationing off the coast of Georgia. Using a barefoot Sangean ATS-909, he caught signals from Florida not normally received inland.

**600 WBWL Jacksonville, Florida**, at 2142 a good signal with Radio Disney fare, "WBWL, AM 600, Radio Disney."

**1150 WNDB Daytona Beach, Florida**, at 2131 a good steady signal with NASCAR race coverage, "Newstalk 1150, WNDB."

**1170 WSOS St. Augustine Beach, Florida**, heard at 1650 a decent steady signal with oldies music, "The Oldies Station, WSOS."

**1220 WJAX Jacksonville, Florida**, heard at 1650 a good signal with swing music, IDs as "Jones College Radio" and "Swing 1220."

**1230 WSBB New Smyrna Beach, Florida**, at 2000 a good signal, ID, "Memories 1230, WSBB, New Smyrna Beach, Daytona Beach, Florida" and oldies music.

**1300 WTIR Cocoa Beach, Florida**, heard at 2310 a decent signal with CNN "Headline News," "WTIR1300@ Bellsouth.Net" promo, "1300 Headline News" and "Traveler's Information Radio" slogans.

**1320 WJGR Jacksonville, Florida**, at 2300 a good signal with SRN news, ID as "1320, The Patriot."

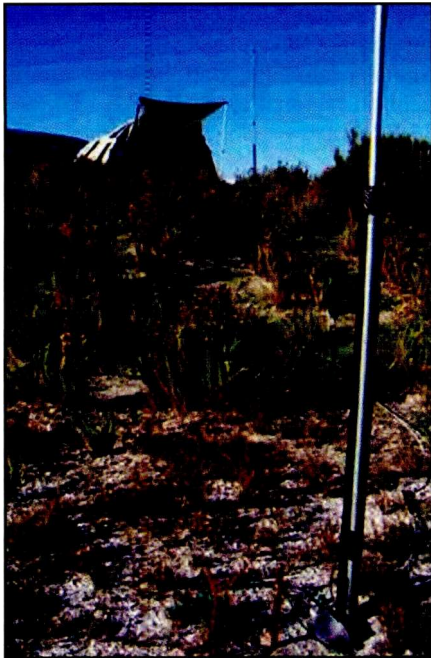
**1450 WMFJ Daytona Beach, Florida**, at 1904 good with "Point of View" program and "USA Radio Network News."

**1600 WQOP Atlantic Beach, Florida**, at 2000 good with EWTN program, IDs as "Queen of Peace Radio" and "WQOP, 1600 AM, Atlantic Beach."

*Walt Salmaniw, Queen Charlotte Islands, British Columbia, Canada*

I began DXing at just before 1100 UTC and immediately found the bands to





*The Coorong, Australia, campsite with Ewe antenna in the foreground.*

be alive. Most split frequencies had good hets on them. A short 120-ft random wire running very close to east/west was the best antenna for many split frequencies, mostly because of the attenuation of North American signals, allowing for the numerous transpacific signals to propagate. That short length of wire provided excellent DX right up until sunrise at which time the ambient noise on that antenna rendered it useless for MW. Generally I heard reasonably good signals from all over the Pacific, without any one region dominating. Perhaps Japan was best if I had to pick—on the final night of the DXpedition, Japan practically had the entire MW band to itself.

**612 4QR Brisbane, Australia**, at 1155 a talk show with the “Australian point of view” on Iraq and Australian involvement. ABC network at 1158, then faded out.

**693 JOAB Tokyo, Japan**, at 1200 a strong signal with NHK2 network 3 + 1 time pips, and “NHK, let’s learn together,” then same in Japanese. “Konichewa. Hello listeners. I hope you’re studying hard this week. OK, let’s get started.”

**828 JOBB Osaka, Japan**, heard at 1141 good reception with talk in Japanese parallel to JOIB Sapporo and 774 JOUB Akita at poor to fair level. I rechecked 774 kHz at 1209, at that time it was very strong.

**920 KSRM Soldotna, Alaska**, at 1059 a new Alaskan log for me, with ID as “KSRM, now in our 38th year.” Fair to good with a few weak co-channel signals.

**970 KFBX Fairbanks, Alaska**, at 1422 time check for Fairbanks, and local job oppor-

tunities. Poor with lots of atmospheric noise. Not bad for 5 kW in the morning, with the sun high in the sky!

**1170 KJNP North Pole, Alaska**, at 1359 a good strong signal, over a weaker co-channel with ID, “You are tuned to 1-1-7-0, KJNP North Pole, Alaska.” I had to look up on GeoClock where North Pole was. Clearly nowhere close to the actual or magnetic pole.

**1269 JOFM or JOHW, Hokkaido, Japan**, at 1120 good reception and the strongest transpacific I’ve heard yet. Parallel to JOHR Sapporo on 1287 kHz, also at good strength.

**1287 JOHR Sapporo, Japan**, at 1243 good reception. “Hokkaido” mentioned, as well as “HBC Radio” (at least it sounded like this to me!). Consistently one of the strongest Japanese stations heard on the Charlottes.

**1296 1ZH Hamilton, New Zealand**, at 1246 received with only 2.5 kW, heard “Newstalk ZB” with email and 0800 phone number given.

**1440 JOWF Sapporo, Japan**, at 1221 reminding me that it’s worthwhile to check the 10-kHz channels. This 50-kW Hokkaido station was well over any North American co-channel signals.

**1566 HLAZ Cheju Island, South Korea**, at 1310 a strong signal with a Japanese Christian broadcast, still fair at 1321, well after local sunrise.

*John Bryant, Grayland, Washington*

This “reads better than it was” with only one transpacific signal ever being really above “fair.” That was the 639 Fiji, booming in on the second morning. Aw well, it was still wonderful.

**576 1XLR Southern Star, Hamilton, New Zealand**, heard at 1236 heard parallel to much poorer Wellington on 657 kHz. Fair level with usual quiet pops/ easy listening music program hosted by a male announcer.

**639 Fiji BC, Lautoka, Fiji**, heard at 1240 heard with a huge signal at dawn with a church service in Fijian. The hymns were wonderful. The tradition of world-class Polynesian choirs is alive and well in Lautoka.

**693 JOAB Tokyo, Japan**, at 1123 heard with NHK2 program parallel to 774 kHz at poor level. Over 30 minutes before sunset at the transmitter.

**738 Radio Tahiti/RFO, Mahina, Tahiti**, at 1218 noted at good level with news/features in French until 1220, then into traditional Tahitian drumming of the form that accompanies their famous high-speed hula.

**774 JOUB Akita, Japan**, at 1050 noted during an odd Japan opening almost an hour before sunset at the transmitter, running a program in a Southeast Asian language in the several minutes prior to the top of the hour. At the hour, NHK time pips into the news in Japanese.

**1035 2ZB Wellington, New Zealand**, at 1230 heard “NewsTalk ZB” network program

followed by a commercial string with mentions of New Zealand and several cities. Fair level.

**1566 3NE Wangarata, Australia**, at 1247 heard near dawn mixing with HLAZ. Good level with their usual old time rock and roll programming. Elvis and “Hound Dog” never sounded so good. By 1325 band fade it was all alone and still good level.

**1566 HLAZ Cheju Island, South Korea**, at 1115 noted at good level in an Asian language well over an hour before sunset at the transmitter.

*David Onley, Coorong National Park, Parnka Point, Australia*

This DX trip to the Coorong with fellow DXer Craig Edwards was up there with the best of them. I was totally blown away by the strength of signals from the Philippines, especially at Philippine sunset (around 9 p.m. our local time) and then again in our mornings close to dawn at their sign-on. I’m a convert and love these whacky stations. It was one of the most enjoyable DX trips for listening I have had. I couldn’t get enough of these stations.

The Indonesians were quite good at times in strength. RRI Makassar on 630 kHz was huge at times. RRI Jakarta on 999 kHz was okay. 1035 kHz was interesting with two Indonesians, the stronger RRI Serui and RRI Bandarlampung. 1107, 1179, and 1287 were all quite good as well.

The highlight of the trip was the Africans: 1386 Kenya, 1539 Djibouti, etc. The interesting two were the tentative loggings of Nigeria on 854 and 945 kHz. This trip we had poor openings to Europe with a sprinkle of signals from 873 Russia, 1233 Cyprus, 1467 TWR France, 1548 Moldova, but that was basically it.

*Bryan Clark, Mangawhai, New Zealand*

One of the challenges for DX listening at Mangawhai is friendly neighbors who spontaneously invite one out for a meal, but I did manage to return to the dials for some late night DX. My listening sessions at Mangawhai to date have usually been limited to hours around local sunset, which generally provide the optimal reception from the Americas. With only one antenna, a 185-meter Beverage-On-Ground (BOG) aimed at Texas, plus limited listening time, my impressions are fairly narrow as to the overall conditions. Thunderstorm activity was quite high, but I would summarize reception as a little above average.

Examples: extricating audio (but no identifiable material) on a U.S. talk station on 1250 kHz, when semi-local "Radio Rhema" on 1251 (less than 100 km away) would usually prevail, a first-time logging on 1230, also several stations from the Americas topping the Zedder on 1350 kHz. There was a predominance of southern U.S. or Mexican signals, with Mexican "Radio Formula" on 1230 kHz and KWHN on 1650 kHz the pick. Hawaii also made an appearance.

Pre-sunset listening at this site always brings good results for me. This time it

was logs of WAAA Atlanta on 1690 and KKGM Dallas on 1630 kHz. The latter frequency is difficult due to an aeradio beacon at Whangarei (80 km north) co-channel, but on this occasion KKGM was dominant.

The next night was the first time I've seriously DXed late in the evening from my coastal site. While New Zealand stations are much stronger after dark, I was pleased with the sustained strength of U.S. stations at this time. Western states and Hawaii were more prominent with traditional "clear channels" like 830 and

840 producing less common catches for me like KXNG and KXME, respectively. Spanish language stations were prominent on regional channels like 1370 and 1390 kHz.

**740 KTRH Houston, Texas**, heard at 0729 with advert "to subscribe to After Dark," and ID, "It's 2:30 on Newsradio 740 KTRH," followed by road conditions and weather.

**760 KGU Honolulu, Hawaii**, at 0727 concluding "Word of Hope" Christian program, ID, "This is AM 760, Hawaii's Christian Talk, for you, KGU."

