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MARCH 2004

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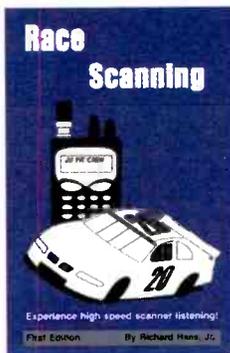
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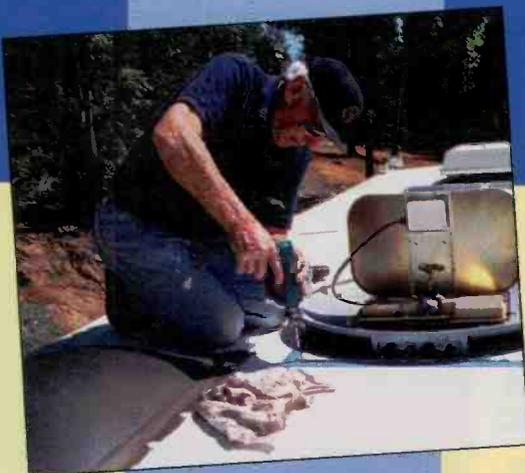
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On The Cover

This view of the rising Earth – so small in the vastness of space – some 240,000 miles away, greeted the Apollo 8 astronauts as they came from behind the Moon after the lunar orbit insertion burn. Thirty-five years later there's serious talk about returning to the Moon – and perhaps going beyond with manned space flight. Tune in, and be part of your planet's and children's future with this month's Utility Communications Digest by Steve Douglass beginning on page 70. (Photo Courtesy NASA)

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10



16

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Modes
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The screenshot shows the RadioCom 4.0 software interface with various controls and a station list. The physical device is a small black box with a speaker and a display.

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What Am I Bid For This Radio?

Remember the *Challenger* disaster? A 50-cent O-ring caused the demise of the spacecraft and loss of the entire crew. And then there's the loss of the *Columbia* and its crew; the apparent result of insulation falling off and damaging the craft at takeoff. I suppose when contracts go out to the lowest bidder, you get what you pay for—nothing but the best for our pioneers paving the way for mankind's future.

Personally I think it's a sad commentary on how we do business in this country. (Interesting, don't you think, that to put out the oil fires and operate the wells in Iraq the contract *immediately* went to Kellogg, Brown & Root International, Dick Cheney's Halliburton Company, *without* going through the customary bidding process because, in Rumsfeld's own words, "this is wartime.") What feisty Don forgot to mention was something I uncovered a couple of weeks ago: Much of the half-billion-dollar (that's right, billion!) contract and actual task orders were given to the company in 2002, a year *before* the Iraq war even began. I smell it again, and it's not my radios overheating. Smells like oil. Darn, it *is* oil!

Now, you ask what on earth does this have to do with the radio hobby, or you for that matter. Glad you asked. Every time a half-billion dollars or so flies out of this country with no oversight—only the good word of our Defense Secretary and other folks—it disappears from places it could do more good right here in the USA. I'll bet the ARRL would like a mere *tenth* of that money to help educate youngsters about radio, electronics, and volunteer communications. Our government pulls no punches during this wartime letting us know we all share the burden, the sacrifice, and long-term fight against terrorism. And so we do.

This country needs to rethink its energy policy, plain and simple. You're affected every time you flick the light switch in your shack and turn on the receiver or transmitter. Maybe if enough everyday folks told the politicians we've had it up to here with high energy bills, we'd be able to conduct further research and development on alternative energy sys-

tems, and even get substantial tax credits for installing and maintaining solar systems for our homes and businesses. Granted a handful of us use solar power in emergencies and as backup power, but that's not enough. Of course, if we sit back and take it, thinking "that's the way it is," it'll be business as usual for the next decade and beyond. Why should alternative energy—solar or wind power—be thought of as unattainable? If you were paying attention in third-grade science class you learned that the earth's supply of fossil fuels won't last forever. I think Cheney and Rumsfeld skipped school that year.

Yes, Don, this is still technically wartime—has been since 9/11/2001. Some days it seems like dozens of years ago, and other times like it was only yesterday. Since politicians always like to ask the question, "are we better off now than we were a year ago," I thought I'd take a stab at answering that question.

Take for example the *Patriot Act*. Yes, folks, it's still there on the books and very real. If you're thinking it has nothing to do with the radio hobby, think again. Just because you're reading this magazine doesn't mean you're plotting to install a monitoring station atop the Capitol or in Billy Tauzin's shorts. If you pick up a copy of the *World Radio TV Handbook* for your kid's birthday, you're just trying to interest him or her in the fascinating world of radio listening, to broaden horizons. You're not giving the VOA's frequencies so your kid can join a foreign movement in East Goofidor to build a jamming station!

I mentioned the Act right here a couple of months ago and got plenty of e-mail. Most of you are clearly concerned about our loss of rights, but of course there are always a couple of doofi in the pack that I would imagine sit very close to the DC boys' thrones with a shoeshine cloth in one hand and shredded copies of the Bill of Rights and Constitution in a paper bag in the other. One fellow went so far as to suggest if I didn't like it that I could move to another country. That's not how it works. In *my* America we can still debate issues, work out problems

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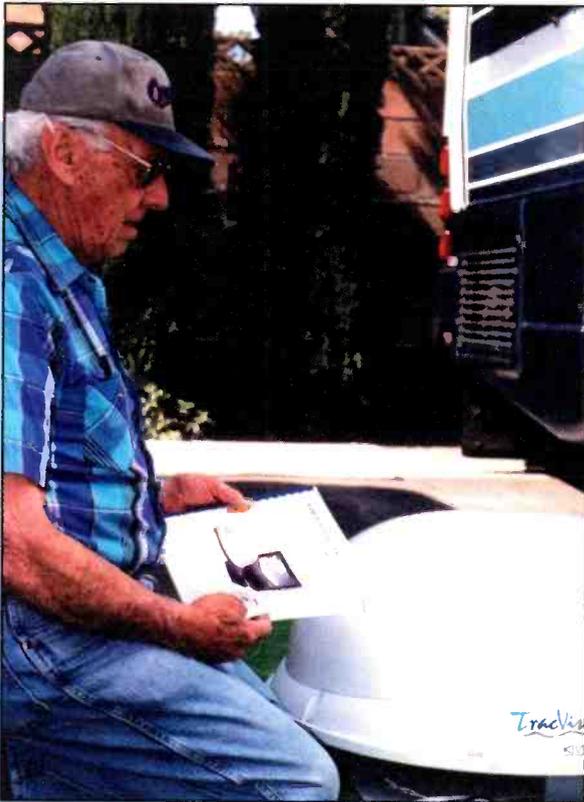
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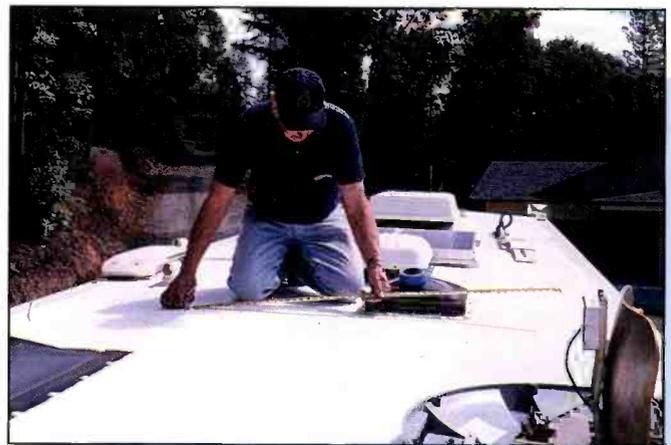
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RV Owners: Follow These Easy Steps To Install The KVH Satellite TV Tracking Antenna



**Forget The Snow—Head South,
Get Out The Tools, And Save A
Few Bucks!**

By Gordon West, WB6NOA



Carefully tape measure for center roof line.

Always read the instruction and installation manual first. Art's satellite system is Dish Network and requires one additional module, plus some dealer pre-programming for the motorized antenna to select the correct satellite. On a DirecTV installation, the KVH antenna requires no programming nor any other module.

At almost any RV show you can spot the activity around the KVH satellite TV antenna booth. Not only do they demonstrate their products and direct you to their local dealer network, they also offer troubleshooting as well as “coach calls” to make sure their equipment is working at optimum.

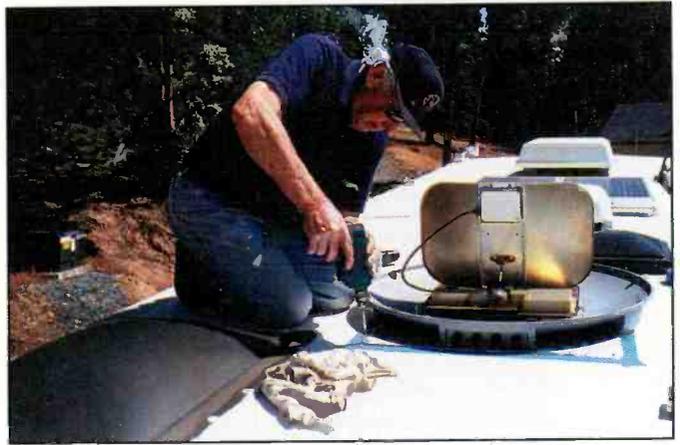
When I asked how hard it would be for RV owners to install their own Trac Vision LM satellite TV antenna, they were pleased to show me correspondence from several owners who accomplished the job without any outside help. But they lacked the pictures of the installation process, so we turned over a complete new Trac Vision LM to an ambitious 77-year-old RV owner who said he could pull off the task with almost no out-



Mask off the exact location and dimensions of the antenna unit. The antenna cover gets removed at this stage.



Put down a thick layer of white silicone all the way around the inside of the masking tape, where the antenna will rest.



Set the antenna in place.



This silicone is just inside of the blue masking tape.



After cleaning the base plate of all debris, you can now install the antenna unit back onto the base plate.



Most motorhomes have a vent area that comes up behind the refrigerator. By removing the vent cap you can run the wires down the back of the refrigerator vent area to where you are going to have your satellite receiver mounted. Art used 3/4-inch PVC pipe cut halfway down the middle to cover the wires.



Feed the wires under the PVC and glue the PVC as you go. Try not to get the PVC cement on the wires underneath.

side help. He'd only need me to hand up the KVH antenna system so he could get started on the installation.

"After many years in the marine electronics business, and with equipment back then that consisted of big transformers, coils, and vacuum tubes, I decided to take on the challenge of today's latest solid-state, space-age technology by installing a satellite antenna on my motorhome," explained Arthur

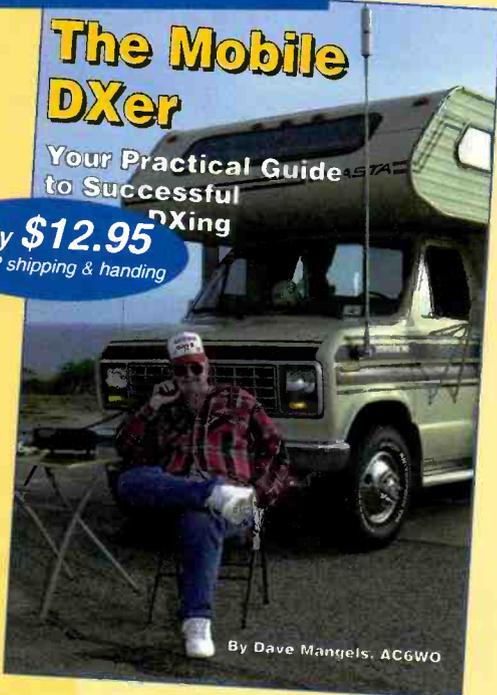
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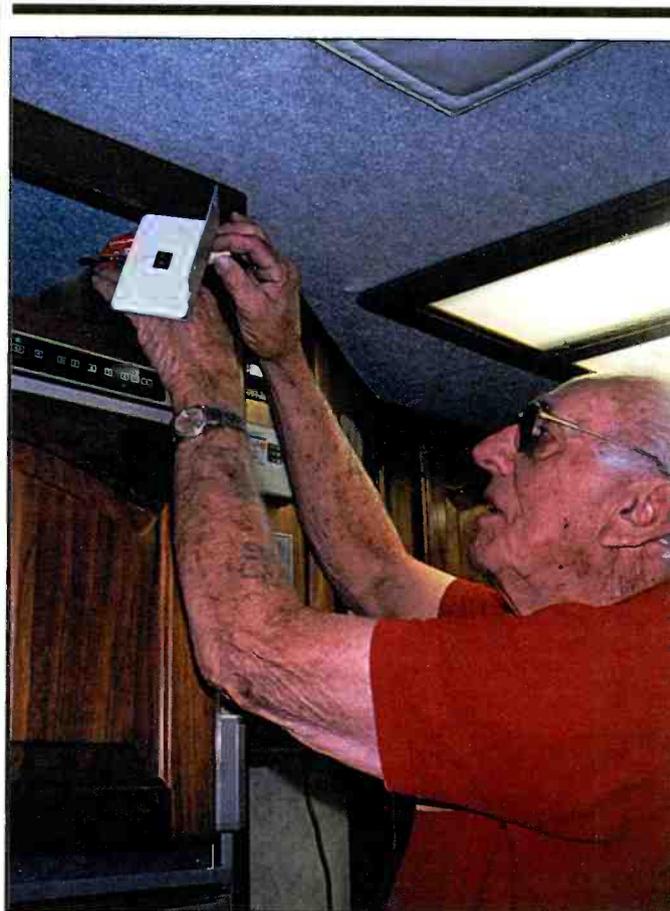
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Routing the wires inside the RV.

Godson, W7AEG, of Grants Pass, Oregon. His motorhome is a Country Coach Affinity.

If Art, at 77 years old, can do it in a matter of hours, there is every opportunity for you to do the same without seeking outside help. You'll save a couple hundred dollars by installing it on your own, and you'll know exactly where all the wires go if ever you need to do routine maintenance.