**820 WBAP Fort Worth, Texas**, at 0724 noted with a very good signal, Cuban "Radio Reloj" audible in background, promo for the "Midnight Truckers Radio Network."

**840 WHAS Louisville, Kentucky**, at 0543 a good signal, "Newsradio 84 WHAS Weather Bulletin."

**840 KXNT Las Vegas, Nevada**, heard at 1058 very good with promos for Nevada Army National Guard and "Kim Komando on 840 KXNT."

**1120 KMOX St. Louis, Missouri**, at 0704 with ABC news, later identifying as "Newstalk 1120, KMOX."

**1150 KTLK Los Angeles, California**, heard at 1046 very good with "Air America Radio" and "LA's Progressive Talk, KTLK AM 1150" slogans.

**1230 XEEX Culiacan, Mexico**, peaking fair occasionally from 0637, up for full ID as "Radio Formula."

**1540 KMPC Los Angeles, California**, at 1039, surprisingly carrying Brother Stair and his "Overcomer Ministry" program. Website confirms KMPC carries this daily 3 till 4 a.m. Pacific Time.

**1560 XEINFO Mexico City, Mexico**, good with ID, "Desde la capital de la Republica Mexicana, escuchas de XEINFO, Radio Monitor, 24 horas...mil watts de potencia, en todos..."

**1650 KWHN Fort Smith, Arkansas**, at 0603 ABC news, then weather and ID for "News/Talk 1650 KWHN" and "Good Morning Oklahoma, this is George Noory, Coast to Coast AM on KWHN."

### Pending

New Call	Location	Frequency	Old Call
WYYC	York PA	1250	WQXA
KTTO	Spokane WA	970	KTRW
WMTI	Picayune MS	106.1	WKSJ
WOLI-FM	Easley SC	103.9	WOLI
KPLI	Olympia WA	90.1	KWGV

### Changes

New Call	Location	Frequency	Old Call
KNUV	Tolleson AZ	1190	KMYL
WDDV	Venice FL	1320	WAMR
WODJ	Whitehall MI	1490	WUBR
WTWG	Columbus MS	1050	WACR
KVMN	Cave City AR	89.9	KZIG
KXZM	Felton CA	93.7	KTEE
KXSM	Hollister CA	93.5	KOTR
KPGS	Pagosa Springs CO	88.1	New
KAIO	Idaho Falls ID	90.7	New
WMYJ	Oolitic IN	88.9	WXVW
KAIG	Dodge City KS	89.9	New
KHBQ	Sulphur LA	89.1	KJJN
WICE	Ironwood MI	88.3	New
WIAB	Mackinaw City MI	88.5	WDQV
WODJ-FM	Newaygo MI	92.5	WKOQ
WACR-FM	Aberdeen MS	105.3	WWKZ
WWKZ	Columbus MS	103.9	WACR-FM
KQLU	Belgrade MT	90.9	New
KWLY	Moapa Valley NV	104.7	KBHQ
KUSW	Farmington NM	89.7	New
KKNM	Gallup NM	88.1	New
KLLU	Gallup NM	88.9	New
KPKJ	Mentmore NM	88.5	New
WENI-FM	Big Flats NY	97.7	WCBA-FM
WHAZ-FM	Hoosick Falls NY	97.5	WZEC
KRVX	Wimbledon ND	103.1	New
WHKC	Columbus OH	91.5	New
KWXC	Grove OK	88.9	New
WFHU	Henderson TN	91.5	WFHC
KHFD	Hereford TX	88.7	New
KJJN	San Angelo TX	89.3	KHBQ
WDYK	Ridgeley WV	100.5	New
KCWW	Evanston WY	88.1	New

## Keep On Tunin'

Thanks to all the coastal DXpeditioners for their outstanding reports. Visit [dxing.info](http://dxing.info) for complete reports and more photos from these and other DXpeditions worldwide. While online visit our friends at Universal Radio, [www.universal-radio.com](http://www.universal-radio.com), where you'll find complete specs for current receiver models mentioned here, plus a good stock of used equipment. And don't forget to report your DXpedition results here.

For now, 73 and good DX! ■



# Hurricane Helpers!

**G**o figure. In last month's column we discussed public service and emergency communications in general. And this month—thanks to Hurricanes Katrina and Rita—we can get into some specifics. As I write this, Katrina has left death and destruction in her wake. Experts say she was the most destructive storm in U.S. history and Rita, now dubbed the third most powerful hurricane in recorded history made landfall in Texas.

Before, during, and after the twin storms, hundreds of ham operators did what we do best: provide emergency communications to individuals and served agencies at the federal, state, and local levels. But as we'll discuss in greater detail, the way hams helped out this time around is subtly different than in years past. Some of that's due to technology and greater efforts to integrate existing commercial communication services, and some to the way the agencies themselves had to respond to the situation on the ground when faced with a storm (or storms) of unprecedented impact.

Hams, as always, will stay on the job long after the initial blasts. And after that, when the dust settles, hams, their service organizations, served agencies, and even the FCC will spend a lot of time and effort sorting out what went right, what went wrong, and what was simply different from anything that's come before.

## Plenty Of Hams To Go Around!

Amazingly, served agencies and emergency communication coordinators received so many offers of assistance that—almost as soon as the Katrina disaster response began—they had to ask throngs of eager, ready-to-help hams to stand by and *not* proceed into the disaster areas.

As expected, because of the severity of the situation, hams were literally coming out of the woodwork, wanting to do their part. Many were asked to monitor the ARRL and Red Cross websites and to wait to fill the expected needs of various agencies.

"The response was simply phenomenal," says Bob Josuweit, WA3PZO, *CQ* magazine Public Service Editor and Assistant ARRL Eastern Pennsylvania Section Manager, who also cautioned hams against heading into the disaster areas without proper coordination.

"In areas that are essentially under the equivalent of Martial Law, you might be stopped without proper identification and an assigned task, so it's really important to work through local channels and to have a plan before you go down there."

## Commercial Comms Better Than Expected

In many previous disasters, one constant was the relative failure of commercial communication systems in highly stressed environments. Cell phones are usually down for quite a while after recovery efforts begin, and various agencies and government entities can't seem to communicate with one another because of various technical, modulation, and spectrum assignment issues.

*The National Hurricane Center in Miami has plenty of room for amateur radio. Shown here manning WX4NHC are KU4GY, KG4GKU, WN4F, KG4BZA, and WD4JR.*



For Katrina, at least, the commercial operators seemed to produce better results this time around. "The sat phones were up and running relatively quickly," says ARRL Special Assistant Dave Patton, NN1N, "which is a bit of a departure." Patton also says that most inter-agency communication was handled well by local operators, commercial and amateur.

One high-profile snafu reported by *Amateur Radio Newsline* was the apparent failure of a new FEMA-sponsored interoperable radio system designed to let emergency and relief organizations communicate with one another. According to *Newsline*, the repeater-based system, using newfangled Motorola hardware, was a total kludge in the field, and even a team of experienced ham technicians couldn't make the system work! The deployment team members eventually had to settle for limited cell phone service to maintain contact. (It's probably unrelated, but two of my friends and I just deep-sixed our Motorola cell phones long before their times because they simply never worked right. Hundreds of users complaining on the Internet had similar experiences. Hopefully, this isn't an omen of things to come from the once-vaunted technology innovator.)

## Helping In Other Ways

Perhaps because of the sheer size of the Katrina disaster, many hams showed up in the crunch zone and found that there was little or no need to pass traffic in the conventional sense. That's a detail that's not likely to stop any ham who is bent on public service and, indeed, hams helped out in a variety of ways.

According to Patton, "Many of the hams who went in didn't do much on-air operating, but they did fix and distribute power generators, fix commercial antenna and communication systems and assist the Red Cross with technical problems." Hey, public service is public service!

## Tidbits

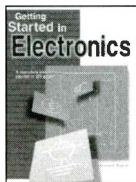
- As reported on *Newsline* and elsewhere, the mainstream media has picked up on the Amateur Radio involvement in the

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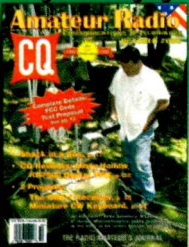
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Katrina recovery, and the response has been quite favorable. *Newsline* reports articles in the *Washington Post*, *Wall Street Journal*, the *New York Times*, and the *Christian Science Monitor*. There are undoubtedly others. I was pretty much glued to CNN for several days during the excitement, and I lost count of the number of times "ham radio operators" were mentioned, all in a positive light.

• To make sure hams could provide as much assistance as possible, again according to Patton, the FCC, perhaps for the first time, approved time-limited field upgrades to Extra class for a number of Technician class operators in hurricane-affected areas.

"In addition," says Patton, "despite whatever tension that may exist surrounding various regulatory issues, such as BPL and license class restructuring, the FCC recognized the ham response up front and asked us what we needed to best carry out our missions. That, too, was appreciated."

• Health and Welfare traffic, long a hallmark of how hams serve disaster victims and their far-flung families, was surprisingly minimal during hurricane Katrina and its aftermath. I think it's only reasonable to assume that the Internet, the public media, and improved commercial systems account for part of the dramatic reduction in H&W traffic, but the Red Cross itself may have preempted a large portion of that traditional traffic by simply assigning operators and priorities to in-area emergency communication. It will be interesting to see if H&W traffic starts to become less of a focus for hams in future disasters. For whatever reason, decades of tradition didn't hold up this time around.

## Our Thoughts Turn Again Toward The Gulf

As I put this column to bed, section emergency coordinators in Texas and elsewhere have met Hurricane Rita head on. Resources and supplies were prepositioned, and the Red Cross moved comm operators and their equipment westward. These are important moments for ham operators everywhere. The teams are well equipped, well trained, and definitely experienced. As always, when the need arises, amateur operators respond without hesitation. ■

## Tuning In (from page 6)

What didn't fail? Citizen volunteers, Americans helping Americans. Amateur radio and the good-old basic portable gear we use everyday once again passes the test of time. Interesting, isn't it, that it's what we've talked about for years: If our basic equipment—especially VHF simplex—works when the chips are down, but the public safety community and feds aren't able to muster similar radios and trained people, even as a *backup*, to make things happen, then heads should roll. But, then again, we said that after 9/11.