Thanks to KVH Enterprises for all of their assistance and product support. For more information, contact KVH Enterprises at www.kvh.com. ■



The author in front of his completed RV.

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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.

Digital Voice: The Next Big Thing

You've Heard About It, But Not Till Now Have You Really Been Inside The World Of Digital Voice

By Don Rotolo, N2IRZ

Digital Voice is the "Next Big Thing," like Plastics in the 1960s and Software in the 1990s. We've been hearing about digital voice for a while, but there's not a lot of information out there—at least, nothing that anyone without a doctorate in mathematics could understand. This article will explain a little about what digital voice is and how it works, provide an overview of the current state of affairs, and offer some resources to learn more and get involved.

Digital voice is simply voice communications using digital technology. At the transmitter side, someone speaks into a microphone. That sound is converted into a digital signal, sent over the air, and decoded back into sound. Exactly how that's done depends on who's doing it, but we'll explore how it works in just a bit.

Digital Advantages

So, what's so great about digital voice? Well, for starters, it's much clearer on the receiving end. Because the audio decoder does not have to also decode atmospheric and other unwanted noises within the desired signal, there is virtually no background noise. That alone accounts for a lot of the great sound of digital voice.

Another way of making the audio sound even better is called Spectral Band Replication (SBR). The high-frequency portions of an audio signal are mostly noise-like, kind of a hissing sound. SBR encodes the loudness and duration of these sounds, and sends that information digitally to the receiver. At the receiver, the SBR decoder just kind of hisses at the right moments. The effect is amazing—your mind really hears a much wider audio range than is actually present.

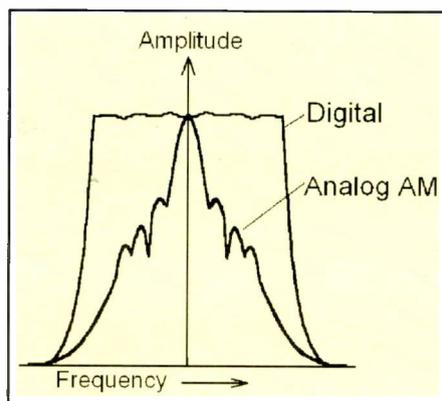


Figure 1. Typical spectrum of a conventional AM signal and of an equivalent digital signal. Because you can put more signal into the same bandwidth, there's less wasted space so the digital signal can be more efficient, which can translate at the receiver into higher fidelity sound and a more noise-proof signal. Note that this is an idealized drawing—the actual digital spectrum depends on the modulation method.

But great audio isn't the biggest advantage of digital voice: signal robustness is. Since the digital voice signal is just a stream of numbers, using some fancy mathematics we can actually make it so that the digital signal can be received perfectly, long after a conventional analog signal has faded into the noise. And, if the communications are two-way, the radios (which are really specialized computers) can adjust themselves automatically to get more and more robust (resistant to noise) as conditions get worse.

Although you need to use a little slice of your digital signal to send some "control data," just the fact that you can hear what is being said is a welcome trade-off against sound quality (which is already better than analog!). Techniques like forward error correction (which allows a

damaged signal to repair itself) and error detection are impossible with conventional analog signals.

Digital communications also tend to be more efficient: With digital signals, you can also fill up the available radio channel more completely, so instead of wasting some of your radio channel with dead air, you can fill it up all the way and transfer more "information" as compared to an analog signal.

How It Works

So how does digital voice work? Since parts of this subject have been covered so well elsewhere, such as the turning of voice into a digital data stream as explained in the Audio Digital Recording articles by Joe Cooper (which appeared in *Pop'Comm* just a few months ago), as well as many Web resources that discuss the myriad ways of transmitting digital data streams (like www.tapr.org), I'll just go over the basics.

The real world is analog. When you speak, the sound is continuous, an infinite number of air pressure variations which can be heard and converted to an electrical signal. As an electrical signal, it can be recorded, transmitted by radio, whatever. To turn that electrical signal, say, from a microphone, into digital audio, you read the signal's voltage many thousands of times each second. When you store all those samples, it becomes a representation of that piece of sound. To play it back, you just re-create the voltage for each sample and send that to a speaker; your ears don't hear the "gaps" between the samples because they're too brief.

Since it is represented by numbers, or digits, it is said to be digital, and because it's a representation of sound, or audio, it's

called digital audio. The numbers are usually represented by binary bits, a stream of ones and zeros which are easily represented with electrical signals, and just as easily worked upon with computers.

Once you have the signal captured in digital form, or *digitized*, you can do whatever you want to it. Mathematicians have a lot of fun with this, since they can enhance or change the signal in literally an infinite number of ways, limited only by the imagination. (I know of a digital audio product which can change your voice to sound like anything, from a duck to Frank Sinatra to a deep rumbling “voice from heaven”).

In our case, we’re going to assume that, after some relatively tame filtering and shaping, someone will feed those bits to a radio transmitter, and we’ll receive it and un-digitize it back into analog sound. That’s what we’re calling digital voice. Sounds easy, right? Well, on the surface it is, but the devil is in the details.

While one could take a simple Analog-to-Digital (A/D) converter chip—readily available for a few dollars—and digitize the signal, it won’t sound very good. Some folks have really studied the human voice, and they have developed special IC chips that can digitize the human voice better through the use of filters and special sampling methods. With digital voice, the goal is to get the best-sounding voice possible with the smallest amount of digital data (measured in bits per second). These special A/D converters, called Vocoders (Voice Encoders) can squeeze a lot of voice out of not many bits.

As you can imagine, there are differently optimized digital encoders for music and other kinds of signals (such as video), but here we’re discussing digital human voice, with the intended use of radio communications, and its resulting narrow bandwidth (in terms of bits per second) requirements.

Why Isn’t It More Popular?

Why indeed. According to a survey conducted last year by the American Radio Relay League, nearly 62 percent of people surveyed think that digital voice for amateur radio is “just around the corner.” In one way, I agree, but there are some practical issues which will slow down the acceptance and use of digital voice for amateur and commercial (non-broadcast) communications.

The first problem is that there’s no one standard today for digital voice. Unless



The AOR ADR8200 digital voice “adapter,” sitting atop a typical HF transceiver. This little box takes your voice and turns it into a digital voice signal that can be transmitted through almost any radio. You’ll need another one at the receiving end to hear what’s being said, however. Although the technology involved is a steal at \$500, casual listeners will probably continue to wait for less expensive solutions.

you’re using a digital decoder that is exactly the right one for the signal you’re receiving, you’ll probably hear silence. For example, AOR (www.aorusa.com) has come out with their ARD9800 Fast Modem digital voice & image modem, which takes a microphone input and sends a digitized signal to the transmitter (and vice versa on receive). To hear anything, though, you’ll have to get a second unit just like it for the receiver.

Although it is based on a project published a few years ago by some radio amateurs from Great Britain, and it uses a readily available and inexpensive Vocoder chip, there are too few of them out there to call it a “standard” for digital voice. And, at around \$500, few casual users will take a chance and buy one. Despite it being about the only game in town, thus becoming a “de-facto” standard, who knows what’ll be on the market in six months? Eventually, someone will make a product that is embraced by enough users to become a true standard, which will attract even more users, who can be sure their investment will not become obsolete too quickly. But, the problem is that we’re not there just yet.

The second problem is scanning around for a signal to listen to. Whether you’re an SWL listening to the action, or a ham looking for a two-way contact, it’s obvious that you need to be able to hear and recognize when you’ve found a dig-

ital voice signal. The problem is that, because of the high efficiency of the Vocoder chips, and their “efficiently filled” signal spectrum, the on-air signal sounds just like white noise or hissing. A digital voice signal (most any digital signal, actually) almost sounds like background noise. When the signal really is below the noise—remember, you can decode a robust digital voice signal from *below* the noise floor—how in the world can you find it?

A third problem is figuring out which decoder to use. Even if you have found a digital signal, you need to start up the correct software program, or connect the correct digital voice decoder box, to be able to hear it. If you guess wrong, you get silence. The only ways I know to figure out what encoding method a digital voice signal might be using is either to try them all (too many possibilities) or to use expensive test equipment, which will help you figure out which dozen or so methods are most likely.

So there, in my view, are the biggest obstacles to an explosion of digital voice communications: The very few digital voice signals that are out there are difficult to find, and listeners can’t always be sure how to decode them. And, nobody (to my knowledge) has come up with a set of frequencies where people can meet to play with digital voice. (Perhaps a reader out there knows of some frequen-

cies where digital voice activity is common; if so, please write so we can share that information).

I guess the conclusion we can draw is that digital voice is certainly coming, but it's not quite here yet. I'd imagine that, by the end of 2004, we'll start to see various standards for signal types and frequencies emerge, along with a plethora of software applications, ranging from freeware to very expensive costware, to listen in. One thing should be clear: you'll definitely need a computer and sound card if you're not willing to spend hundreds of dollars on a specialized piece of hardware.

Although I've written about some major issues that have to be resolved before digital voice really takes off, I strongly believe—as do those surveyed by the ARRL—that we're really right at the edge of the explosion in digital voice. Don't let the gloom and doom discourage you, because maybe by listening and trying, *YOU* will be the one who figures out how to tune in a digital signal reliably and figure out the decoder you need. You will never know unless you try.

What's Out There?

To give you the opportunity to try, let's have a look at some of the more popular

products on the market. From the broadcast arena, we have DRM and Ibiquty's IBOC. DRM (Digital Radio Mondiale) is a consortium of shortwave broadcasters and equipment manufacturers that has developed and published a standard for digital shortwave broadcasting. It has been accepted by the ITU as a standard, so you'll be hearing about this quite a bit as broadcasters slowly migrate to digital.

The advantages of DRM for broadcasters are a much more robust signal, ability to transmit digital and conventional analog signals on the same channel simultaneously (allowing old and new receivers to be used), and the much higher fidelity of the digital audio signal. Broadcasters can even send digital data in the background, for program information (such as artist and title) or receiver control (to seamlessly switch to another of the various digital signal methods possible, on the fly). Visit www.drm.org, where you can hear some audio samples recorded off the air that are nothing short of astounding, as well as get technical information, broadcast schedules, and even buy the decoding software (www.drmrx.org) to use with your SWL receiver, PC, and sound card.

Ibiquty's IBOC (In-band On-channel) digital broadcast standard is being

used by nearly 200 broadcasters, such as WOR-AM (710 kHz New York, www.wor710.com) to transmit analog and digital signals on the same channel, with the same basic advantages of the DRM standard. Although the technical implementation is somewhat different, most of the results are the same. Especially important for the AM broadcasters is the chance to compete with FM radio with comparable audio quality. Although AM radio in North America is mostly talk radio and news, that's about to change in a big way. Visit www.ibiquty.com for information about participating broadcasters and the latest on available receiving equipment.

Of course, there are many other digital voice systems. For instance, Germany was experimenting with digital audio broadcasting and looking for folks to help with testing when I was at the ham radio hamfest in Friedrichshafen, Germany, late last millennium. Chances are your cell phone is using digital voice. There's a lot out there, but of course I can't mention it all.

HF Radio

For HF radio communications—amateur, commercial, and maritime—the AOR fast modem mentioned above offers one of the few solutions today which is compatible with nearly any existing radio. Just plug it in between the microphone and radio and go. A quick Google search for "ARD9800" returned 120 hits, so there's a wealth of info out there. The key to this (and other) HF radio solutions is the low bandwidth requirements—the signal has to be fairly narrow (about 3 kHz) to peacefully co-exist with existing modes and users.

Earlier this year, Thales Communications in France, in collaboration with Ten-Tec here in the United States, stated that a software solution for digital HF voice, based on the DRM standard, would be available later in 2003. An early version of this software was used to make the first two-way HF digital voice contact across the Atlantic Ocean late in November, 2002. You can read more about that, as well as some new receivers and broadcast DRM, at www.tentec.com. At the time this was written the software had not yet been released, but stay tuned.

Although it doesn't actually use digital voice (yet), I have to mention the SDR-1000 Software Defined Radio. It's a \$500



Gerald Youngblood, AC5OG, discusses the SDR-1000 Software Defined Radio with Ron Block, KB2UYT (left), and Phil Thies, K3TUF (right), at last September's ARRL/TAPR Digital Communications Conference in Connecticut. Inset is the SDR-1000 semi-kit board set. The SDR-1000 is a Software Defined Radio, where all signal processing is performed in software, using a PC sound card. It's much more than a software-controlled or DSP radio (see text for more info).



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HF transceiver semi-kit, which does all the signal processing in a PC sound card. The reason I mention it is that, since every (!) characteristic of the radio is defined in software, with just a little programming (the PC software is open-source and written in Visual Basic), any moderately competent programmer can write their own digital voice encoder and decoder. In other words, this next-generation radio, which is not just software controlled, but actually defined by software (a mind-boggling concept), is flexible enough to be made to do digital voice of almost any type with just a little effort. Learn more at www.flex-radio.com.

For VHF and UHF communications, a few years ago Alinco sold their EJ-43U digital voice option module for the DJ-596T walkie-talkie, since discontinued. More recently, they have newer radios and a digital voice module (EJ-47U) available (see <http://www.alinco.com/usa.html>). I participated in an on-air test of a pair of those HTs with Rich Moseson, W2VU Editor of CQ magazine, shortly after they became available. Heard on a conventional FM receiver, the digital signal sounded like unquelled radio noise. On another digital-equipped radio, the

sound quality was just a little bit worse than analog FM simplex, and the audio dropped out at around the same signal levels.

While they chose a standard chip set and modulation technique for their digital voice adapter module, Alinco purposely did not incorporate any error correction or significant audio processing to enhance the performance of the digital audio. They specifically stated that they did not intend for this adapter to become some kind of standard; it was developed primarily to give us an opportunity to experiment with the digital world. What I learned was that completely unenhanced digital radio signals will perform much like conventional analog signals and that there are significant opportunities for enhancements to increase range and audio quality, as well as to provide services to radio users which are, again, limited only by your imagination.

Viva La Revolution

So, here we are, right on the edge of yet another revolution in communications. Printing press, telegraph, tele-

phone, spark radio, SSB, FM—and now digital. There's not a lot of plug & play equipment out there...yet. But, in just a few short months, maybe a year or two, we'll see the digital voice snowball get big enough to roll on its own, and then hang on, because it'll be a fun ride.

I've given you a little taste of digital voice, and although it's not as easy to get involved with as, say, broadband radio scanners, just a little effort will return great rewards as you get to be one of the pioneers of the digital revolution. What are you waiting for?

Editor's Note: Don is also the Digital editor for CQ magazine and has written for CQ VHF and many club newsletters and publications. In his "Digital Connection" column in the April 2003 issue of CQ, he wrote about the DRM broadcast standard and the historic trans-Atlantic digital voice communication late last year. And in October 2003, he wrote about the SDR-1000. Contact him at Don Rotolo, N2IRZ, PO Box 114, Park Ridge, NJ 07656 or via e-mail at n2irz@cq-amateur-radio.com.

China Shortwave Guide

If you haven't already heard of the *China Shortwave Guide*, you have now! Shortwave guru Bob Padula is working on this new project, which will cover the B03 operational schedules for all known HF broadcasting services located on the Chinese Mainland and Taiwan. Sorry, no Clandestines or Non-Official radios! SW only. Bob tells *Pop'Comm* the *China Shortwave Guide* should be available as this goes to press.

The data will include broadcasting organizations, specific transmitter sites, target zones, languages, start/commencement times, broadcast days, and other relevant information. Bob said, "This brings together a lot of information which is not readily available outside the frequency management industry, some of which is not available at all from public sources."

As a little bonus, coverage will also include external service broadcasts of CRI and RTI via their off-shore relays. Details will be given of leased relays using facilities in China and Taiwan, as well as the important data of the various regional and provincial outlets of CNR and the CBS. Bob continued, "I did one of these projects a couple of years ago, which proved to be very popular, mainly because there was no charge for it! (It was sent out to anyone who wanted it as an Excel file, with many embedded VisualBasic relational search routines)."

This latest version will again be offered as an Excel file, but without VisualBasic enhancements. You select how you want to use it, and you print it out! This time it will not be free—the charge will be around A\$5/U.S.\$5 or 5 IRCs. It will have several hundred entries, and will reflect current operational data, not obsolescent or imaginary registrations offered elsewhere, or plagiarized from the ITU. If you lose it, accidentally delete it, or corrupt it, then you pay for another one! It's also subject to strict Copyright protection. It's simply not a free list!

Much of the data is derived from Bob's work in managing Engradio Communications in Melbourne, which offers HF broadcast engineering frequency management and monitoring services to select clients worldwide.

If you're interested in a copy of the *China Shortwave Guide*, contact Bob Padula directly at bobpadula@engradio.org.

AMSAT India Launches Soon

AMSAT India, along with the Indian Space Research Organization (ISRO), has developed a 40-kg micro-satellite named HAMSAT, which will soon be launched into space by ISRO. HAMSAT will be the first satellite to be launched for amateurs in India. Currently, more than 20 such satellites have already been launched into space by amateur satellite programs in other countries. These satellites are being used for radio communications related to research, education and community awareness programs.

AMSAT India is an organization for the Indian amateur satellite program, with members including students, researchers, and radio technologists who work with it as part of their hobby. AMSAT India is a group of Indian hams that was formed in

December 2000, along the lines of similar amateur international associations, with a goal of promoting satellite activities in India. The idea to develop a full-fledged satellite took shape in January 2001. HAMSAT, which will be used for radio communication by hams for their research projects, was scheduled to be launched on the PSLV-C5 riding with the IRS-P6 satellite, which is already at the ISRO launch base at Sriharikota, in south India. However, due to some integration issues, HAMSAT will be launched on one of the subsequent flights of the Polar Satellite Launch Vehicle (PSLV) planned this year.

Maoists Launch FM Radio Station

Maoists rebels have launched an FM radio station, named Jana-awaj, across the country and also in Kathmandu Valley in Himalayan Kingdom, Nepal. The radio can be heard at 95.1 MHz in the FM band. They have three broadcast stations hidden inside Nepal. The radio will air all activities of Maoists, voices from the villages, and news of international revolutionary's along with anti-government propaganda.

Radio Ship Goddess Of Democracy Scrapped In Taiwan

Taiwan began to scrap the radio ship *Goddess of Democracy*, which has been in mothballs after it was blocked from beaming messages of freedom and democracy to China in 1990 following the Tiananmen Square massacre.

The demolition work, scheduled to take about 70 days, kicked off following a ceremony at Anping, a harbor in the southern Tainan County, said Wu Meng-wu, the owner of the 1,200-ton ship.

Wu was ordered to scrap the ship after he lost a lawsuit filed by the Anping Harbor authorities, who insisted the ship must be removed to make way for harbor expansion and that Wu must pay at least two million Taiwan dollars (about \$58,650 U.S.) in harbor-related fees. Wu agreed to begin dismantling his ship, but he denied that he owed the authorities any fees.

Wu purchased the ship for \$550,000 U.S. dollars from the France-based Chinese Shipping Association, a group set up in Paris by exiled Chinese dissident leader Yan Jiaqi, after pressure from Beijing scuttled the group's bid to broadcast freedom and democracy messages to China in April 1990.

Nepal Cracks Down On "Illegal" Foreign Media Equipment

Nepal has asked foreign organizations, including the BBC, to seek government approval before "donating" media equipment, which was reportedly being used to broadcast their programs, within that country. Donor countries were reportedly giving FM transmitters to local stations and then re-broad-

casting their programs in Nepali from these stations.

BBC radio is one of the organizations that re-broadcast Nepali language programs from a Kathmandu-based FM station without officially informing the government, as per existing rules. Authorities claim that the BBC was exploiting Nepali resources illegally and that the government was losing revenues that the channel was supposed to pay.

UK Broadcaster: "Heavy License Fee Structure In India"

A heavy license fee structure has inhibited the launch of niche commercial radio stations in India, said Steve England, who runs a UK-based company, S2Blue, that produces radio commercials, radio and TV jingles, and custom music productions and soundtracks for TV commercials. Diverse program formats have also not emerged because of a regulated environment and a huge payout to the government. "All private FM radio stations are almost having the same content format. They are desperate to have the largest part of the market because of the drain on their resources due to a high license fee," said Mr. England.

Urging the government to allow news on private radio stations, Mr. England said that this is "an unhealthy trend" and is "only helping All India Radio." News is an important content element. "Brief news bulletins of 2-3 minutes actually help music stations draw in listeners," he said. Private FM radio stations are only working mass appeal formats. A sensible license fee and deregulation will help change that and expand the sector, he opined.

Drawing a contrast between radio today and the way the Indian television industry grew, Mr. England said private radio stations should enjoy similar freedom. "The satellite TV channels grew under an unregulated environment. Private radio stations should be allowed to flower under similar circumstances," he added.

In the UK, radio was regulated to protect the BBC. But in 1973, commercial radio was allowed and the government issued licenses for private radio stations. "India has a lot to learn from the UK experience to liberalize the sector. The move should be towards revenue-sharing rather than a high license fee," said Mr. England.

Steve England started his career in radio with Radio Caroline, broadcasting commercial radio to Britain and Europe in defiance of the BBC. He then joined Piccadilly Radio, and in 1979, started a company called ALFASOUND along

with a partner. After that, he floated a company, called S2Blue, with his son. He has represented JAM Creative Productions of Dallas, USA and PAMS productions of Dallas in the UK and Ireland for over 15 years. ■

Next Month In Pop'Comm

Two very special antennas, a new Grundig portable shortwave receiver, a high-tech flashlight and more are coming your way next month in *Pop'Comm*! You might have noticed that this month we didn't include any product reviews - Technology Showcases - but next month will be very special: We'll showcase the new StepIR Vertical antenna which covers 6.9 to 54 MHz, continuous! It's a ham antenna that's perfect for DXing and shortwave listening.

Grundig's latest entry onto the shortwave scene is the new YB550E. Don't be fooled by its small size; it includes 200 programmable memories, AM/FM

coverage, a snap-on stand and a lot more that we'll review next month.

The Eavesdropper/C shortwave broadcast receiving antenna covers 11 through 60 meters. This neat center-fed trap dipole antenna from the folks at Antenna Supermarket is only 42 feet long, and delivers the signals to your receiver a whole lot better than that old longwire you're using!

Also next month we'll have an extensive report on those survey results. We sincerely appreciate the time you've spent sending in the cards and your comments about your magazine. Remember, your suggestions and ideas matter at *Pop'Comm*!

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Wristwatch Emergency 121.5-MHz Transmitter

A few months ago I wrote about newly FCC-authorized personal locator beacons transmitting on 121.5 MHz, plus an alert and ID datagram on 406.028 MHz with accompanying (if available) GPS position data. Many readers were surprised to learn that the 121.5-MHz local homing signal will still continue to be the MAIN SIGNAL even though satellites will drop their listening guard on this frequency sometime after 2006.

The personal locator beacon is intended for a dual-purpose search and rescue function—satellite detection, satellite approximate locating, and local signaling for search and rescue groups to track down the actual transmitting device on land, or on a lake, or along a river. Although the personal locator beacon is indeed waterproof, it's not like a regular marine EPIRB that you would toss overboard and it would self-right and begin transmitting. As the name implies, the personal locator beacon is intended for manual activation by a person in trouble.

The ACR GyPSI personal locator beacon, designed for satellite detection, is small enough to be worn on a belt. Another product, called "Fastfind" from McMurdo Pains Wessex, Inc., is imported from England and goes one step further by building the GPS receiver right into the yellow enclosure. With ACR, the receiver for GPS reception is separate.

The McMurdo Pains Wessex personal locator beacon is advertised as "the only PLB with built-in GPS, and the smallest and lightest PLB worldwide." We agree: it is a tad smaller than the ACR GyPSI.

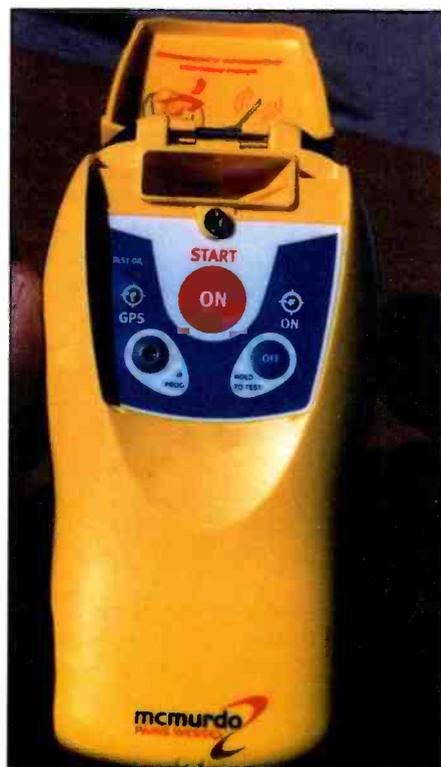
But if you want something REALLY small, McMurdo Pains Wessex offers a wristwatch 121.5-MHz transmitter. The lightweight, easy-to-wear, waterproof, multi-function wristwatch has a built-in 121.5-MHz transmitter, which when activated either manually or automatically transmits a distress tone on the international emergency search and rescue frequency, 121.5 MHz. It will stay transmitting for up to eight hours, and it has enough power that it might be detected



We tested 10 different 121.5 MHz emergency transmitters and direction finders and position spotters



The local harbor patrol has this 121.5 MHz receiver mounted and turned on ready for an emergency alert!



This 121.5 MHz also transmits 406.028 MHz position reports with a built-in GPS.

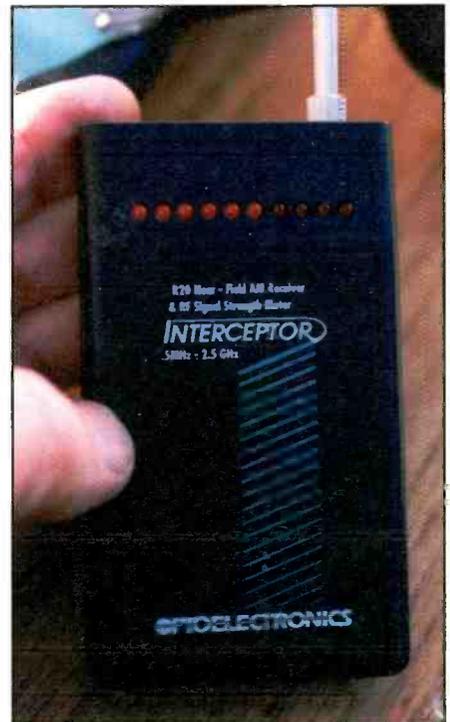
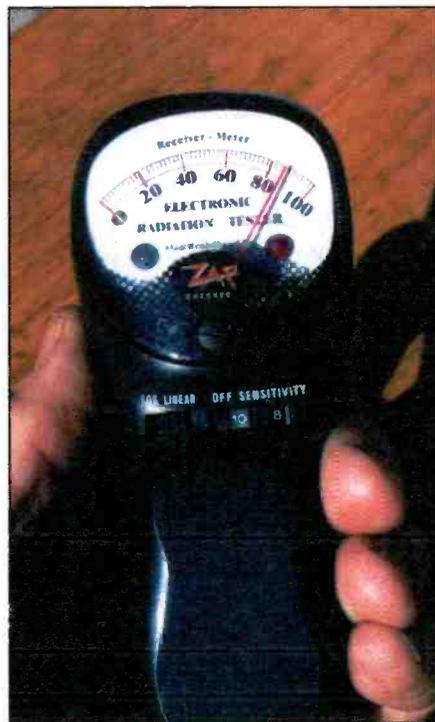


The ACR direction finder in a real 121.5 MHz track-down along a popular river's remote rafting area.