Perhaps *our* success as communicators is because hams and other radio volunteers actually talk with one another *before* disaster strikes to plan and train for the worst-case scenarios. That's common sense, but then again...

On September 28, the *New York Times* reported, "The near-total collapse of communications made every task far more difficult, forcing some Guard commanders to use 'runners, like in World War I,' as one [Guard official] put it. With land lines, cell phones and many satellite phones out of action, the frequencies used by the radios still functioning were often so jammed that they were useless." This is not some liberal media campaign reporting bad news, it's what boots-on-the-ground National Guard officials are telling you and me.

Sound familiar? That's right, sounds like the troops in *foreign* countries signaling in convoys using rags and turn signals! The trouble is, this is *at home* and, well, perhaps Rumsfeld was right: "You go to war with the Army you've got."

ARRL President, Jim Haynie, W5JBP, reported in official post-Katrina Congressional testimony, "...amateurs are trained in emergency communications...they are disciplined operators, and their stations are, in general, portable and reliable." Simply put, our gear is easy to use and not dependent on a centralized system in order to operate. It works, period. Our people are motivated and give a damn about their fellow citizens. We're also not politicians.

Indeed, just as hams from all over the country descended on the Gulf in the wake of Katrina, as this is written they're *again* doing their part after Hurricane Rita. Aren't you glad our radio volunteers can think independently? I, for one, am very proud of each and every one of them, and you should be too.

## Angry, And Rightfully So

In an open letter to President Bush,



Louisiana's largest newspaper, the *Times-Picayune* said, "We're angry, Mr. President, and we'll be angry long after our beloved city and surrounding parishes have been pumped dry. Our people deserved rescuing. Many who could have been were not. That's to the government's shame."

"Every official at the Federal Emergency Management Agency should be fired, Director Michael Brown especially," the letter said. "No expense should have been spared. No excuses should have been voiced."

The timeline for Katrina began many years ago. The official warnings and watches gave authorities *at least* a solid week to do the right thing. Instead, they all grumbled, continued their adolescent turf wars, underestimated the storm, and waited for someone else to take charge. In hindsight, maybe that's what was needed all along.

It's time for the feds to act on the promise of protecting our citizens. I respectfully ask you to direct your anger at the appro-

priate officials and agencies, and not at the media for reporting on the problem. They should be asking the tough questions and doing their jobs. If the answers are troubling, well, please don't shoot the messengers.

## What's Important

I can't help wondering how the FCC's Kathleen Abernathy or former Chairman Michael Powell would feel if a family member was among those missing and perhaps trying to get a barely readable message through one of the hundreds of ham or CB radio volunteers. Imagine for a moment that a faint amateur radio signal was their only viable comm link to the outside world, *but* that weak signal was obliterated by BPL interference.

I'll bet that suddenly the almighty dollar would be less important than it was just a year or so ago. It always is when disaster strikes closer to home. ■

## A Special Note To Uncle Sam

The following points are intended only to serve as a basic government guide for disasters. It is presented here in the simplest language, and should be cut out, photocopied, and given to the head of FEMA and those folks on down the flow chart. It is also required reading at the White House.

- It's our government's responsibility to protect and help its citizens. Excuses, bickering, and turf wars are for children.
- Parts of the United States get hurricanes, and great damage and loss of life is *always* possible. Many lives were lost and billions of dollars in property damage occurred from Hurricanes Katrina, Andrew, Camille, Gloria, Hugo, Floyd, Gilbert, and the unnamed hurricane of Labor Day 1935.
- There is no such thing as a "minimal hurricane."
- We must remember that other areas of the United States can suffer from disasters. For example, the entire East Coast from Florida to Maine can suffer hurricanes, and the West Coast and other areas are prone to earthquakes, floods, and other natural disasters.
- Hurricanes and the problems they cause are nothing new. Hurricanes aren't always predictable, but NOAA's National Hurricane Center is a great source for information. They are very good at issuing detailed advance warnings so people can be evacuated in plenty of time. You can tune to NOAA with a simple weather receiver or on the Web at [www.nhc.noaa.gov](http://www.nhc.noaa.gov) for hurricane and tropical storm updates.
- Some cities have unique situations. For example, New Orleans sits in a bowl. It is below sea level. It can flood very easily. If it is decided to rebuild New Orleans below sea level (probably not a wise decision) the levee system should be built better and stronger. That will help hold back the water.
- We need a workable plan for evacuating, caring for, and housing people. Convention centers and sports facilities are not very good shelters. Their roofs can blow off when the winds are strong. Debris can fall and injure people.
- We should consider having hardened buildings designed and built to withstand 200-mph winds. These buildings don't need to be pretty, but should have a lot of non-perishable food and plenty of water.
- There should also be other hardened buildings with fueled and ready-to-go buses and rescue vehicles and communications equipment at key locations. These key locations should not be below sea level. Very important: The construction of

these buildings should not go to the lowest bidder. If we need to think of them as military projects in order to get it accomplished or money appropriated, then we should do so.

- It's a good idea to have sufficient National Guard and Reserve troops here in the United States to help Americans at home. National Guard and Reserve troops are our local citizen-soldiers. They know a lot about their local areas and their talents are best used at home.
- We must be prepared for chaos after a disaster by having troops within a reasonable distance, equipped with proper radios, and trained in how to secure an area. (It is not a good idea to pattern this after our Iraqi security measures.)
- It's not good when people aren't getting proper medical attention and are dying in front of children in shelters. Therefore, we should also have hardened medical facilities at key locations. These medical facilities should have all sorts of basic triage equipment, medicines, and easy-to-use radios in case they're needed.
- We should also have a good, reliable communications system in place to help our public safety people talk to one another. It doesn't need new frequencies or more money, and it doesn't have to be complicated or run by a computer. This will help them help American citizens and keep them safe.
- Federal, state, and local agencies should cooperate with one another. Cooperation is essential if peoples' lives are to be saved.
- We should use *all* forms of tried-and-proven radio communications—not just ham radio—and train the operator in emergency communications. Training helps those charged with helping others. The radios don't need to be very complicated; they just need to work. An easy way to be sure something works is to try it out before a disaster strikes. We can ask our firefighters and police officers to do this. That is their job.
- We must think ahead and plan for the worst-case scenario. Constantly reminding our citizens to be prepared for emergencies and do their part isn't helpful if we can't do our own jobs correctly.
- These things all cost money, but it is worth the expenditure when lives are hanging in the balance.
- If we need help learning how to communicate, organize, and plan for a disaster, we can always call the American Radio Relay League at 860-594-0200 or REACT International at 301-316-2900.

# MILCOM Above 30 MHz: The Right Antenna System For You, Plus Monitoring An Osprey Mishap!

System you ask? But isn't an antenna just a collection of some metal rods connected to a receiver by a skinny little piece of wire? It can be, that is if you don't really care about the quality and quantity of your VHF/UHF military monitoring intercepts. But if you're reading this magazine, chances are you *do* care and want to do everything possible to capture even the weakest, yet potentially important, communication snippet. The best match of antenna and coaxial cable could make all the difference for you.

## Coaxial Feed Lines And Pre-amplifiers— Do They Work For VHF/UHF?

Modern day VHF/UHF scanners are designed to work best with almost any grade of coax. Your best bet is to use coaxial-type cable rated at least at 50 ohms and up to 75 ohms.

Some monitoring enthusiasts use the type of coax intended for CATV reception, because it is moderately inexpensive. Most standard TV antenna cable is rated at 75 ohms, but a good grade of coax makes all the difference in containing those signals *inside* the cable (no doubt you've encountered cable TV leakage on your scanner). So instead of using CATV grade coax, such as RG75, I suggest you use a better grade like RG-6 designed for use with two-way VHF/UHF transmitting equipment, such as ham radio gear. It's more expensive, but you'll hear much more. Also consider using RG-8 or RG-8M available at most radio shops. When selecting a coax, look for one with a solid metal (foil) shielding, foam dielectric core, and a single wire copper center conductor.

## With Coax, Size And Height Matter

This is true *especially above 30 MHz* where signal loss down the feed line (coax) can be great.

Since VHF and UHF communications are line-of-sight (except during times of sporadic atmospheric skipping), mounting your antenna as high as practical is a given. So what's to stop you from putting an antenna up, say, 200 feet or so? Well, although ideally an antenna should be mounted as high as possible, because of signal attenuation (signal loss) by the coax itself, 60 feet seems to be about the limit before loss outweighs the gain. You can find a good cable grade signal attenuation guide at [www.rfparts.com/commcoax.html](http://www.rfparts.com/commcoax.html).

One way to keep signal attenuation to a minimum is to use the highest grade coax you can get. Some MILCOM monitors (with deep pockets) have gone to hard line coax, which is very low loss even at runs over 60 feet, but there are trade-offs here as well. Hard line coax is very expensive and unwieldy, finding appropriate connectors can be a pain, and even finding it for sale in your area can be problematic.

Hard line grades of monster coax (such as Andrew or Belden) work well, but cost about \$2 a foot, and that doesn't take into consideration shipping costs. An alternative is gas-injected, double-shielded coax such as West Penn Q841 RG6/U, but a 1,000-foot run of it will cost you \$150—a price most monitors aren't willing to pay. You can view a list of many types of high-grade coaxial cable at [www.allkindscable.com/coax.html](http://www.allkindscable.com/coax.html).

However, if you're interested in an area where squeezing out every iota of signal from the background noise is imperative, such as SATCOM monitoring, then consider going hard line. One way to *possibly* get hard line for next to nothing (or free) is to contact your local cable TV provider. Many cable companies are replacing long runs of hard line coax with digital optical cable and have supply yards just filled with the stuff, awaiting disposal. You might even be able to talk them out of cable connector adaptors, making it easier to connect to your receiver. I was able to get my hands on several hundred feet of hard line cable but have not yet had the chance to use it.

## Amping It Up?

So what about RF amplifiers? Do they work?

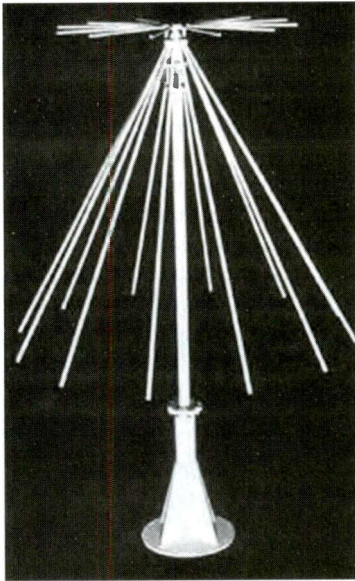
RF amplifiers can help reduce signal loss due to cable attenuation, but again there's a trade-off. Unless they are properly designed to be narrow banded, such as for UHF only, TV-type RF amplifiers can introduce unwanted noise, especially in urban areas, that can actually *degrade* your receiver's ability to hear anything. But if you have a friend who has a degree in radio engineering, or if you are an accomplished ham radio operator yourself, it's possible to build the ultimate antenna system using advanced design low-noise amplifiers (preamps coupled with low-loss hard line feed line). You can find a great primer and plans for building a good RF preamp at [www.geocities.com/toddemslie/bf981\\_preamp.html](http://www.geocities.com/toddemslie/bf981_preamp.html).

There are some commercial-grade antenna preamps available from a variety of sources. Grove Enterprises offers the Ramsey Wide Band Pre-amplifier, which some swear by, at [www.grove-ent.com/PRE2.html](http://www.grove-ent.com/PRE2.html). GRE makes popular preamps as well, including one that you can put on your handheld scanner. Try visiting [www.greamerica.com/shop/](http://www.greamerica.com/shop/) and take a gander at the GRE Super Amp Handheld.

So what about TV-type preamplifiers? Will they work on your scanner?

The answer is yes, and no. It really depends on how radio-noisy the environment is surrounding your QTH. An FM trap can help eliminate unwanted overload caused by high-power FM commercial transmitting stations, but expect some frequencies to still be overloaded with unwanted signals. Some military monitors, however, have noted that they've seen some signal-sucking improvement on the UHF military aero bands, including the UHF SATCOM frequencies. For a quick overview





Typical discone antenna.

on how a preamp can help or hinder your MILCOM capabilities, point your browser to [http://www.milaircomms.com/antenna\\_mounted\\_amplifier.html](http://www.milaircomms.com/antenna_mounted_amplifier.html).

## Antenna Types: Which Direction Do You Want To Go?

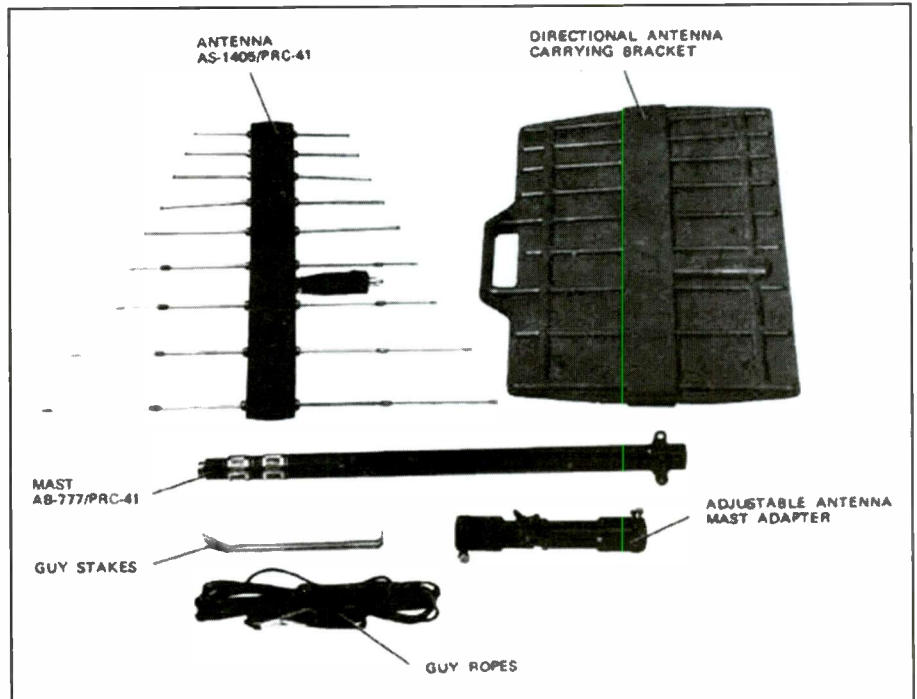
The type of antenna you should consider buying or constructing will have a lot to do with what you're able to intercept. Following are a few common types, which fall under the categories of omnidirectional and directional.

### Omni-directional Antennas

An omni antenna does just what its name implies: it receives signals equally well from all points on the compass. Let's jump right into some specific versions.

**Omni-directional Dipole**—The most basic omni-directional antenna is the dipole, which is great for general wide-band monitoring applications. Dipole antennas are cheap and easy to build yourself, or you can purchase a commercial dipole antenna such as the Grove Omni II, which is a good performer over many frequency ranges.

Dipoles, however, do not offer any *gain* (signal amplification) and are best used if you live relatively close to your particular military monitoring target, such as a military base, or are under an active military aircraft training/transit corridor where signals are relatively strong. Omnis may not be powerhouse antennas, but they perform *way better*



Compact military surplus antenna the author uses for UHF MILCOM.

than the dinky whip back-of-set antenna that comes with your receiver.

**Omni-directional Discone**—A discone antenna offers great wideband capabilities coupled with increased signal gain. If you've ever been to a military air base and noticed antennas on the control tower consisting of two rows of radiating spikes (arranged in a circle) with an array pointing up (or level) and one pointing down, then you've seen a discone. Some discones have a single vertical element to enhance VHF low-band (30 to 70 MHz) reception.

Discones have much more gain than a standard dipole antenna (from 0 to 4 dB) and good omni-directional reception patterns. One of the best commercial discones available is the Diamond D130J Superdiscone.

Good friend and ham radio operator, Ken Hanson, WB5QLI, lent me his Diamond discone, and I have to say it's one fine antenna. You can read more about this antenna at [www.rfparts.com/diamond/d130j.html](http://www.rfparts.com/diamond/d130j.html).

RadioShack also offers a good discone antenna that monitoring enthusiasts rate high, the No. 20-043. Some say it's as good as the Diamond. You can find specs at [www.radioshack.com/product.asp?catalog%5Fname=CTLG&product%5Fid=20-043](http://www.radioshack.com/product.asp?catalog%5Fname=CTLG&product%5Fid=20-043).

**Omni-directional Ground Plane**—A ground plane antenna has the highest gain

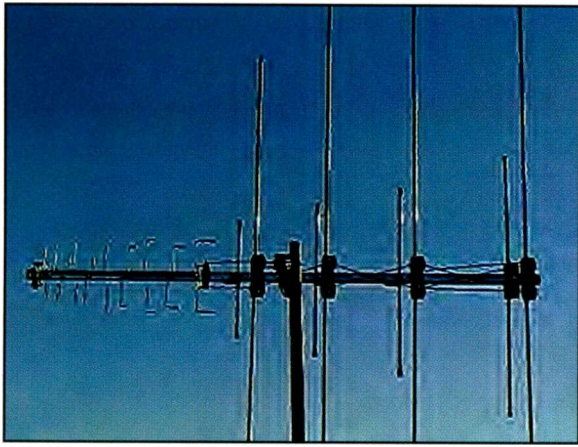
characteristics of omni-directional antennas, usually from 3 dB to 6 dB. Bandwidth is usually narrower, but some newer advanced designs combine multiple elements cut for different frequency bands. It's called a ground plane because an array of radials eliminates the need for the antenna to be coupled to earth (grounded) like a standard dipole or placed at a certain height above the ground.

Mobile antennas are modified ground planes, since they are isolated from the earth by rubber tires with the body of the car acting as the ground plane. RadioShack sells an inexpensive ground plane antenna (No. 20-176) that gets mixed reviews from MILCOM users. You can read all about it at [www.radioshack.com/product.asp?catalog%5Fname=CTLG&product%5Fid=20-176](http://www.radioshack.com/product.asp?catalog%5Fname=CTLG&product%5Fid=20-176).

If you feel like you would like to try your electronic skills and build your own simple and inexpensive ground plane antenna, visit <http://www.northcountryradio.com/Articles/groundplane.htm>. There you can download a PDF-file containing instructions and a parts list that will enable you to build an antenna for less than \$20.

### Directional Antennas

Directional antennas are also just what their name implies: antennas that receive signals best from a single direction. Why is that good? Why wouldn't we want to receive signals from all directions? Well,



*Grove Scanner Beam II is a favorite among MILCOM monitors.*

for instance, a directional antenna usually has much more gain than an omni-directional antenna and can pull signals out of the air that an omni can't even hear. Because of its directionality it can be used to zero in on weak signals when aimed in the direction of the signals, and it can even block unwanted signals (and overload) coming from nearby transmitters when aimed at a right-angle *away* from the offending transmitters.

A good way to understand what directional antennas can do is to think of them as being much like a telephoto lens on a camera. A telephoto lens (through a combination of lenses and mirrors) can zoom in close and collect light from distant objects. However, because its field of view is so narrow, if an airplane was to streak across the sky, chances are the telescope wouldn't see it unless it crossed directly in front of the lens or the lens was aimed directly at it. Vice-versa, a wide-angle lens (like an omni antenna) may be able to see most of the sky, but the airplane may not be visible at all. A beam, or directional, antenna works in this way also. Although it may not be able to intercept all the signals emanating from all directions, it can amplify and receive weaker signals coming from a certain direction that an omni-directional antenna would miss.

Since directional antennas receive signals best from one direction, they work best when coupled to an inexpensive TV or ham rotator that you can aim at your (possibly stationary) military communications target of interest, such as a military base. If you are interested in intercepting military satellite communications you can combine two rotators so you can swing the antenna in all directions and elevations.

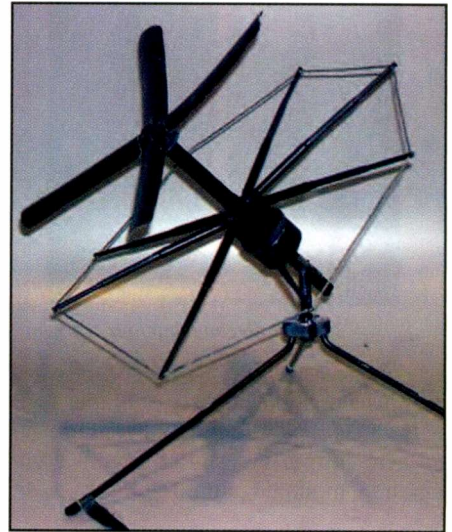
**Yagi-Uda**—The Yagi-Uda or Yagi (as it's usually called) is a directional, normally narrow bandwidth antenna and is typically cut to perform on a certain frequency band. Yagis have good gain (6 to 20 dB) and can really pull a weak signal out of the background noise.