All tests were conducted on 121.775 MHz, a test frequency for search and rescue teams.



The ACR direction finder with red LEDs which travel from bottom to top when headed toward the station



Close-proximity signal sniffers.

out in the open up to one mile away, or from an aircraft up to 10 miles away. Ski patrols are testing it now to see whether or not it could also double as a locator for someone buried in an avalanche. The signal is only a few milliwatts, but certainly strong enough to pick up under snow a few yards away.

Most rescue groups who regularly track

down activated 121.5-MHz ELTs and EPIRBs use a portable direction finder manufactured by L-Tronics (www.ltronics.com), nicknamed the little Lper. By swinging the receiver and antenna unit back and forth, the trained 121.5-MHz direction-finding operator can track down the source quickly. Almost every month a local ham radio club, the Santa Barbara

Amateur Radio Club, conducts Lper training on a test frequency (www.sbarc.org).

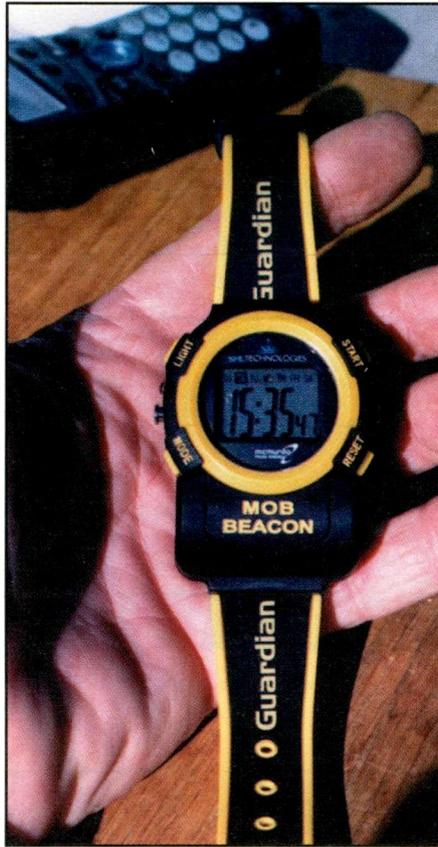
But for an emergency group base headquarters, both McMurdo and ACR have developed alert receivers that might also double as a direction finder. The McMurdo emergency receiver offers the option of using an external antenna and also offers 121.5-MHz receive plus reception on one additional training channel. An eight-level LED signal strength indicator shows whether or not a signal is close or far away. There are relay contacts that could allow you to tie the alert monitor into an alarm system at headquarters, or into a pager transmitter that might notify ski patrol that there is an emergency on the slopes.

The McMurdo receiver is distributed by Revere Supply Company in New Jersey. You can contact them at 972-575-8811; www.reveresupply.com.

Another ACR Receiver!

Another receiver is manufactured by ACR Electronics, called the Vecta. This receiver may be used on external 12 volts (like the McMurdo) tied into an external antenna. But unique to the Vecta is that it lets the user unplug it and it will deploy its own direction-finding printed circuit board wing antennas for tracking down the signal on 121.5 MHz. That signal might be from the little tiny McMurdo wristwatch, or from a more powerful personal locator beacon. It could also be used by diving instructors in connection with the submersible 121.5 personal diver's beacon also manufactured by ACR. If a diver pops out of the water and can't find the dive boat, they transmit the distress signal on 121.5 MHz, which alerts the dive operator to track them down and haul them back onboard.

I did some extensive testing of the portable ACR direction-finder receiver, and after a while I began to understand what all of the blinking red light-emitting diodes were about. In one mode, you select relative signal strength. If it's at the bottom of the scale, you are at least a half-mile away from your target. When it gets mid-scale, you are about a couple of football fields away. As it approaches the top of the multi-LED readout, you are within 100 yards of the signal. When the final LED at the top of the display lights up, you are within shouting range to the activated 121.5-MHz transmitter, whether



This Guardian wristwatch transmitter sends a distress alert on 121.500 when auto-activated by salt water.

it's the McMurdo wristwatch, or a more powerful personal locator beacon.

A very useful feature on the Vecta portable radio direction finder, with its swing-out antenna system, is its ability to track field strength. Push a button and an internal circuit analyzes signal level changes not easily calculated with a needle movement or simple LED averaged signal strength readout. In the tracking signal strength mode, as you walk toward the beacon signal, a row of light-emitting diodes will track upwards, indicating you are heading in the direction where the signal appears to be coming from. Every now and then switch back to the average signal strength readout to double-check that indeed the averaged signal strength is getting stronger. This keeps you from going in the wrong direction because of a signal bouncing off a nearby building.

As you swing the directional ACR Vecta unit back and forth, you can quickly see which direction causes the pulsating light-emitting diodes to track up (the correct direction). Regularly cycle back and forth between average field strength and tracking field strength, and you

should see success on the light-emitting diode readouts.

In the case of a buried 121.5-MHz signal, or a signal that you know you're right next to but just can't locate down to the foot, you can fold the Vecta antennas back into their "nested" position. Then you simply do the familiar body-turn to where the signal will be weakest when it is in back of you, and strongest when the direction finder and the signal are directly in front of you. And if you really want to get down to the "precise" signal location, you can use a pair of signal sniffers that you see pictured in this month's column. During a simulated avalanche rescue, the ACR got us within five feet of our "victim," and the signal sniffers got us down to the precise activated wristwatch transmitter location.

ACR manufactures all of its equipment in their facility in Florida, and it works closely with rescue agencies throughout the world to help them better understand how to use some of their direction-finding products. The Vecta 2 includes a second channel on 151.775 MHz for practice tracking. ACR might also make available to your rescue organization a loaner tracking beacon for testing your skills without putting any signal out on 121.5, which is reserved for emergencies only.

During our tests we were impressed with the compact wristwatch 121.5-MHz transmitter, which has enough milliwatts output (-25 dBm) to put out a usable signal up to a mile away on land with no obstructions, and easily receives several football fields away in heavy vegetation or out of the water. Although the wristwatch 121.5 transmitter would not likely trigger the low-earth-orbit satellite transponder, the watch can be worn without much thought that you are carrying an emergency transmitter. Combined with a 121.5 onboard receiver, you get more than adequate range for ground and air searchers to locate you.

Check Them Out

To learn more about the wristwatch 121.5-MHz McMurdo transmitter, contact Revere Supply Company, the exclusive U.S. importer for McMurdo products, at www.reveresupply.com. To see a complete ACR line up of emergency beacons and transmitters, log onto www.acr-electronics.com. And to learn more about the COSPAS/SARSAT satellite system, log onto www.sarsat.noaa.gov. ■

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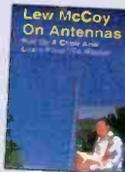
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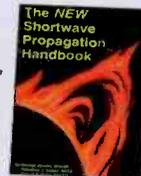
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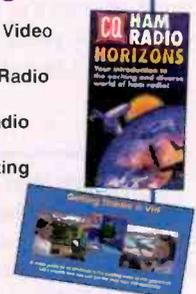
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Emergency Power Sources For Emergency Communications

Resuming the theme from the November 2003 column, this month we'll continue our exploration of power sources for emergency communications.

Battery power is nice to have albeit it's a bit limited for long-haul communications needs. If you don't have a method of recharging your battery supply, eventually you'll run out of power—the very power you need to run your radio gear, computers, and the ancillary equipment needed to ensure you stay on the air in an emergency.

Over the last 30 years, since the gasoline shortages of 1973, much has been said and written about “renewable” energy sources like solar, wind, and hydroelectric. Unfortunately, due to the stranglehold that the “dinosaur oil” (fossil fuel) companies have on this planet, there's more lip service than serious research on renewable energy sources. For the last 25 years or so the cost per watt for photovoltaic (solar panel) energy is roughly five or six dollars. Something is definitely wrong with this model, so please allow me put this into perspective.

In 1975 I encountered my first “personal computer,” a Digital Group kit project that Lee Horton, W5IAV, had built as an experiment. It cost several hundred dollars, in kit form, and you had to supply your own monitor in the form of a TV set. There were no graphic interfaces, sound cards, USB/Firewire ports, etc. You didn't program this early PC using magnetic diskettes or a hard drive. No, you programmed it using a series of toggle switches to input the correct sequence of “ones and zeros” into the ultra-small computer memory, all in order for the computer to perform some simple task. Over the last 29 years we have made great advances in personal computers. What we now have is so many light years ahead of that Digital Group monstrosity of 1975 that it boggles the mind and the end is nowhere in sight!

It's All About Money!

Why, then, don't we enjoy cheap energy, energy that doesn't gut the planet, start wars, and produce unbelievable pollution? If we can manufacture computers in only a few short years that rival anything that could have possibly been envisioned 25 years ago, then why can't we do the same thing for our renewable energy sources? There's only one answer that comes immediately to mind: money.

Essentially we are being held hostage by the oil companies and, of course, Detroit, the number-one promoter of the use of fossil fuel. You'll notice that in the last couple of years some “hybrid” cars have been unveiled. These are, for the most part, concept cars, not designed to be mass marketed to the general public. They use electric motors, fuel cells, and advanced battery technology to be virtually pollution free and amazingly economic. Yet we average consumes are not driving them. Why? Again, the answer is money. These hybrid cars cost lots of bucks and Detroit and their chief supplier of gasoline, the fossil fuel companies, would lose billions of dollars of annual revenue should the consumers of this planet suddenly break away from dinosaur oil technology.



One radio enthusiast put two large solar panels together for his emergency power needs using wood blocks and a post-type mailbox mount.

The same scenario can be applied to photovoltaic (PV) power generation. Imagine the tremendous loss of annual income that the power companies would suffer if the average consumer became independent, even partially, from the commercial power grid. Great efforts are made to *not* develop PV power capabilities. About the only people who really need solar panel technology is NASA. Without it functional satellites and the International Space Station would be really hard to pull off. But remember, NASA has the budget to afford all sorts of high-end solar panel technology.

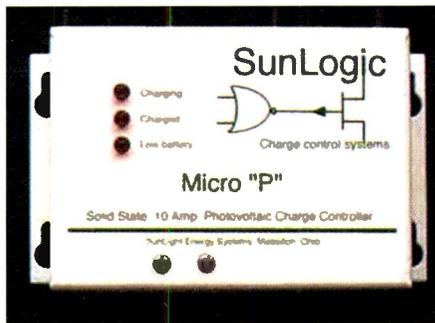
Okay, enough of the soap box. I included the preceding so you'd have some understanding as to why solar energy is still so expensive to implement. On the plus side, the nice thing about using PV panels is that the useful lifetime of a panel is about 20 years. So, once your initial investment is made, system upkeep (battery banks aside) will be minimal.

Without a doubt PV power generation is one of the more exotic methods of renewable energy. The idea that a stream of photon energy from the sun striking a piece of silicon can produce useable electrical power is rather intriguing. This PV process has been understood for years. However, the trick is to get the efficiency of the solar panel up above only a few percent. That is the major stumbling block in realizing cheap energy from the sun. Lacking any method to improve PV efficiency, the do-it-yourself home energy expert must utilize several PV panels in combination with each other to obtain useable electrical energy that can be stored in a battery bank and converted to AC electricity for the home.

It's Not That Complicated

On the surface this sounds like a very complicated project, however, taken in bite sized chunks on a small scale, a solar-powered ham radio station or monitoring facility is not that hard to implement. As with all things, planning is the key and information becomes the cornerstone of your plan.

I've come across several alternative energy magazines on my



The SunLogic Micro "P" charge controller is only \$45 from seslogic.com.

local news stand but they are written for serious practitioners of the home-made energy crowd, not for the beginner or average individual wanting to find out if it would be worth the effort to add solar energy to his or her abode. Mother Earth News' *Book of Home Made Power* was my choice of a beginning book on natural power sources. It's long out of print (I procured mine in the early 1980s), but you might get lucky and find a copy on line or via a used book dealer. This book is a great source of basic information on wind, solar, and hydroelectric power generation. (Did you know that there was, at the time the book was written, a Jacobs's wind generator still producing electricity at the South Pole, left there by one of the Byrd expeditions over 40 years previously?!)

While it is entirely possible to hook a solar or PV panel directly into the radio gear, it is inadvisable to do so due to variations in the output of the solar panel under varying sunlight conditions. A better way is to hook the radio gear into a battery bank, composed of one or more batteries that are continuously charged by the solar panel. The battery bank buffers the output of the PV panel and the radio gear, thereby smoothing out these variations in PV panel output.

Sizing Your System

When it comes to getting serious about setting up a working solar-powered ham radio or monitoring station, you need to "size" the system prior to running out and buying some PV panels. Most people don't have a clue as to how much power their radio gear and ancillary equipment actually requires to properly operate. So the very first step in sizing your installation is to list each piece of radio equipment and the power requirement for each piece of gear in the transmit mode, or, in the case of receivers, in the unscelched mode.

Obviously, your gear will require much more current when transmitting, but remember, you are not going to be transmitting 100 percent of the time. More likely, you'll follow the 80-10-10 rule: 80 percent of the time the receiver is squelched or in standby mode, 10 percent of the time you are receiving traffic, and 10 percent of the time you are transmitting. While the 80-10-10 rule is the standard used by the industry, it is a bit hard to estimate the amount of actual transmit and unscelched receiver time you would encounter in an emergency situation. Therefore, for our purposes, we will deal with the peak current needs of your gear when sizing our PV array.

Okay, so first we need to list all the station gear we intend to power via our solar panel/battery bank installation. When I say every piece I do mean *every* piece of gear since this is the critical portion of the planning phase. In my case I have a Yaesu FT-857 HF/VHF/UHF multi-mode transceiver, a separate FT-1500M 2-meter transceiver, a Terminal Node Controller (TNC) for packet radio, a Dell Inspiron 3000 laptop computer, a Bearcat VHF/UHF scanner, and a reading lamp. **Table 1** lists all this gear, their individual maximum current drains, along with the wattage each requires, the hours/day that I intend to *realistically* use them during an eight-hour "shift."

I must emphasize at this point that while the gear may be on line for eight hours or more each day, the actual time of operation at full-power output (for the HF and VHF transceivers) will be restricted so that the total time will be around two hours maximum per day. This falls within our 80-10-10 duty cycle. In other words, the two hours/day listed for the radio gear will be maximum current drain on an intermittent basis. Again, this is a "best guess" estimate, but in the past this has proven to be definitely within the ballpark when it comes to actual radio transmission usage.

Now that you've figured the number of watt/hours that your station will consume, it is relatively simple to compute the number of 45-watt solar panels that you'll need to realize your goal. I've chosen 45-watt panels because they're reasonably priced (about \$225 to \$250/panel if you shop around), and their physical size is large as to become unwieldy.

Here on the east coast (northeast Pennsylvania to be exact) we get approximately five hours of peak sunlight per day (this is averaged over 365 days per

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year). By multiplying the 45-watt panel by the hours of peak sunlight (5) we get a total of 225 watt/hours per 45 watt panel. By taking the total watt/hours used by your gear (calculated earlier), and dividing it by 225, you arrive at 3.56 panels needed to realize our goal. At this point I would opt for going with a total of *four* PVs just in order to over-engineer the project, but three PVs could possibly work, provided the computer use was curtailed dramatically. If you *really* want to over engineer this project, stick a fifth PV panel on the array and you'll have enough reserve power to arc weld!

The PVs should be set to face south at an angle equal to your latitude (41 degrees in my location). If you had a way to motorize the PV array so that it tracked the sun, that would be the ultimate in wringing the maximum amount of power from your solar panels. However, most of us must be content with a fixed array.

The output of the PV array needs to be fed into a charge controller (a device that monitors the charging rate and current of the battery bank along with the output of the PV array) to ensure that no over charging occurs. Mike Bryce, WB8VGE, of Sunlight Energy Systems (955 Manchester Ave. SW, North Lawrence, OH 44666; phone 330-832-3114) makes some very compact, inexpensive charge controllers. Visit his website at www.ses-logic.com and check out Sunlight Energy Systems product line.

Now a word about Mike Bryce: I have known Mike for over 20 years. He's a well-known author, a respected member of the solar power community, and an outstanding ham radio operator whom I consulted on several occasions. Mike was instrumental in furnishing a wealth of information for the QRP books that I've written regarding solar power and low-power communications. In addition to running Sunlight Energy Systems, Mike maintains the Heathkit Shop website (www.theheathkitshop.com) and is actively involved in collecting and restoring older Heathkit communications gear.

The Battery Bank

After the solar panels, your next biggest expense in going solar will be the battery bank. My advice here is to investigate large deep cycle batteries as opposed to generic "fishing boat" batteries. While you could use the latter, it makes more sense to spend the money up front to acquire at least two (possibly four) large

Table 1.

Equipment	Max Amps	PSU Volts	Watts	Hrs/Day	Watt/Hrs
FT-857	16	13.8	220.8	2	441.6
FT-1500M	2.5	13.8	34.5	2	69.0
Dell3000	2.0	13.8	27.6	8	220.8
Lamp	0.3	13.8	4.1	4	16.4
Scanner	0.5	13.8	6.9	8	55.2
TOTAL					803.0

12-volt deep cycle batteries that will last many years rather than "cheap-out" by settling for bargain batteries that will only last a couple of years. Shop around and find the best deal on large deep cycle batteries. Figure on paying about \$75 per battery.

You'll need one battery (or set of batteries in parallel) for your on-line bank, and the other battery (or batteries) to be charging on the solar array. When the on-line bank drops below 12 volts (they will normally be sitting at a float charge of 13.8 volts) swap the banks around and work off the freshly charged bank and recharge the depleted bank.

Now if all this is starting to scare you (especially when the money comes into play) let's take a hard look at what we need to get this project off the ground. Based upon our earlier calculations, three solar panels would be the bare minimum we could hope to use in our installation. Total cost of the four PVs: \$1,000 (\$250/panel). Since this will be a full-time, unattended solar power system, we'll definitely need a charge controller: \$50. Bare minimum for a battery bank would be two 12-volt deep cycle batteries: \$150. This gives us a total cost of \$1,200 for a PV power production system that will keep us on the air for extended periods, completely isolated from the commercial power grid. One thing I have not included is the cost of the support hardware for the solar panels, cabling, buss bars, switch gear, etc. This will add to the overall cost, so let's round upward and cap our total cost at \$1,300 for the complete installation.

One way to save quite a bit of money on the solar panels is to buy used PVs that have been taken out of commercial service by the local telephone companies or some other local or state governmental agency. Often PVs are used along highways to provide power for emergency call boxes, remote repeater sites, etc. These PVs are rugged, although used, but should provide power for years to come at a substantial reduction in cost. So, shop around for the best deal if you don't want to spend the money up front for new PVs.

Looking at the costs of this installation realistically, if quality solar panels are purchased (with guarantees) in addition to top-of-the-line deep cycle batteries and a quality charge controller, the entire installation should last at least 20 years. Costing this out over that period of time yields a cost of less than fourteen cents (\$0.18) per day to run your ham station or monitoring post completely independently from the commercial power grid! Now, that is cheap electricity. In addition you'll enjoy the freedom of being your own power company and knowing that you're using a renewable, non-polluting energy source for your station.

Will our solar power generation station ever pay for itself? That's a rather hard question to answer without knowing the cost per kilowatt hour you currently pay for electricity. On the other side of the coin, what price can you put on a person's life? If your station can remain on the air indefinitely during an emergency, providing much needed disaster relief communications, then your solar power generation station becomes priceless!

Consider The Solar Solution

What I have outlined this month is a full-blown, 100-watt HF ham radio station with VHF packet and voice capability that can be operated free from the constraints of the commercial power grid indefinitely. Obviously, if you are not a ham and have only to power some CB radio gear, a scanner, a computer, and/or possibly some GMRS equipment, you can downscale this entire installation considerably at a substantial cost savings.

I hope that this column will encourage you to give solar power a try. With the uncertain times we live in, being able to operate your radio gear during an emergency when there is no commercial power available will not only keep you in constant touch with the goings on around your area but could possibly save someone's life.

That's all for this month. See you next month and, in the mean time, remember: Preparedness is *NOT* an option. ■



Shannon's Broadcast Classics

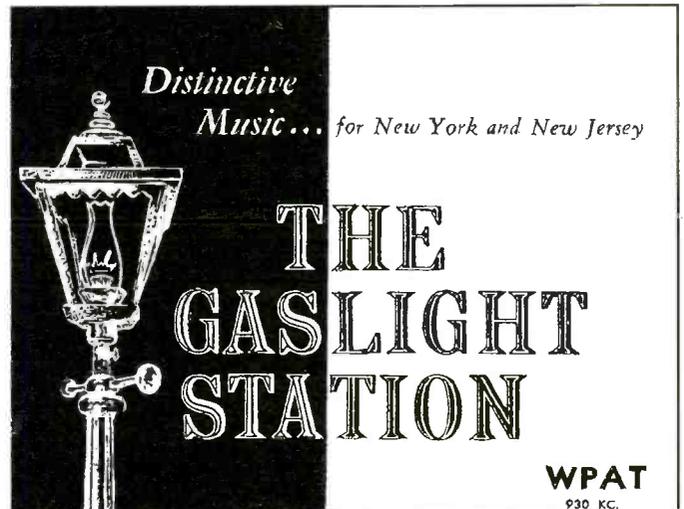
a look back at radio & TV's golden years

The Rise And Evaporation Of Radio's Most "Beautiful Music"

"Now I only listen to my old Mantovani and Lawrence Welk tapes," an older woman who works in my Dad's office sighed, "because radio has *absolutely nothing* for me anymore." The admission got my father going on about "radio's lost format," and prompted this month's column topic: *Beautiful Music*. Because definitions make good starting points, I thought it'd be nice to specify what kind of programming we'll be chronicling.

Generically, radio's Beautiful Music consisted of approximately quarter-hour blocks of non-rock, easy-listening selections that were typically 75 to 80 percent orchestral, with the remainder being light vocals. Both categories could include song titles that might ring a bell with pop hit listeners, but were almost never performed by the original artist. Instead, recognizable vocal tunes like the Beatles' "Yesterday" got covered by "old standard" artists, such as the Percy Faith Chorus, Steve Lawrence, or the Ray Conniff Singers. The instrumental versions of modern hits were "tastefully" interpreted by the 101 Strings, and others.

"Now I only listen to my old Mantovani and Lawrence Welk tapes," an older woman who works in my Dad's office sighed, "because radio has *absolutely nothing* for me anymore."



For mature Americans in the mid-20th century, the term "gaslight" evoked a simpler and more elegant era of about 1890 to 1910. That's why when WPAT sought an icon for its beautiful music format, management decided upon a likeness of a vintage gas-fired streetlamp. This ad for the New Jersey AM hails from 1956 when WPAT's then unique Easy Listening (sometimes dubbed "Elevator Music") sound was being studied and copied by at least one station in every medium to large media market.



That wording within the music note promotes "musical clusters for contemporary listening." The slogan for WQMR referred to the approximately 10- to 12-minute blocks of "quality" soft music. The Washington, D.C.-area station began as WGAY, and ironically was switched to WQMR by a new owner named Connie B. Gay. He did keep the coincidental namesake calls, however, for WGAY-FM. By the way, when this 1960 brochure was current, one could buy a 30-second "spot" on WQMR for as little as \$4.50. You can check out some interesting WGAY/WQMR history at www.radix.net/~krypton/.

By the 1970s, some of the bigger Beautiful Music outlets and syndicators employed ad-hoc London orchestras (where musicians could be assembled less expensively than in the United States) to record instrumental versions of the latest Top-40 hits. From the 1950s and into the 80s, the format faithfully generated big audiences in the adult (25 to 49-plus) demographic and especially attracted women, a segment most coveted by big advertisers. Best yet, for radio's real customers—its advertisers—Beautiful Music caught listeners who were either relatively well educated, sophisticated, making a good income, or all three.

In a 1960 brochure to potential ad clients, the Washington, D.C. area's WQMR (1050 AM) touted its introduction of "musical clusters for contemporary listening—a manner of programming that appeals to the intelligent listener and to the socially conscience one. [The sponsor's] message," the publicity piece boasted, "is heard by an appreciative and financially capable audience." This was a zing to the growing number of "rock 'n' roll" or Top-40 radio stations that often pulled amazingly big ratings and equally broad sneers from the posh adults who

didn't consider the youthful fare to be "real" music. So, for anyone wanting to be viewed as having risen above the unwashed masses of personality pop radio listeners, a Beautiful Music station flowing harmoniously from one's speaker offered instant snob appeal.

The Birth Of An Audio Status Symbol

For the most part, the typical radio station format prior to TV was a potpourri affair, with mass-appeal big network shows (if an affiliate) and a little something for nearly every niche thrown in for good measure. Starting in the mid-1930s, a few notable outlets like New York's WNEW and Baltimore's WITH had successes with a strictly music, news, and weather offering. Their tunes ranged from novelty to big band, and glib DJ patter was showcased. It wasn't until 1947 when a radio programmer figured he could put together a sound that would cause discriminating listeners to dial away from the "this 'n' that" stations and become loyal to his new, daytime-only, Dallas AM transmitting a single musical genre.

It Must Not "Irritate"

"Wouldn't a radio station sound beautiful," Lee Segall, founder and programmer of Dallas' KIXL asked, "if there was a way to have the end of one easy-listening song blend into the start of the next one *and* be in the same key?" Starting in 1947, Segall paid close attention to creating this soft flow on his station. In transitions where the songs wouldn't quite match naturally, he

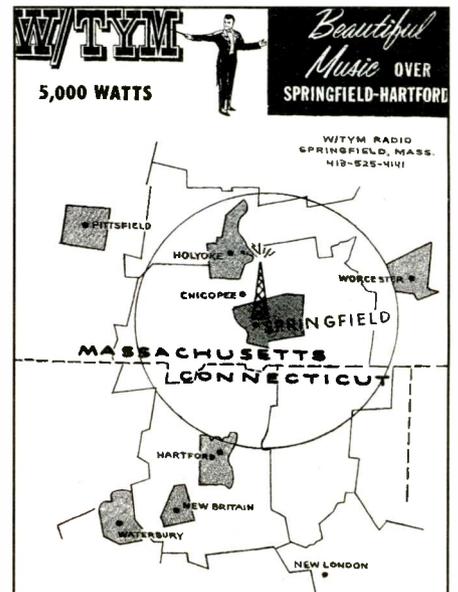
used musical bridges designed to create a seamless handoff from record to record. His announcers were hired based upon their rich, soothing voices.

Besides station IDs and news/weather, KIXL (pronounced *kicksil*) was locally famous for delivering a feature that Segall coined the "Think It Over." These offerings were short, gentle idiomatic thought provokers preceded by a soft chime. "Speaking of climbing the corporate ladder," a mellow KIXL announcer might say, "the best time to look for a job is when you already have one." Then there'd be a pause, followed by the friendly admonition, "Think it over." With that, a KIXL musical bridge would take the listeners back to another segment of beautiful, or "good," music.

Segall made sure that his 1000-watt daytimer's (and FM companion's) selections were especially bright during mornings and afternoons, with easier-tempos in the mid-day and evening. Even the commercials were presented in a relaxed manner. Above all, this pioneer programmer demanded that KIXL be non-irritating to Texans who counted on it to be an instant background mood setter.

Gaslight Makes Sophisticated New Yorkers Shine

With word of KIXL's success reaching the ears of TV-worried radio execs back east, officials at a Patterson, New Jersey, outlet began "metropolitanizing" the Beautiful Music format at their WPAT in the early 1950s. Adding a visual representation to the easy-listening sound, the



No specific signal strength is indicated on this perfect circle WTYM coverage map. Nor is there any mention of the daytimer's actual city of license: East Longmeadow, Massachusetts. Nor can one find an indication that WTYM broadcast from what was then (1970) the upper-most AM radio dial position—1600 kHz. The concert master/conductor motif was used by many stations that transmitted a beautiful music format. That backslash after the "W" denoted the station's nickname: "Time."

station brass borrowed a quaint 1890s icon, the gas streetlamp, and dubbed their programming a "Gaslight Revue."