Yagis are easy to build from scrap metal rods and PVC pipe. Construction consists of an active antenna element (usually a dipole cut to frequency) attached to a boom with several "directors" (antenna rods cut to a certain length and evenly spaced) and a rear reflector that serves to amplify the signals coming at the antenna from a certain direction. You can find a good plan to build a Yagi (and its high-gain cousin, the helical antenna) at [ourworld.compuserve.com/homepages/pjmarsh/satcom.htm](http://ourworld.compuserve.com/homepages/pjmarsh/satcom.htm).

Yagis can be mounted in a fixed position and aimed at your target area or used in conjunction with a rotator. They are great for MILSAT monitoring given their high-gain and directional

capabilities. Since they are narrow-banded in frequency range, however, don't use a Yagi for all-around every band use and expect it to perform as well as a discone. Instead, consider experimenting and building several Yagis cut for different frequency bands and connected to your receiver via an antenna selector switching box.

My main UHF MILAIR antenna is a military (Vietnam-era) surplus antenna (AS-1405/PRC-41) Yagi that has served me well for over 15 years. It's directional, but still receives signals from other directions (side lobes) almost as well as my Diamond Discone. With this antenna pointed at the local airport, where we have lots of military aircraft doing training transition work, I can pick up the weak UHF ATIS (the Air Terminal Information Service that keeps pilots informed about airport and weather conditions) on 350.300 MHz as if it were next door, even though it is 15 miles away. I can't even hear the ATIS on my Discone attached to the same receiver.



*Example of a portable military UHF SATCOM antenna that this author would love to own—the problem is they go for a pretty penny on Internet auction sites.*

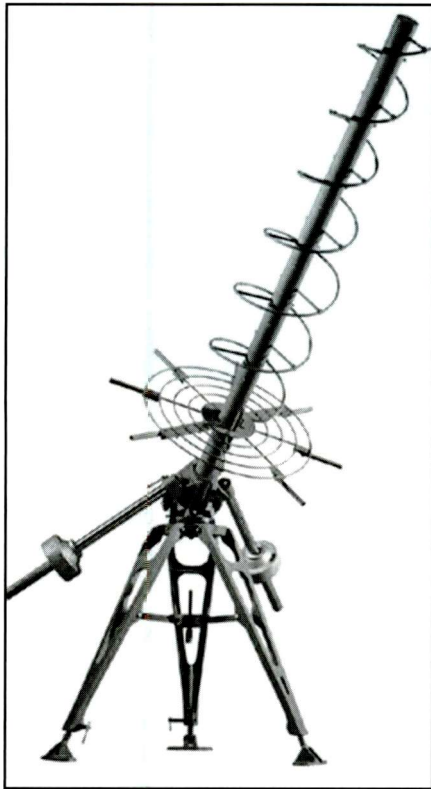
**Log-Periodic**—Although related in design, log periodics are much more wide-banded than Yagis, somewhat directional, have exceptional gain, and consist of several dipoles (and directors and reflectors) cut for many frequency bands. TV antennas are the most common example.

There are several commercially available log periodics that are exceptionally good for MILCOM use. The most popular are the Grove Scanner Beam ([www.grove-ent.com/BEAMII.html](http://www.grove-ent.com/BEAMII.html)) and the Create Log Periodic ([www.universalradio.com/catalog/scanants/1825.html](http://www.universalradio.com/catalog/scanants/1825.html)). Of the two, the Create is better constructed, has more gain, but it is also much more expensive (\$64.95 for the Grove versus \$319.95 for the Create). Both work quite well.

**Helicals**—Helicals are exotic-looking, very directional, high-gain narrow-band antennas that are intended for UHF or microwave (point-to-point) communications. They do not make good general-coverage antennas, but since they have such very high gain and extreme directionality they are ideal for MILCOM SATCOM work. You may have seen helicals used on NASA satellite tracking/data relay ground stations and space platforms. Helicals can also be seen on Navy ships used for SATCOM communications.

Very (and I do mean very) rarely one can find surplus helicals for sale on the Internet, but if you really feel the need for a high-gain and very directional antenna, chances are you'll have to build a helical for yourself. Ham radio operators use helicals for OSCAR and Moon-Bounce applications, so you can find plans for building helicals in the ARRL's *Antenna Book*,





Example of a Helical antenna used for military SATCOM communications.

available at [www.arrl.org](http://www.arrl.org), which aren't specifically designed for MILCOM, but can be adapted given a little tinkering and some math know-how. They're not easy to build without the proper tools and materials, and getting the copper turns just right can be a hit or miss affair, but you may want to give it a shot. You can check out one cool helical design for MILCOM SATCOM work at [http://our-world.compuServe.com/homepages/pjm\\_arsh/satcom.htm](http://our-world.compuServe.com/homepages/pjm_arsh/satcom.htm).

## Osprey Mishap

Some of you might remember my article about the V-22 Osprey (tilt-rotor) aircraft being built in my city. V-22s flying over Amarillo have become a common sight now, and I listen to their test-flight communications on my Uniden BC-790 XLT. Usually the scanner is just bubbling away in the background with the volume set at a low level so as not to disturb the other members of my family, but as long-time monitors know, after years of monitoring they develop an ear (or should I say a brain?) that tells them when something out of the ordinary is going on.

Sometimes it's something very subtle, such as a slight change in the pitch of someone's voice indicating a rise in their stress level, that gets your attention.



Here's the V-22 Osprey that made a hard landing just north of Amarillo. (Photo by Steve Douglass)

When I have people over who are not die-hard monitoring enthusiasts, they are always amazed at what my ears pick up on (from what they perceive to be a slightly annoying, barely audible noise in the background), even during an animated conversation or a loud TV program.

Well, a few weeks ago, my wife and I were watching a movie and, even though I had the surround sound cranked up, a voice on one of my scanners caught my attention. It was a V-22 Osprey pilot reporting (in that matter-of-fact way that military pilots do) that he had a strange vibration and fire warning light and was doing an emergency set-down just north of the field. Although the voice was calm, there was a slight hesitancy that told me something was seriously wrong.

I flew from my chair, dashed to my monitoring post and cranked up the scanner. My wife never batted an eye, because she is so used to seeing me do this, and went on watching the movie.

Minutes went by and I heard nothing. I began to think I was having an auditory hallucination when I heard a call from the Texas Department of Public Safety (base-to-mobiles frequency 155.460 MHz) that they had just received a report of an aircraft crash just north of the airport on Highway 60. I *had* heard something. It seemed an Osprey had crashed.

Grabbing my camera bag and handheld scanner, I kissed my wife and headed out to the airport. If an Osprey had indeed crashed it would be a major blow to the program and indeed newsworthy. Since I am a sometimes stringer for *Aviation Week & Space Technology* mag-

azine I knew they'd be calling me (as soon as they learned about the crash) and would want information and photos.

It took me all of 20 minutes to arrive at the "crash" site, and it turned out not to be a crash at all. Instead it was more of a hard landing or, as the rancher who owned the field the Osprey sat down in said, a "hop, skip and a jump, followed by a tremendous dust cloud going up and a thousand jack rabbits beating feet out of the area!" Luckily there were no injuries to anyone on board. As it turned out, there was a small fire on board caused by a generator (located center wing between the two tilt-rotor pylons) triggering the internal fire extinguishers, which flooded the inside of the wing with foam.

Although I wasn't able to get very close due to security, I was able to snap some photos, which made it into the next *AVWK* issue. Although Bell said it was a minor incident, the "small" fire ended up doing about \$70,000 in damage to the craft, which was towed to the V-22 facility and is undergoing repairs.

## V-44?

Speaking of tilt-rotor aircraft, the Pentagon has put into the works a plan to develop a four-engine, C-130-size Osprey known unofficially as the "Quad," although officially Boeing's Phantom Works is calling it the "Quad Tilt Rotor" or QTR. The Quad is designed to be a large troop/cargo handler able to land and take-off with heavy loads from almost anywhere with no strip required. The Quad will have tandem wings each equipped



The "Quad" Tilt rotor concept being studied by the Pentagon, a C-130 sized troop/cargo transport based on V-22 technology.

with large turbo-shaft engines and counter rotating propeller to offset directional torque. It will also have a C-130 size cargo fuselage with rear-loading ramp.

## Space Marines

In the movie *Aliens*, a squad of "Colonial Marines" was dispatched to do battle with fierce acid-dripping monsters on a far-flung human outpost on an alien world. Although the scenario is far-fetched, did you know that the U.S. Marine Corp is actually studying a proposal to deploy rapid-reaction expeditionary forces to far away political hot spots via a secret space plane?

The study, called "Hot Eagle" would employ a reusable upper-stage (shuttle-like) space travel vehicle to get Marines into a combat area in a matter of hours. The goal of the study, a joint undertaking by the Air Force Research Laboratory and the Defense Advanced Research Agency (DARPA), is to find a way to deliver strategic equipment and a small squad of soldiers to any point on the globe (even the hardest to reach locations) within hours of need.

It is envisioned that the space vehicle, called the Common Aero Vehicle (CAV), could be configured to carry cargo, soldiers, and weapons payloads into space, sling-shot off of the back of rocket boosters into a low arcing trajectory, skipping off the atmosphere until it arrives near its target, where it would glide like the space shuttle and land at small airports, or even rough-austere fields.

Although some Marine Corps brass chuckle at the proposal of space-borne

Marines and think it's a bit too *Buck Rogers* for their tastes, there are some Pentagon officials who are giving the concept serious consideration. An anti-terrorist, extremely rapid reaction force vehicle is an appealing concept and one that some military strategists think is worth funding a study for.

## FB-23: The Next Stealth Bomber?

The panic has subsided concerning the inadvertent exposure (someone posted a model of a secret FB-23 bomber for sale on eBay!) of the secret medium bomber competition between Lockheed's F-22 bomber concept (the FB-22) and a Northrop Grumman design (based on the passed-over YF-23 Black Widow).