The soothing musical genre hit an endearing chord with significant numbers of New York City-area listeners. And, because the music was primarily instrumental, it was embraced by everyone from sophisticated 5th Avenue gentry to

WWEL FM 108
BEAUTIFUL MUSIC FROM THE TOP OF THE DIAL...

A TYPICAL 30 MINUTES OF BEAUTIFUL MUSIC

- Feelings - Percy Faith
- Raindrops Keep Fallin' On My Head - Ferrante & Teicher
- Moon River - Henry Mancini
- It's Impossible - Perry Como
- I Will Wait For You - Frank Pourcel
- The Most Beautiful Girl - Roger Williams
- Theme From "Love Story" - Mantovani
- Close To You - The Carpenters
- Spanish Eyes - Bert Kaempfert
- You Are The Sunshine Of My Life - Floyd Cramer
- Love Is Blue - Paul Mauriat

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88 90 92 94 96 98 100 102 104 106 108

WERS WGBH WBUR WBOS WOCZ WQGY WRRB-FM WJIB WCAV WROR WPLM-FM WSSH WTTK WLN WCRB WEEL-FM WBBN WAFB WBZ-FM WAUF

88.9 89.7 90.9 92.9 94.5 96.1 96.9 97.7 98.5 99.1 99.5 100.7 101.7 102.5 103.3 104.1 105.7 106.7 107.3

RADIO SHACK 1115
BURLINGTON MALL
BURLINGTON, MASS. 01803

WWEL FM 108
BEAUTIFUL MUSIC FROM THE TOP OF THE DIAL...

As shown front and back, "dial cards" like this were popular promotional handouts for FMs airing relaxing tunes. Typically, the cards noted what the area's FM band looked like and detailed a sample listing of music aired. Circa 1977, a Medford, Massachusetts FM outlet set out to compete with Boston's highly rated Beautiful Music station, WJIB-FM. "All is well," WWEL's station identifications began in "ye olde" New England town crier fashion. "All is well on WWEL, Medford, FM 108, with beautiful music from the top of the dial." Legendary Top-40 DJ Arnie Woo-woo Ginsburg served as an official at WWEL, which rather quickly switched to more contemporary musical fare under the call WXKS-FM.

immigrants who could hardly speak a word of English. No matter their pedigree, aficionados of WPAT were considered to have good taste. Their "TSL," or time spent listening, was typically longer, too, than the radio dialing habits of most other "foreground" stations' audiences.

Critics argued that WPAT was simply a low-key background service, and warned advertisers that people paid little attention to commercials there. No matter, well into the 1990s (when it was sold to a Spanish language broadcaster), WPAT had little trouble attracting sponsors wanting to reach the 5-kW AM's loyal listeners.

Today, WPAT's original music lives on the Internet. For a sample of the Gaslight Revue sound, download an hour or so via <http://home.att.net/~carla.sanzone/jukebox2.htm>.

An Old Crow Rings The Cable Car Bell

Gordon McLendon is best remembered for his contributions to developing the personality and promotion-driven Top-40 radio format. But the Texan also has a strong connection to Beautiful Music's saga as well. That's because he didn't particularly mind listening to KIXL, the easy-paced Dallas cross-town rival to his 90-mile-per-hour KLIF. During the 1950s, though, there was no FCC-sanctioned opportunity to own a pair of AM outlets in the same market, so McLendon knew he couldn't keep his highly rated KLIF *plus* operate a good music standard broadcast facility in Dallas to compete directly with KIXL.

The hankering to fine-tune Segall's programming somewhere caused McLendon to buy the old KROW in Oakland, California, and revamp that 960-kHz facility as KABL (pronounced "cable") a *la* musical cable car bringing Beautiful Music to posh listeners throughout the San Francisco region. Besides stacks of relaxing tunes, this 1959 transformation included an ever-increasing repertoire of poetic transitions from commercial "set" to music segment (or from one-quarter-hour music cluster to another approximately 15-minute group of evenly matched records) that romanticized the station's milieu.

"As the sunlight shimmers through a gentle fog wafting past the Golden Gate Bridge," a rich-voiced KABL announcer would say, "you're listening to Beautiful Music on Cable, K-A-B-L." And then, just

prior to the record being started, a tastefully muted cable car bell sound effect would be aired. This signature was the icing on a "good music" package designed to say to KABL listeners, "You've got class, and listening to us proves it."

Washington's Quality Music Radio

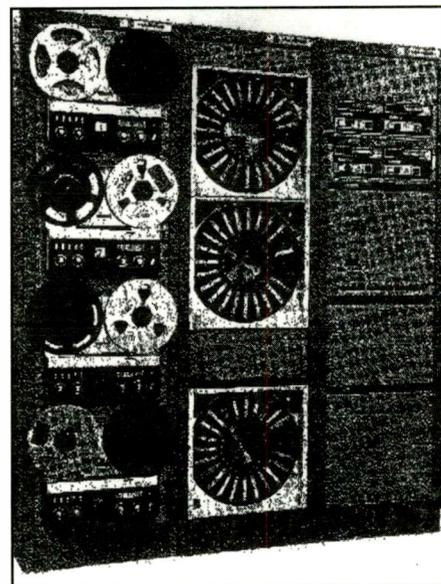
WGAY hit the suburban Washington, D.C. airwaves in 1947 and with an emphasis on personality DJs spinning a variety of musical offerings, and the 1000-watt daytime station developed a marketable local following. Coincidentally, in 1959, it and a sister FM were purchased by a fellow named Connie B. Gay. April of that year saw WGAY shifting to a more singular format of "mood music," presented in approximately quarter-hour clusters.

By September, Mr. Gay had discharged the WGAY disc jockeys and dumped all of the station library's rock 'n' roll records. A station publication brags that Gay then required his announcers (re-identified as "music-casters") to "place an emphasis on more music and less talk by eliminating all song titles, artist credits, and label mentions." Though parking his namesake call letters on WGAY-FM, Gay changed the AM moniker, in early 1960, to WQMR, denoting *Washington's Quality Music Radio*.

"The [re-named station's] new musical format," indicated the pamphlet, was "again refined and upgraded to include an abundance of show tunes, tastefully selected from original albums, [as well as] a schedule of uninterrupted music and government news." While the emphasis on this brand of news was largely due to the audience being so closely linked to the goings-on in the U.S. Capital, WQMR's show tune inclusion was also showing up on the growing number of Beautiful Music stations from coast to coast.

A Nice Local Clone

Representative of the scores of small to medium market broadcast facilities that adopted portions of the KIXL, KABL, WPAT, and/or WQMR/WGAY style is a 5-kW AM in the Springfield, Massachusetts, market. This daytimer, WTYM, resided at what was once the backstop of the standard broadcast band: 1600 kilocycles. There, in 1963, it started transmitting a "Good Music" format that

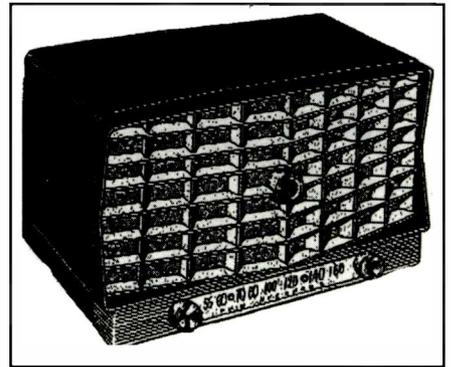
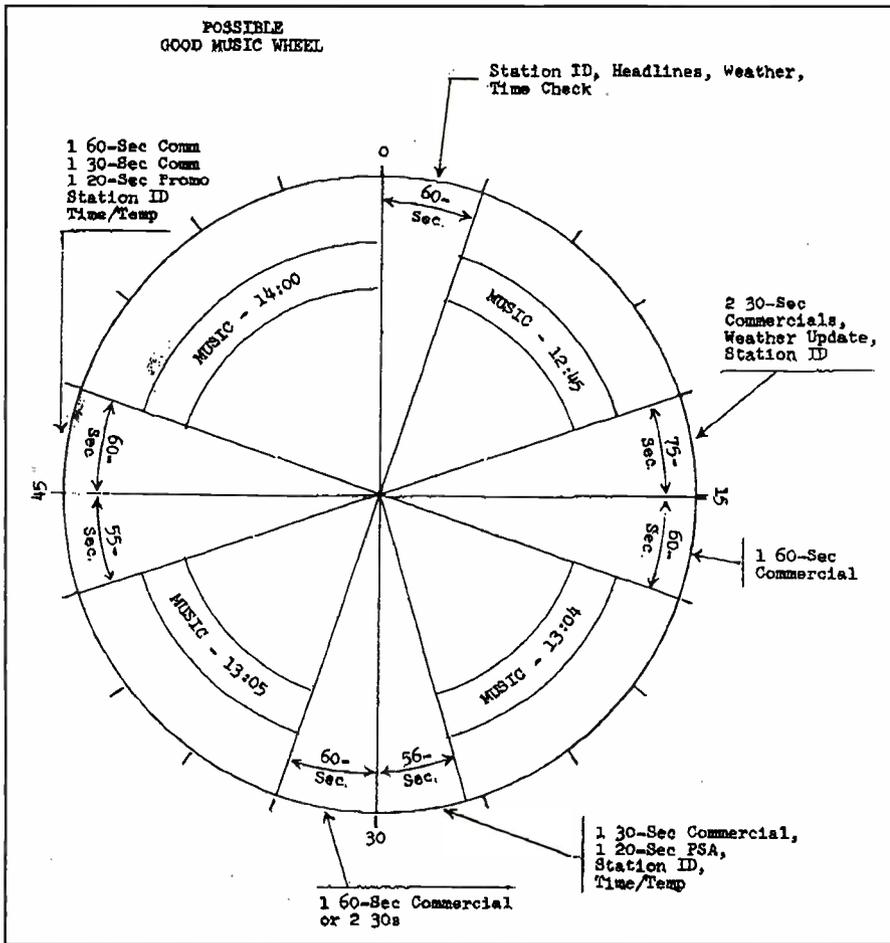


Four reel-to-reel tape decks, three "random accessible" carousel cartridge players, a quartet of conventional cart machines, and a control "brain" make up the automation unit of "Good Music" outlet KIKS-AM in Sulphur, Louisiana. Some stations ran the beautiful music or background music format with automation as modest as two reel-to-reel players, a single carousel, and a regular cart machine for station IDs or a weather forecast (that hopefully got changed more than once per day!) Those Revox brand reel-to-reel units were quite popular in the mid-1970s, as they could be bought for much less than the standard bearers from Ampex, Scully, or ITC.

found a following throughout the Springfield area and in some northern suburbs of Hartford, Connecticut.

WTYM informally identified itself as "Time" and even re-named the all-important number in its weather forecast "the time-preture." The station's direct competitor was New Britain, Connecticut's WRCH, or "Rich" music. The time angle was supposed to be a mnemonic moniker, along the likes of *rich*, *cable*, or *gaslight*.

WTYM published an unusual piece of promotional literature during the early 1970s that acknowledged its beautiful "Time Music," but focused on the station's attractive ad sales revenue growth. "Billings have increased from \$60,000 in 1963," the flyer stated, "to over \$360,000 (annually) at the end of the 1970 fiscal year. The station [through its soft music] has gained immense prestige and audience," it noted, "and has been able to increase its rates from an average of \$1.50 per announcement to a high of \$13.00. WTYM constructed a new facility, including a new tower, ground system,



Well-to-do listeners to the first Beautiful Music format stations might have enjoyed being serenaded via an American-made RCA Victor Glendon series receiver. According to its instruction pamphlet, the “modern twin speaker superheterodyne AM [table radio featured] a straight-line dial to permit easy tuning of the Standard Broadcast Band; built-in loop antenna for wide-range reception; and a Golden Throat tone system—for more enjoyable listening.” This model also possessed an RCA phono jack input and phono/radio switch so that the music lover could connect a turntable, click to “phono,” and “tune the radio off station to prevent interference from strong radio broadcasts.” Equipped with two speakers and a tuning section that completely concentrated on amplitude modulation, this RCA set could really produce some crisp AM reception. It was Hi-Fi at its Beautiful Music best!

From Edd Rout's 1978 *The Radio Format Conundrum*, here's a sample “format wheel” to be adopted by programmers preparing to put a beautiful music station on the air. Immediately evident are the largest pieces of the Good Music pie, musical clusters no shorter than about 13 minutes. Notice how light the commercial and informational “spot load” must be to make the genre work.

and buildings and occupied these new quarters in February of 1970.”

'TYM For Memories

Gary Tompkins, who as a kid bitten by the radio bug used to help out at WTYM, recalls that it “always had a strong signal in Northern Connecticut. The station owners, from their earliest days, found that salesmen from the stations in Hartford, and Springfield did not work the [northern Connecticut] area. Consequently, this was a void that they were quick to fill and capitalize on.” He also remembers engineering “at least four remotes for WTYM in stores like Woolco in Enfield and Hazardville, Connecticut.” According to Tompkins,

WTYM had a small Enfield studio at the Hospitality Motor Inn, in an attempt to further solidify and protect 'TYM's turf in the Nutmeg State. The studio was a “fishbowl” in the main lobby. The board was a Gates Yard,

which came from the WTYM production studio after it was displaced by the old Bauer brand board from WTYM's acquisition of WCRX-FM in Springfield. I don't remember Dave Lane (WTYM's best-known announcer) going down there—that must have been after I left. In my day, Fred Steinman did his weekday shifts from there. Fred was not one to complain, but I'm sure that [lugging all the needed items from the main studio to the auxiliary locale] was something of a pain. Those stacks of beautiful music records had to be pulled in advance and brought down to Enfield, as did all live copy, the day's program log, and dubs of any agency spots. Local—northern Connecticut—news was provided by the *Journal Inquirer* newspaper. The audio quality was very good, as it came over the air via a studio-transmitter-link (STL). There was no remote transmitter control, so the operating log and control was maintained from WTYM's main studio on Fisher Avenue in East Long Meadow, Massachusetts.