Northrop Grumman has now confirmed that the design was one of several next-generation, long-range concepts submitted to the U.S. Air Force. The design, a larger bomb-carrying version of the YF-23, was just one of many bomber concepts ranging from an updated unmanned version of the B-2 to a supersonic unmanned bomber. The U.S. Air Force is looking at several options to replace its aging B-52 and B-1B bombers with something that can be operational by the year 2018.

## In The Wings

Next month this column will feature more on the basics of MILCOM above 30 MHz with a look at some unique antenna alternatives that you may not have



FB-23 concept art. (Courtesy Northrop Grumman)

thought about. And we'll check out the new Uniden 396T handheld scanner to see how well it works for VHF/UHF MILCOM monitoring.

We will also take a look at NASA's bold new plan to return to the moon. Until then, send in your loggings, clippings, gripes, suggestions, and your monitoring story to the e-mail address above. Remember, this column is nothing without your input. We want to hear from you!

## Reader Logs

Not many this month; it seems my regular reporters are asleep at the wheel. Come on folks! Send those logs in!

**0000.0:** (Frequency MHz): STATION, Anytown, USA, summary of traffic heard in MODE at 0000Z. (monitor/sometimes location)

**3167.4:** Q7J, 50R, Q1X, 0ZQ (US Navy ships) in comms in JAX OPAREA at 0408. (MC)

**3349.0:** NNN0HNB Net Control SC Navy MARS Net with message from NNN0ASA for the Gulfport, MS NAVSELRES unit following Hurricane Katrina at 0014. (MC)

**4041.0:** NNN0IRA standing by for emergency traffic on National MARS Emergency Net following Hurricane Katrina at 0036. (MC)

**4372.0:** FRANCHISE, K0K, and 2PC in Link coordination net in VACAPES OPAREA at 0016. (MC)

**4712.0:** NOVEMBER FOXTROT, LIMA, SIERRA, and HOTEL in Link-11/16 coordination net at 2336. (MC)

**5154.0:** UNID with ltr "C" rpted. Also on 4558. CW at 2040Z. (CG)

**5211.0:** WGY912 (FEMA, Mount Weather, VA) w/WGY963, WGY906, and CAMSLANT during Hurricane Katrina at 1338. (MC)

**5320.0:** CAMSLANT c/g USCGC PAMPANO, USCGC PELICAN, and USCGC RAZORBILL following Hurricane Katrina at 1837. (MC)



**5732.0:** 4CS (CBP-P-3) wkg HAMMER to request they pass to FEMA information on group of people stranded in Katrina floodwaters at 0123. (MC)

**5732.0:** SHADO 91 (MC-130) clg CHINDIT OPS at Hurlburt Field at 0028. (MC)

**5732.0:** CAMSLANT requests CG 1720 (HC-130) check a report from FEMA and the FBI of 30-40 people floating down the Mississippi on a barge at 2147. (MC)

**6694.0:** PATHFINDER 16 p/p via HALIFAX MILITARY to MOC at 1113. (MC)

**6715.0:** PATHFINDER wkg HALIFAX MILITARY in voice & RTTY at 2218. (MC)

**6715.0:** HALIFAX MILITARY wkg RESCUE 114 (CP-140) at 2124. (MC)

**6761.0:** BOLT 41 (KC-135R) clg LIFTR 31 at 1303. (MC)

**6809.0:** FC6 (WGY906 FEMA Region 6, Denton, TX) clg MS4 (WGY964 Jackson, MS) in ALE during Hurricane Katrina heard at 2156. (MC)

**7313.5:** AFA2CO net control taking check ins to USAF MARS 2S1 Net at 1227. (MC)

**7348.0:** FC6 (WGY906 FEMA Region 6, Denton TX) clg LA6 (WGY946 Louisiana EOC, Baton Rouge, LA) in ALE following Hurricane Katrina at 0200. (MC)

**7527.0:** CG 1720 (HC-130) p/p via SERVICE CENTER with Clearwater Air regarding IFF mixup at 2016. (MC)

**7527.0:** HAMMER wkg 4CS (CBP P-3) coordinating rooftop rescues during Hurricane Katrina at 2323. (MC)

**7632.0:** NN0TWT taking check ins from AAR9LR and others in SHARES SE RCS Net at 0148. (MC)

**7605.0:** UNID YL/EE rptng "KPA C58D5." Also on 4780. USB at 2015Z. (CG)

**8070.0:** FDG, FAF Bordeaux with VVVs in CW at 1320Z. (CG)

**8301.6:** ANDVT followed by Sector San Juan wkg STINGRAY 04 at 2208. (MC)

**8421.8:** LZW, Varna Radio, Bulgaria with VVVs in CW at 1313Z. (CG)

**8989.0:** OMB and ONY in QSO, both OM/FF. USB at 1158Z. (CG)

**8971.0:** RED TALON 711 (P-3C) wkg FIDDLE to report ops normal and on station at 1614. (MC)

**8983.0:** CAMSLANT wkg USCGC PAM-LICO (WLIC 800) and CG 2135 for damage assessment to NMC transmitter near New Orleans after Hurricane Katrina at 1449. (MC)

**8992.0:** FLASH 04 p/p via Andrews HF-GCS for WX at Djibouti at 0024. (MC)

**9007.0:** CANFORCE 4443 wkg TRENTON MILITARY for WX at Keflavik, Iqaluit, Goose Bay, Trenton, and Ottawa at 2027. (MC)

**9022.0:** NIGHTSTAR ALPHA (E-8 JSTARS) with line code traffic for GRIME and SEMINOLE 10 at 1555. (MC)

**10607.0:** FDI8, FAF Nice with VVVs in CW at 1300Z. (CG)

**11175.0:** Offutt AFB, NE with two 28-char EAMs in USB at 1435Z. (CG)

**11229.0:** TEUTONIC radio check with ALLOTMENT at 1735. (MC)

**11232.0:** CANFORCE 4447 (CC-150) opening watch with TRENTON MILITARY. Requests WX at Zagreb, Keflavik, and Gander at 0038. (MC)

**11232.0:** AIR FORCE RESCUE 4863 (HC-130P#64-14863 71 RQS/347 RQW) p/p via TRENTON MILITARY to KING OPS during operations following Hurricane Katrina at 2117. (MC)

**11271.0:** JSTARS 64 (E-8 JSTARS) p/p via TRENTON MILITARY to PEACHTREE at Robins AFB with line code report monitored at 1813. (MC)

**11494.0:** 53A position report to PANTHER. Has comms with AUTEK and secures guard with PANTHER at 1514. (MC)

**12808.5:** VTG, Mumbai, India with marker in CW at 1255Z. (CG)

**12916.5:** HLF, Seoul, South Korea with marker in CW at 1300Z. (CG)

**12935:** HLG, Seoul, South Korea with marker in CW at 1304Z. (CG)

This month's star contributors are Mark Cleary (MC) and Chris Gay (CG). ■

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# Repair Bench Math Made Easy

Many years ago—more years than I care to remember, anyway—the nifty wooden discs shown in **Photo A** accompanied some electronic components that I had mail ordered. If you’ve been around long enough, you’ve probably seen the similar “wooden nickels,” or “Round-to-Its” discs that have made the rounds over the years. But, these promotional items are really useful, and I’ve been kept handy on my bench since then! And, lo, they were the inspiration for this column!

Since math is an integral part of our radio hobby, especially when working with replacement parts in our classic radios, this month let’s get those math brain cells working again. But don’t worry, it’s not going to be painful!

Don’t let the math scare you. What we’re dealing with is basic algebra. If you’ve taken algebra courses in school, you’ll quickly see how just memorizing two of the formulas will allow you to recreate any of the others by following the basic rules for substituting values in these equations.

Also, I’ve taken the time to make up a larger Reference Wheel for the Ohm’s Law and Power Formulas (see **Figure 1**). You might want to make a few copies for you workbench. Now, by just memorizing  $E = I R$  and  $W = E I$ , you’ll be able to substitute and simplify the equations to develop any of the other formulas shown on the Wheel.

Suppose we take the formula  $E = W / I$  and, knowing that  $I = I^2 R$ , we can substitute  $I^2 R$  for the  $I$  in the first formula, or  $E = W / I^2 R$ . The last example in the Ohm’s Law Reference Wheel for the Power ( $W$ ) formulas confirms that this is a valid formula. Sometimes it isn’t as easy, and extra steps to further simplify the equation will be needed.

Please don’t let this mathematical gyration scare you off, were just trying to show how all of these formulas are closely related and derived from each other. For the time being, keep a copy of **Figure 1** handy and you’ll be able to solve any Ohm’s Law mysteries in seconds.

## Getting Started: Ohms Law

To understand the equations better, remember that the terms represent the following: **I** stands for current, in amperes; **E** is voltage in volts (sometimes a **V** is used instead); **R** is resistance in ohms; and **W** is watts (sometimes a **P** is used for power). Remember that currents should always be converted to amperes when using any of these equations; the same is true for any of the other terms. For example, 100 mW (100 milliWatts) would be shown as 0.10 watts, while 500 mA (milliAmperes) would need to be converted to amperes, or 0.5 amperes.

The object of these formulas is simple: *If you know two of the values, you can determine either, or both, of the remaining two unknowns.*

Here’s a simple example: There is a 100-ohm resistor in a circuit with 100 mA of current going through it. Looking at the formulas in **Figure 1**, what other data can we determine with this knowledge? Knowing the current (**I**) and the resistance (**R**), will allow us to determine the wattage (**W**) or voltage (**E**) across the resistor.