An interesting note is that the Enfield studio was set up after the Connecticut signal was degraded by the move to Fisher Ave. This was done deliberately as a condition of sale when

WTYM bought WEXT 1550 West Hartford, Connecticut. From the old WTYM transmitter site on Shaker Road, WTYM put a city grade signal into West Hartford. Without a reduction to WTYM's field strength, the Federal Communications Commission would not permit WEXT and WTYM to be under the same owners [in those pre-duopoly days]. Thus, the WTYM transmitter was moved 2.5 miles north, the tower height was reduced by 50-feet and shielded by a hill behind the studio/transmitter building. The terrain blocks the horizon to the south.

According to Rick Kelly, proprietor of www.northeastairchecks.com where you can click on some WTYM jingles, WTYM's main personality and selling point was a guy named Dave Lane. Lane's claim to fame (besides being surprisingly short for his deep voice) was that he once worked at CBS-owned KNX in Los Angeles. Gary Tompkins remembers that Lane's given name was Eber Lineberge. WTYM's star announcer, Tompkins reports,

... was originally from North Carolina and went to Furman University. He started on WFBC in Greenville in 1935 as a performer, mostly playing piano, but also signing. He was

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discovered by WBT in North Carolina and became very popular there. Then he went on to even greater success when he was hired by CBS. He worked for their KMOX, KCBS, and KNX. Later he wrote scripts for the "Dick

Powell Show" on NBC. Lane worked for lots of stations over the years, and his last job before coming to WTYM around 1967 was in Boston at WEZE, which also ran good music.

As a young radio-hopeful, Tompkins says he used to "ride around with Lane as the veteran air-personality made calls on sponsors. We'd then go back to the station and I'd engineer the recording of his commercial spots. After that, he'd treat me to lunch before dropping me back at my mom's place. The lunch was the closest thing to professional broadcasting 'pay' that I got back then," Tompkins now laughs.

Automation Needs No Salary, But...

By the mid-1970s, there was a trend in shifting Beautiful Music formats from the AM band to FM where the fidelity was clearer and automation in this still emerging radio territory negated the need for live, in-house announcers like Lane at WTYM. Some of the automated set ups were as basic as a pair of reel-to-reel machines, a tape cartridge carousel (where several dozen "carts" waited to play their commercials, public service announcements,

and/or station promos), and a regular cart player for (hopefully, but not always) a recently recorded news/weathercast.

New London, Connecticut-based WTYD-FM, christened "Tide 101," to positively impact the aesthetic sensibilities of its Beautiful Music listeners along the Connecticut coast and Long Island Sound, utilized a three-reeled (a pair for instrumentals and one to play vocals), two-carousel system that was down the hall and invisible to the on-duty, co-located WNLC-AM DJ. When a WNLC announcer was working in the AM wing, the only indication of the FM's presence was a doorbell-type alarm activated by a silence sensor. When a WTYD reel of Beautiful Music ran out and 10 seconds of dead air occurred, the bell would ring. Provided the volume on the air monitor in the Top-40 AM studio was low enough, the jock would be notified by the ringing that he forgot to change one of the "Good Music" reels.

One WNLC part-timer, who later admitted "not being into geezer tunes or FM," figured he'd make his life easier by simply pushing the reverse button on any of Tide 101's big Scully brand reel-to-reel players when they got near the end. Another WNLC personality, possessing a

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bigger-picture view of the AM/FM operation, raced towards the station after hearing a backwards version of Andre Kostelanetz Orchestra's "Born Free," which sounded like drunken chipmunks speaking Russian.

Several Saturdays following the reckless-reverse incident, that Tide 101 rescuer, a rich-voiced, slender twenty-something who, in addition to being the WNLC morning personality, was featured on all of WTYD's "from the beautiful shores of Southeastern Connecticut to the sand dunes of Sag Harbor" transitions, was startled by an elderly couple staring at him through the AM studio window. As the only one typically on Saturday morning duty, he was wearing an old blue T-shirt and rather wrinkled jeans. The old man told him he'd brought his wife over on the Long Island to New London ferry because it was her 85th birthday wish "to

meet the wonderful *tide* man who plays all the beautiful music."

Those seniors didn't believe the young DJ's admission that he was actually the *tide* man. Then he cleared his throat, closed his eyes, and intoned one of those "from the lighthouse at Orient Point to the..." WTYD transition liners. The old lady stood there in shock for about 30 seconds before complaining, "You might be able to imitate my *tide* man, but you're certainly not him. The *real* tide man is a very mature heavy-set distinguished gentleman who sounds like he wears a nicely tailored tweed vest!" She then requested that her husband take her home so she could write a letter to the station manager. In it she expressed disappointment that a "boy impersonated WTYD's best announcer" and that the "rather impertinent youth claimed that the whole station was just a machine."

audiences embraced the change, as did the huge list of advertisers trying to reach them. In 2004, the pure Beautiful Music radio format is offered by only a handful of stations, including WJIB 740 AM in Cambridge, Massachusetts.

Something Completely Different

Bob Frost sent us a copy of Worcester, Massachusetts' WORC music survey for the week of April 10, 1972, on which he is featured. Bob, who now lives in California, believes that the early '70s were AM Top-40s last hurrah because "this was the era that FM began to take substantial shares of the AM radio audience. [Prior to the rock FM's siphoning off teens] it was during the evenings when a Top-40 station had mostly listeners in the 18 to 24 age group. Bob recalls,

As music director, I worked with the record promo people. Because the station broke so many hits in the 50s and 60s, WORC was on the A list for receiving promotional copies of records allowing us in some instances to do "exclusives" on new releases. In looking at past station surveys, WORC played a lot of music that didn't chart nationally. This was a practice that continued during my music director days. Many stations were fearful to air what could turn out to be "bombs," but our request lines played a large part in guidance regarding what received airplay.

The station had the top market ratings except during morning drive, but still had a problem staying in the black. We ran great promotions, many remote broadcast, and lots of public service. In spite of this, the new owner who purchased the station not too long before I began working there was having problems with overhead expenses. I was told, that in the late 60s the national advertising agencies changed their spot buying policies, relying more on Boston radio.

When the station was sold, the new owner with a high mortgage found it difficult to turn a profit relying so much on local advertising. It shows how you can do everything right but still have financial problems. A new station manager was brought in, which in short order led to my decision to leave. Of all the stations [Bob worked with, though, he says WORC was [his] favorite.

Coming Up

Next time, we'll tune in a view of "TV Translators and Tiny Television Stations." Until then, don't forget to send your cards, letters, and photos to me at *Pop'Comm* headquarters.

And so ends another day of broadcast history at *Pop'Comm*. ■

The Illusion Faded

A check of radio ratings circa spring 1977 (about the time of the aforementioned bubble burst) shows the Beautiful Music format doing well, though it had largely migrated to FM. The program genre registered number one in markets like Rochester, New York, Providence, Rhode Island, and Sacramento, California. Beautiful Music attained second place in Hartford, Connecticut, fourth in Los Angeles, fifth in Chicago, and a respectable seventh in New York.

Problems for the format began hitting critical mass, however, by the early to mid 1980s. That's when big band/non-rock hits ("Music of Your Life") stations (many on AM) began attracting older listeners and FM owners sought younger audiences, so either converted Beautiful Music fare to an easy listening/soft hits focus, or changed the "Good Music" for Top-40, country, or progressive rock. When in 1974, WPRO-FM dropped its Beautiful Music for contemporary hits programming, one old listener cried to the station receptionist that the abrupt change was "like using a new Cadillac as a garbage truck." Of course, the younger

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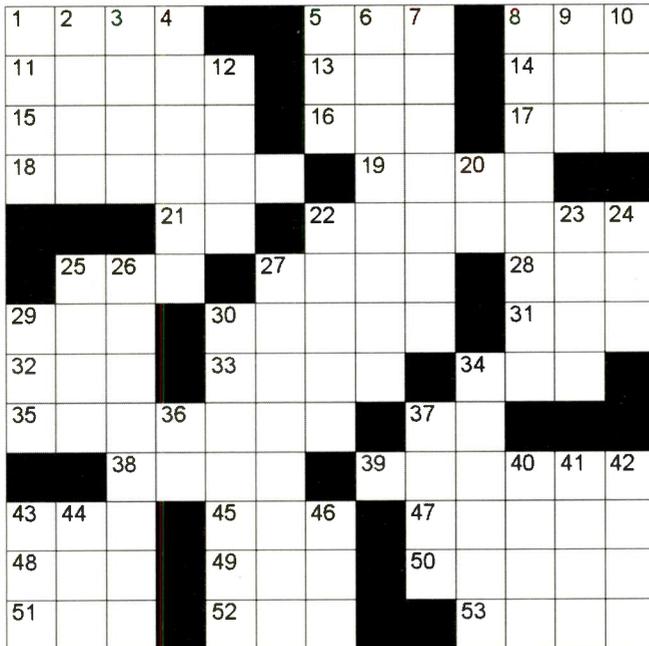
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- 29 A freight trailer (CB Slang)
- 30 Pyongyang is capital city here (RevSp)
- 31 Domesticated animal
- 32 AM 1070, Moncton, New Brunswick
- 33 Soldering tool
- 34 ABFF this notation
- 35 ITC Prefix 5CA-5GZ (Country) (RevSp)
- 37 CW abvr, Say
- 38 Transmits instructional information (service)
- 39 Callsign, Air Exel Belgique (RevSp)
- 43 AM 740, Edmonton, Alberta
- 45 Old Timer's Club (abvr)
- 47 Controls antenna's directional radiation
- 48 Hearing organ (RevSp)
- 49 Airport code, Dulles International
- 50 Soldering flux
- 51 "A worldwide initiative to bring AM radio into the digital era" (abvr)
- 52 CW abvr, later; letter
- 53 Narcotics agent
- 5 Pop' Comm's _____ Reiss
- 6 Resistance to moving
- 7 HI Airport OGG (RevSp)
- 8 2nd most popular Web browser
- 9 ASCII characters 65, 66, 67
- 10 Now called Class A airspace
- 12 Fermented malt beverage
- 20 3.1416 this
- 22 AKA "Continental" code (RevSp)
- 23 Callsign, Airborne Express
- 24 East-West Lines (abvr)
- 25 AM 770, New York, NY
- 26 Mexico's national airline (RevSp)
- 27 Hot air balloon or dirigible
- 29 EMF controlled oscillator
- 30 AKA Wing
- 34 Elementary particle
- 36 CW abvr, Old timer; Old top
- 37 To fly without using power
- 40 Now called Class C Airspace
- 41 1979 hit musical starring Treat Williams
- 42 Synchronize (abvr)
- 43 CW abvr, Card
- 44 Automatic rifle M1918A2 (abvr)
- 46 CD format (Write Once, Read Many)

- ACROSS**
- 1 AM 1260, Edmonton, Alberta
 - 5 AM 640, Los Angles
 - 8 Phonetic "N" (U.S. Army 1916)
 - 11 Wood plank (RevSp)
 - 13 Egypt Radio & TV Union
 - 14 Emirate Broadcasting Corporation
 - 15 Wheeled locomotive under-carriage
 - 16 CW Abvr, I have nothing for you; Not In Log
 - 17 Now called Class B airspace
 - 18 Signal Strength Meter
 - 19 Drinking vessels
 - 21 Area Code 501 here
 - 22 Honorable, moral
 - 25 IARU "Worked All Continents" award
 - 27 World's largest continent
 - 28 Abampere (abvr)

- DOWN**
- 1 FCC's new database system (Abvr)
 - 2 Lower limit
 - 3 Extreme anger
 - 4 Positively charged ion (RevSp)

(Solution on page 80)

THIS MONTH IN RADIO HISTORY - Cypher
 (Hint: ACROSS Crossword Clues Hold the Key)
 On March 3, 1922 ...

' S
 191 141 381 136 451 167 352 331
 J -
 151 372 252 322
 1715 131 132 281 089 136 431 191 251 451
 454 225 211 531 181 432 167 331 501 351 451 171 181

Solution: DETROIT'S WWJ-AM BEGAN RADIO TRANSMISSIONS.

Pop'Comm Trivia...

Owen Pool (WB4LFH) describes his web site as providing a "pretty good set of resources and ideas for the crystal radio enthusiast." I disagree. I'd call it an "AWESOME SET" of resources! Owen also proves that a web site doesn't have to be fancy to be outstanding.

What's does Owen call his site and what's the URL?

Answer: "Crystal Radio Resources"
 More info at: <http://www.thebest.net/wuggy/>

FREE! "Where's That Station" MW DX Utility - Check It Out! - <http://www.dobe.com/wts/>

computer-assisted radio monitoring

by Joe Cooper, joe@provcomm.net

Digital Control—Part I

Over the past two years I have covered the foundations of computer-assisted radio monitoring, starting with the basics you need to know (serial ports, sound cards, digital control of radios, etc.) and then outlining how to put them together into working systems.

Over the next series of columns I'll be digging deeper into the "innards" of the new generation of computer-controlled radios and the software used to operate them. In addition, I'll be looking in more detail at home computer networks and how you can control compatible monitoring radios over them remotely.

My ultimate aim is to show you how to expand that control to the point where you can do it across the Internet. Thanks to the advances being made in radio hardware and computer software, it's now possible for you to operate a compatible radio from a remote location, and listen to it as well, with relative ease.

I believe that this ability to control monitoring radios remotely will become increasingly popular as people come to see the convenience and flexibility it offers, particularly for those who would normally not be able to use a monitoring radio. Many people today are limited in their ability to really enjoy the hobby due to restrictions on antennas in their locations or by high levels of radio noise. Using their home computers, they could listen to a radio set up at a remote location (a cottage, for example) or one shared among radio club members.