Example: To solve for wattage when the resistance and current are known, use  $W = I^2 R$ , or by replacing the unknown terms

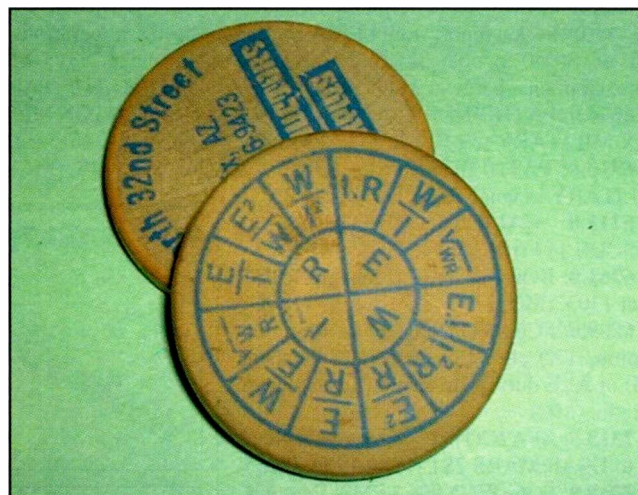


Photo A. These wooden discs were inexpensive promotional items gifted by a mail order vendor. One side provides contact information for the vendor, while the other side is imprinted with Ohm’s Law and the Power Formulas—a smart marketing idea, since I’ve kept these in handy reach by my bench for over 25 years.

with known values, we see that  $W = (0.1 \times 0.1) \text{ times } 100$ , or  $W = 1$  watt. Likewise, knowing these three values would allow solving for voltage (**E**) by several means,  $E = I R$ ,  $E = W / I$ , or  $E$  is equal to the square root of  $W \text{ times } R$ . Let’s use  $E = I R$ , thus  $E = 0.1 \text{ times } 100$ , showing that  $E$  is 10 volts. Likewise, using  $E = W / I = 1 / 0.1 = 10$  volts. Starting with two knowns (**R** and **I**), we now also know the two other unknowns (**W** and **E**).

On a more practical note, what wattage resistor would you need for a replacement in the radio if its resistance was 100 ohms and the current through the resistor was 0.1 amperes (100 milliAmperes)?  $W = I^2 R$  showed us 1 watt of power would be dissipated as heat, but that value should be at least doubled or

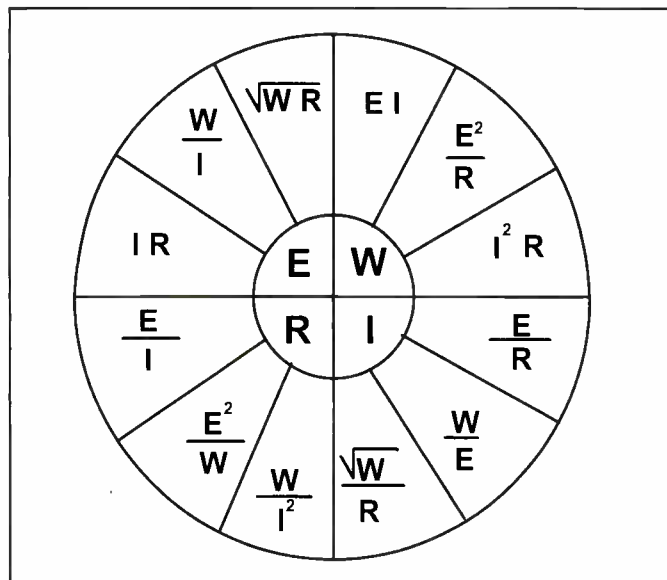


Figure 1. The Reference Wheel for Ohm’s Law and the Power Formulas.



tripled to be conservative and ensure long component life. Remember that a resistor's wattage rating cannot be used to calculate the expected voltage through the device in a circuit! The resistor wattage should always be larger than the maximum wattage dissipated by the device.

## Using Resistors In Series

There will be times when an oddball resistance value is needed, and the exact value is nowhere to be found! Remember that in most instances the resistors used in vintage consumer sets had tolerances of 20 percent unless marked with a 10-percent silver band. I'll be the first to admit using a 91 K-ohm resistor or 110 K-ohm metal-oxide resistor with a 2-percent tolerance to replace an out-of-spec 100 K-ohm 20-percent carbon composition resistor in those instances!

Suppose a 100 K-ohm resistor is needed, and nothing close in value is handy. There are two ways to come up with a replacement (refer to **Figure 2**). The easiest way is to add resistors in series until their individual resistances total up to the desired 100 K-ohm value. Ten 10 K-ohm resistors in series would do the trick, but that would be wasteful and a silly thing to do! How about using a 33 K-ohm and a 68 K-ohm (nearest practical values) in series? They would yield a 101 K-ohm replacement—more than close enough! Remember that resistors in series add.

Also remember that the wattages of the individual resistors will be less than the replacement. If two identical resistors are wired in series to replace a larger value, say two 47 K-ohms to make a 100 K-ohm, the voltage across each resistor will be nearly halved, thus the wattage requirement will be one-half of the original 100 K-ohm resistor. Again, use the **Figure 1** Reference Wheel to find the best formula to calculate the actual voltage drop across each resistor, and calculate a conservative wattage rating (two or three times) for the replacement.

How can you do this? Well, the set's schematic probably gives you some idea of the voltage, and the wattage rating of the original resistor gives some idea of the maximum expected current. Or, measure the current through the resistor, or measure the actual operating voltage across it.

## Voltage Ratings

It's tempting to stock up on bargain price lower-wattage resistors, but there is

### For Resistors in Series:

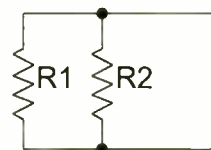
$$R = R1 + R2 + R4 + R5, \text{ etc.}$$



### For Resistors in Parallel:

For Two Resistors in Parallel This Formula Will Work

$$R \text{ total} = \frac{R1 \times R2}{R1 + R2}$$



For Two or More Resistors in Parallel Use This Formula

$$R \text{ total} = \frac{1}{\frac{1}{R1} + \frac{1}{R2} + \frac{1}{R3} + \text{etc.}}$$

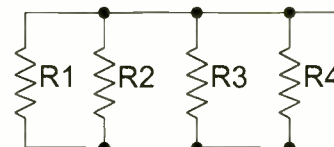


Figure 2. How to calculate resistances in series and in parallel.

a caveat. Vintage radios deal with high voltages; it's the nature of vacuum tube technology. Be very careful when using 1/8-watt or 1/4-watt resistors in vintage tube gear, and be sure to check the manufacturers' voltage ratings for those wattage resistors. That's something that's often overlooked by restorers; you have to be aware of both the voltage and wattage limitations of the devices. Adding two equal resistors in series doubles the voltage rating for the pair. If you have to do this, consider sleeving the pair in heat-shrink tubing to keep things looking neat.

## Using Resistors In Parallel

Here's an easy rule of thumb for paralleling resistors with *equal values*: divide the value of one resistor by the number of resistors being connected in parallel. For example, paralleling two 50-ohm resistors would make a 25-ohm value. Paralleling five 33 K-ohm resistors would give us a 6600-ohm resistor. Remember, this shortcut only works when identical values are being paralleled!

Paralleling resistors of different values involves a bit more math (see the last equation in **Figure 2** for how to solve for paralleled resistors). For two or more

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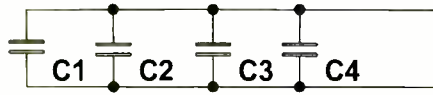
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## For Capacitors in Parallel:

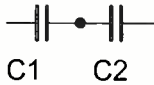
$$C = C1 + C2 + C3 + C4, \text{ etc.}$$



## For Capacitors in Series:

For Two Capacitors in Series This Formula Will Work

$$C \text{ total} = \frac{C1 \times C2}{C1 + C2}$$



For Three or More Capacitors in Series Use this Formula

$$C \text{ total} = \frac{1}{\frac{1}{C1} + \frac{1}{C2} + \frac{1}{C3} + \text{etc.}}$$

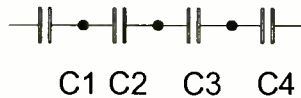


Figure 3. How to calculate capacitances in series and in parallel.

resistors in parallel, the total resistance can be calculated by taking the reciprocal of the total of the reciprocals.

Again, please, don't get scared off! All we're doing is taking the value of each resistor and dividing it into 1, adding up the total, and dividing that sum into 1. Let's work through an example where we parallel three resistors with values of 25 ohms, 50 ohms, and 75 ohms. Respectively, the reciprocal of these three values is  $1/25 = 0.04$ ,  $1/50 = 0.02$ , and  $1/75 = 0.0133$ . Totaling the three reciprocals gives us  $.04 + .02 + .0133$  for a total of  $0.0733$ . Taking the reciprocal of  $0.0733$  ( $1/0.0733$ ) gives a value of  $13.6$  ohms for the combined resistances.

Remember that the final answer will always be lower than the lowest resistor value in a parallel circuit. Obviously,  $13.6$  ohms is lower than the smallest value ( $25$  ohms), so our results look good! Again, the voltage across any component in a parallel circuit must be equal, so you can use the appropriate formulas to determine a conservative wattage rating for each resistor value.

Please don't jury-rig your repairs or restorations with wads of paralleled resistors as a permanent solution! Cobbling repairs is amateurish at best. These tech-

niques will help you get by in a pinch. Resistors are cheap and plentiful.

## Capacitors In Parallel And In Series

Capacitors in series and in parallel act just the opposite of resistors! *The value of capacitors wired in parallel would be equal to the total of their individual values*, as shown in the first equation of **Figure 3**. Since this is a parallel circuit, the voltage across each capacitor would be the same, thus *the lowest voltage rating for any individual capacitor determines the maximum voltage for the paralleled combination!*

Capacitors in series follow the same rules for resistors in parallel. Take a look at **Figure 3**. If the capacitor values are equal, dividing one capacitor's value by the number of capacitors will yield the value of the series arrangement. For example, two  $33\text{-}\mu\text{Fd}$  capacitors in series will yield a  $16.5\text{-}\mu\text{Fd}$  value. Theoretically voltage should divide equally among equal value capacitors, but that can be problematic and depends largely on leakage currents through the individual capacitors.

Electrolytic capacitors can be wired in series to yield a higher voltage filter cap

than is commonly available, and it's usually good practice to provide *equalization resistors* across each cap to ensure that the voltages are divided equally (more on this in a bit). For non-equal value capacitors, the higher voltages will appear across the smaller capacitance value caps. In those instances, it's easier to use caps that are all rated for the maximum operating voltage of the series string.

To determine the value of capacitors of unequal values wired in series, we need to take the reciprocal of the sum of the reciprocals of the individual capacitors. For example, let's assume  $C1$ ,  $C2$ ,  $C3$ , and  $C4$  in **Figure 3** are  $22\ \mu\text{Fd}$ ,  $33\ \mu\text{Fd}$ ,  $47\ \mu\text{Fd}$ , and  $22\ \mu\text{Fd}$  wired in series. The reciprocals in order would be:  $1/22 = .045$ ,  $1/33 = .030$ ,  $1/47 = .021$ , and  $1/22 = .045$ . (Note that I've taken the liberty to round off these values to three decimal places to keep things practical; most electrolytic capacitors have a very broad tolerance rating!) The total of the reciprocals is  $0.141$ . Taking the reciprocal of  $0.141$  ( $1/0.141$ ) gives a total value of about  $7\ \mu\text{Fd}$ .

In all fairness, this example is more of a mental exercise than of a practical nature. However, it's not unusual to use two identical caps in series to produce a higher voltage cap when needed; for example, two  $350\text{-}$  or  $450\text{-volt}$   $33\text{-}\mu\text{Fd}$  capacitors in series to make up a  $500\text{-}$  or  $600\text{-volt}$   $16\text{-}\mu\text{Fd}$  filter capacitor. A  $100\text{-K-ohm}$  (or higher value) resistor to equalize the voltages should parallel each cap. Since each capacitor will have upwards of  $300$  volts, what's the minimum wattage rating for the divider resistors?  $W = E^2/R$ , or  $W = 300^2/100,000$ , or  $W = 90,000/100,000$ , or  $W = 0.9$  watts.

To be conservative, I'd suggest using  $5\text{-watt}$  *wirewound* resistors here. Why so high? Well, these resistors also serve as bleeder resistors. Bleeder resistors are used to discharge the filter capacitors when the power is turned off; thus minimizing shock hazards when servicing the radio. Safety = Conservative, in this instance. You'll see bleeder resistors more often used in ham transmitters, or in commercial or military grade gear than in consumer sets.

## Your Patience Is Requested

Well, that's a wrap for this time. Please keep your letters, photos, and suggestions coming in. I do try to read everything that is received, but I am very far behind in replying individually to everyone. In the meantime, keep those soldering irons warm, and those old radios playing! ■



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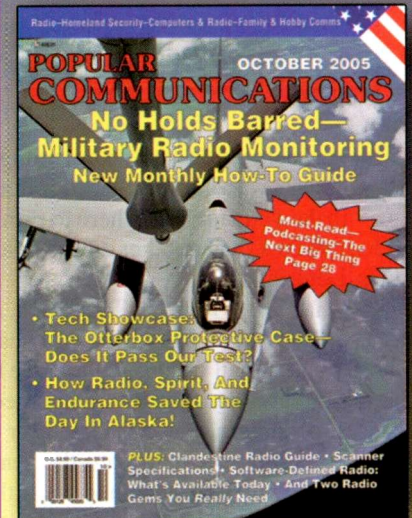
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# Maurus, Harry, And Doug

Okay, before you start complaining that this will be another “nice” column where I salute someone and don’t make you laugh, I’m here to prove you wrong. You will find Joe Maurus (and another dozen or so like him) in Pumpkin Center, Louisiana.

I know it’s not as funny as Toad Suck, Arkansas (yes, Harold, there *is* a Toad Suck), but whenever I hear from Joe, who is one of those great e-mail friends whose face I’ve never seen outside of a .jpg picture, my thoughts go immediately to the first and only jack-o’-lantern I’ve ever made (or care to make) and the day I had to stick my hand into the center of a PUMPKIN! I haven’t asked Joe if they named his little berg for that gloppy stuff you throw away when you make a jack-o’-lantern, or if it’s the center of all agricultural pumpkin activity near the generous and overworked city of Baton Rouge (which loosely translates to “something you twirl in a parade and later put on make-up with,” if my memory of French serves me as well as it did when I earned a “D” average).

Joe is a good guy. A professional good guy, but not exactly the highest-paid good guy in all of Pumpkin Center, if I read him right. He *does* work with electronic communication in his job as an EMT/medic first responder, flood-wader, rescuer, person-who-works-with-very-little-sleep and all that. However, like me, his dreams of a HPJIE\* have been set aside by reality. I think Joe and I really have LPJIEs,\*\* but I can tell you my job is a real box o’ chocolates compared to his. He worked his tail off during a hurricane and-a-half, and still found time to sneak two quick e-mails to his friends, which I am proud to say include me and our fearless editor, Harold “EEK!-a-bug!” Ort. I’m hoping that Harold was able to fit some of Joe’s information into an appropriate section, or will be soon.

So if you know Joe, or if you live near Pumpkin Center, or even Baton Rouge, look him up. Take him and his co-workers for lunch or coffee someday. In fact, even if you’re in East Armpit, Oregon, and have never been touched by a hurricane, tsunami, or terrorist, buy lunch for a “first responder” next time you see one or two in the chow line at your local eatery. It’ll make you both feel better.

Hey—on yet another funny communication note, I’ve seen my share of crazy methods of communication, and in fact, most of the craziest ones are those that I’ve been directly involved with, and they usually involved a good friend named Norm (and I’m still waiting to see pictures of the runaway drill-holes from his antenna installation attempts on that new “chick-magnet” car of his). But this little bit of communication wizardry was just made for me to watch at least once a week.

My local gun shop (not *mine* in that I own it, just mine in that I’ve spent enough there that I *could* own it if I’d have invested the money that I’ve spent there) is a small gun shop with a staff of one or two people at any given time (unless the owner wants to run across the street to the deli, when he takes the cordless phone and lets me sit on the stool behind the counter as if I belong there). It’s located in a small shopping center and most of the people in the other businesses in the center stop in from

***“When the brick rang in my hand (I thought the Avon Lady was about to appear), I realized I’d been carrying a battery-powered doorbell with eight “D” batteries in it.”***

time to time, whether to bring a sandwich, borrow a cup of bullets, or just say “Hi.”

One of these neighboring businessmen is an occasional hunter who stops in to chat now and then, and since he’s been there a few times when I’ve been there, we’ve gotten to know one another to the point where I’m no longer curious about the brick-sized object which he carries in his left hand, and sets on the counter as he stops to chat. Once he left without it and the gunshop owner asked me to take it back to him. When I picked it up, I noticed that it was as *heavy* as a brick!

We will call the electronic “brick’s” owner, Harry, so as to protect the innocent (as I’ve tried to do with Norm all these years). Believe me, Harry is a whole lot more normal than Norm, and the doorbell lets his drive-up customers call him without getting out of their cars.

When the brick rang in my hand (I thought the Avon Lady was about to appear), I realized I’d been carrying a battery-powered doorbell with eight “D” batteries in it. I now understood that if Harry *had* made a belt clip for the thing, it would have pulled his pants down around his ankles in about two steps—something neither Harry nor the rest of the community was anxious to behold.

I don’t want to make a laughing stock out of Harry for carrying a 10-pound doorbell with him when he leaves his post, so I won’t mention the business he’s in (okay—I give in—it’s propane tank refilling), or the location (well, it’s just next door to the gun shop where I hang out, but you’re not getting the name of the shop out of me (Dominion Arms) or when you’re likely to see him there (Fridays, about 5). After all, a guy’s gotta have a little dignity.

Finally, if some of you remember my telling tales of my early CB radio days, you will remember tales of my friend, Doug. He had a ’65 Mustang fastback (the front was pretty fast, too) with a 102-inch whip on the left rear fender, and while I drove my dad’s ’66 Charger with an all-tube Lafayette Comstat 25, Doug had a much smaller solid-state 23-channel something or other ’neath the dash of the Mustang. We were young and, to be honest, we spent most of our airtime trying to impress girls with these radios and cars. I don’t think any of them were ever fooled.

Doug has been my best friend since we met in 1963. That he left this earth a week ago doesn’t change that, it just makes it more difficult for us to communicate—at least for now. And there are too many great memories to let me stay sad for too long. May you all have a friend so good. ■

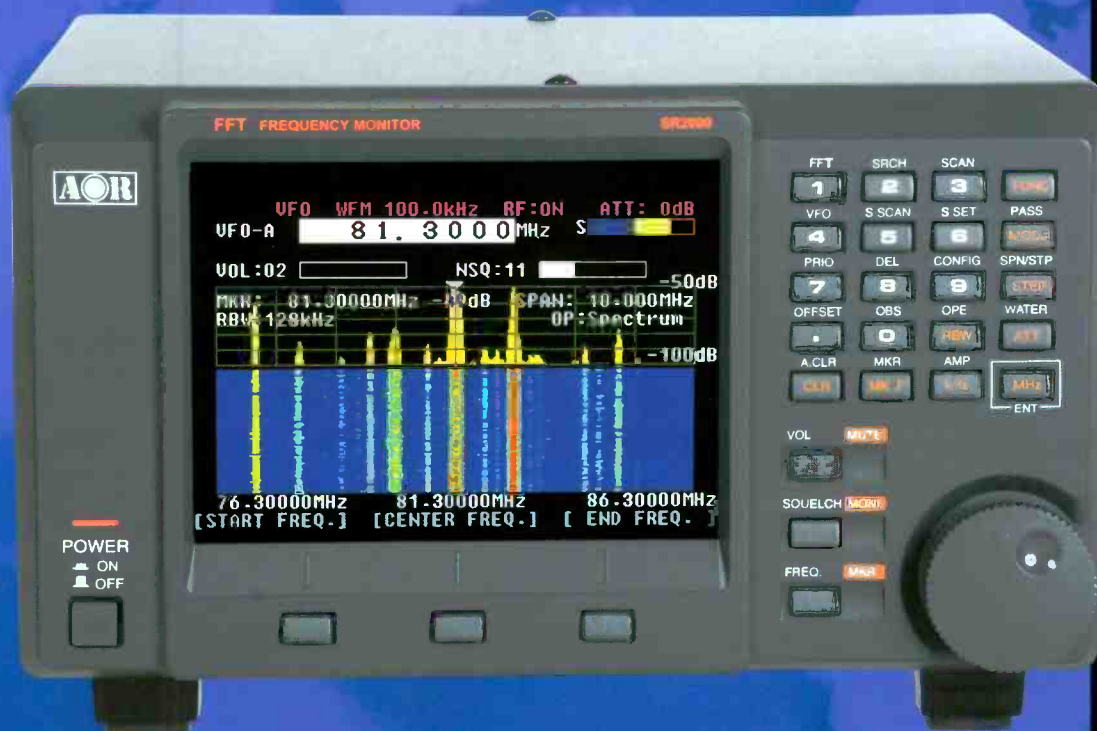
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