Already there are a number of remotely controlled radios available to the public via webpages on the Internet, so what I'm talking about is far from Science Fiction—it's already an established fact. I'll be sharing the URL's of those webpages and talking about the software and hardware techniques each uses.

These innovations in home networking are not limited to desktop computers. Imagine being able to go to any room in your home with a laptop computer, or even out into the back yard, and be able to control your monitoring radio via a wireless home network—and listen to it, too! I'm going to be showing you how to do that; you'll be surprised at how simple it is to set up.

So to begin this interesting journey, let's start with the foundation of this revolution, the computer-controlled radio.

The "Black Box" Radio

I'm of the generation that started out with vacuum tube radios that were tuned by coils and capacitors. I saw the first transistor radio sets come onto the market and, soon thereafter, the introduction of radios with integrated circuits.

First, integrated circuits were primarily used as audio amplifiers. Later on, detectors, RF amplifiers, and IF circuits came on chips. Not long after that came the first true "radio on a chip," which contained just about everything but the inductors and power supply.

The first ones simply provided such things as digital readouts and primitive (by our standards) Digital Signal Processing (DSP). Today even the most basic monitoring radios have processor-based heterodyne tuning and other exotic features.



Like all things electronic, the design of many brands of monitoring radios have advanced over the past 10 years. Today we're at the point where the "black box" radio—that is, one that is completely computer controlled and has no external controls—is now available. Rather than using knobs and dials to control a radio, today we use keyboards and mice while looking at virtual radio knobs, dials, and readouts on our computer screens.

While many people are more than happy to simply plug such radios into their computer, add an antenna and listen, there's



This is what you get when you purchase the Ten-Tec RX320D. From left to right is an audio cable to go from the radio to either a sound card or speaker, the "black box" radio itself, a serial cable to attach between the radio and computer, power supply, whip antenna that screws into the radio's built-in active antenna, controller software, and manual. That's it, there's no more!

much to be gained through understanding what takes place when you send a software command from your computer to the radio and something happens. This knowledge will become especially important when I start moving into the topic of local area networks for home computers. Before you start saying, "this sounds too deep for me, I'd rather just listen to the radio, thank you," understand that it's really not that complicated. Sure there are some technical concepts and jargon to master, but seriously, you'd be surprised how straightforward it actually is. To get us started and keep things simple I'm going to focus on the Ten-Tec RX320 and also at the updated version, the RX320D (check out the Ten-Tec website at www.tentec.com).

So now let's look at this "black box" radio and see why it's a good representative of state-of-the-art computer-assisted radio monitoring.

Where Do We Start?

I've talked about the RX320 by Ten-Tec before when I was writing the "Utility Radio Review" column. Since its introduction in 1998, this little radio has captured a lot of people's imagination. The reason is that when Ten-Tec released the radio they did so with an important policy.

Even though they supplied the user with a good computer-control package of their own design, they also encouraged experimentation. To this end, they provided the public with a great deal of information about the hardware and software components at no charge. As a result of this enlightened policy, a significant number of third-party software packages were developed. What was even more surprising, and as a way of saying "thank you" to Ten-Tec for their generosity, the majority of people who developed these packages offered their software over the Internet for free.

Because it's a true black box radio, it has a unique feature. While the basic design has not been changed since it was first introduced in 1998, the radio still gets better every year. The software has continued to develop to the point where greater potential is being extracted out of the original design.

One of the best examples of this is the ability of the current "D" model to take advantage of the new Digital Radio Mondiale (DRM) shortwave radio audio broadcasts. The RX320D has a special output that provides the 12-kHz bandwidth of audio required for monitoring DRM transmissions. You hook up the radio via an audio cable from a special jack on the back to your computer's sound card. All you need is the DRM decoding software installed on your computer in order to listen to the new generation of digital audio shortwave broadcasters.

I'll be looking at DRM and how to get started using it in a future column. In the meantime, let's get back the radio itself.

More On The Black Box

The RX320 is basically a black metal cube measuring 3 x 6.25 x 6.5 inches and weighing 2.5 pounds. The most notable feature is a group of plug-in connection points on the back. The only difference between the original RX320 and the new RX320D is the addition of a new plug for the special 12-kHz audio output needed for decoding DRM with your computer's soundcard and special software.

There are no control functions on the box other than an on-off switch for power. The only way to control the RX320 is through the computer software supplied when you purchase the



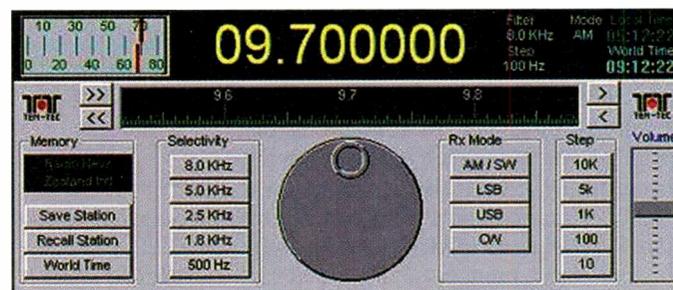
This is a shot of the back of my RX320. The only real control is the on-off switch. The rest are plugs for power, serial, audio, and the antenna. If you purchase the current version—the RX320D—you'll have a new plug for the 12-kHz audio output used to connect up with your computer's sound card. Using the proper software you can then demodulate Digital Radio Mondiale (DRM) broadcast transmissions.

receiver. This software sends its control information from the computer to the radio box via a serial cable connection, and also receives important information back from the radio (such as frequency, signal strength, and selectivity status), which is displayed on the computer screen.

The radio covers from 100 kHz to 30 MHz and receives AM, CW, USB, LSB modes. In addition, you have 34 IF-DSP bandwidth filters available through software control. The range of selectivity over this 34-step range is from 300 Hz to 8000 Hz, with the latter wide-frequency range allowing for some pretty nice sound reproduction of strong AM broadcasters.

Software Control Of The RX320

After having mastered the basics of controlling the RX320, one of the first things that the programmers discovered was that you could customize the software to meet a variety of monitoring needs. The first group to benefit from this was shortwave listeners, who were provided with software that could be seamlessly integrated into logging and database functions. So, rather than having to jump from one program to another to find a frequency, tune the radio, and then log the results, SWLers using this new RX320 software were able to perform each of these tasks from within a single program.



This is a screen shot of the virtual controls used to run the RX320 supplied by Ten-Tec. As you can see, they designed it so it looks and feels like a conventional radio. While adequate to get you started, it really doesn't exploit the full potential of the radio. To really use all of the features properly there are a number of third party products you can use in place of this one.

Needless to say, those who used this software soon started using the black box all the time, particularly when they found that its performance was equal to many high-end radios. Many reviews of the product have put it on par with such well-known radios as the Drake R8 or the Japan Radio NRD-525.

What Makes Up The RX320?

When you open the small cardboard box that the RX320 is shipped in you find literally everything you need to get started. Included are,

- The receiver
- Serial cable (two DB-9 connectors), 1.8 meters (6 feet) long
- Audio patch cable to plug into the PC sound card, 1.8 meters (6 feet) long
- Wall-mounted power transformer, 120 VAC to 15 VDC at 800 mA
- Ten-Tech control software for the receiver (1 diskette)
- User manual
- Telescoping whip antenna
- Male phono plug (for external antenna connection)

The only thing I bought separately for the radio was a coax-to-male phono plug converter to let me use my existing coax cable. The setup of the receiver was so simple that I didn't even look at the manual, and the five plug-in locations and one on-off switch are clearly labeled as to their purpose on the back of the radio.

There are really only four things you need to be concerned about: the power source, antenna, speaker, and serial cable. Even the antenna is somewhat optional as you can use the supplied whip antenna that simply screws into its own hole and is provided with a broadband RF pre-amp (though it will certainly not perform as well as a good outdoor antenna).

We'll be looking at what's inside the radio itself next month, but if you simply can't wait to see what's "under the hood," you can open up the box, where find two circuit boards. The first board is the radio's front end, which contains the RF circuitry. It is basically a "radio on a board" which contains the usual tuning hardware needed to pick signals out of the antenna and a number of integrated circuits used to amplify the signals before they are processed.

The radio's computer processing takes place in the second circuit board where DSP and control function chips are found. It is here that the actual interface between



Here you have a picture of my monitoring station with the RX320. Can you spot it? I really don't need to have the radio out in the open as there's no advantage doing so. Frankly, the radio can be placed anywhere, as long as it can be connected to a computer. This can be done either directly via a serial cable, or indirectly using a wireless connection.

the computer and the radio takes place, as well as where the signal you hear is detected and amplified for audio output.

Getting Started

If you have a reasonable understanding of how personal computers and radios work, you'll have no trouble setting up the RX320. In fact, it's so simple that I was listening to local radio stations on the broadcast band in under 10 minutes without reading the installation guide—and that *included* the time it took to install the software.

If you're a little less sure of yourself, you can turn to the manual for instruction. It is a slim document, but complete and to the point. Each step is laid out in easy-to-understand terms and is fully illustrated. The level of writing used is for someone who is new to either computers or radios.

Using The RX320

So what makes the operation of the RX320 so special, and why do people get so excited about it? The answer very simply lies in two features: its stability in holding onto a signal and low noise floor.

I've been using the RX320 at my own monitoring station for over a year now, and I can say that if I leave the RX320 on a single frequency, it will remain there for

one week without drifting. I proved this by leaving the radio on 24 hours a day for seven straight days on WWV at 10 MHz, and it was still on frequency at the end of that test.

As I said, the noise levels are extremely low, particularly when using a good quiet antenna system. I use the Alpha Delta DXSWL, which is a 60-foot sloper, and a G5RV. The Alpha Delta works best for me at lower frequencies, particularly on the broadcast and tropical bands. I like to do some BCB-DX work and find that the RX320 is excellent at pulling out weak signals among the noise of nighttime skip and flutter. For shortwave, even distant and weak signals are very easily detected, and I find I can monitor most using a wider selectivity bandwidth than I do with other receivers under the same conditions.

The complaint I have (and other people share this) is with the radio's performance between 100 to 530 kHz. In order to prevent overloading of that range of frequencies by strong local broadcast band stations, Ten-Tec put in a high pass choke on the radio's RF circuitry. Unfortunately this nearly eliminates all but the strongest low-frequency signals from getting through.

On a more positive note, one feature I find particularly useful is its two outputs: line and speaker. I have the box hooked up to an external amplified speaker

“Imagine being able to go to any room in your home with a laptop computer, or even out into the back yard, and be able to control your monitoring radio via a wireless home network—and listen to it, too!”

(which is a bit of overkill as the 1-watt output is enough to drive a good speaker by itself). I have the lineout hooked up to the soundcard on my computer through a suitable cable.

Using that setup with the appropriate software, I'm able to decode digital signals (CW, RTTY, PACTOR, and others) using the many decoding packages available, some of which I've written about in this column. What is important to understand is that I can perform that decoding while operating the RX320 and listening to the signal through my speaker. What is even better is that the line out and speaker levels are *individually* controlled, with the result that my success at decoding has increased considerably.

The other feature I find extremely useful is the adjustable tuning rate. You can still tune in multiples such as 100 Hz, 1 kHz, 5 kHz, or 10 kHz, to give a few examples, but on many of the available software packages, you can adjust that to suit your tuning needs. In fact you can tune the RX320 in 1-Hz increments with absolute ease. Now, combine that with 300-Hz selectivity and you can begin to see just how fine a cut you can make across a signal. Such precision may not seem necessary today, but with new digital modes on the horizon it will certainly become so.

In addition to all the above, you also have such important features as adjustable squelch, dual (local and UTC) time display, AGC, frequency offset control, dual VFOs, and dual S-meter output showing instant and averaged readings.

So, despite its small size, the RX320 is an excellent radio for anyone serious about their radio monitoring and who understands the potential of a computer-controlled radio.

Next Month

I'll be continuing my examination of the Ten-Tec RX320, looking next at the circuitry and programming functions. I'll provide a detailed overview of the chips used and how an RF signal is processed within them. I'll also introduce you to the

basics of control code program and even get you started with some programming in BASIC.

You may be surprised to find that, while the circuitry is relatively sophisticated, it's not that hard to understand once you sit down and take a look at how each part fits together. Even the software that controls the radio is not all that difficult to piece together. You may not be able to write your own control programs after reading the column, but you certainly will have a greater understanding of what takes place when you use someone else's.

If you want, you can get a head start on next month's column by going to the Ten-Tec technical website for this (<http://www.rfsquared.com/rx320/rx320main.htm>). The site has some excellent detailed information about the circuitry and command codes you can download.

One thing that I should mention here is that while I am focusing on one product, the techniques that I will be discussing are fundamental to nearly all computer-controlled radios on the market today. I'll be covering other radio makes and models in future columns, including scanners and specialty radios. So don't worry, nobody's going to be left out.

More importantly, though, we're actually laying the foundation of information that you will need to control your radio over a local area network. So this column is only the beginning of an interesting journey that will take place over the next few months.

If you want, you can e-mail me with any questions or comments at carm_popcomm@hotmail.com. As mentioned before, I cannot answer general questions on computers, but will be more than happy to help you with any issues raised in the columns. You can also write me at "Computer-Assisted Radio Monitoring," PMB 121 1623 Military Rd., Niagara Falls, NY 14304-1745.

I'd also like to request any pictures you may have of your own computer-assisted monitoring station or stories about how you have built and run it. Don't worry about your writing, as I'm more than happy to help you.

And, please, take a moment to write a letter or send a even a quick note to our armed services men and women in Iraq. It doesn't matter if you send it to someone you know or just mark it "Any Service Person." Just let them know that their efforts are appreciated.

Until next month, may you have many good radio monitoring sessions! ■

March Survey Questions

I use solar or other alternative energy to power my radio equipment:

- Yes1
No2

I would use solar or other alternative energy for my radio equipment if – (mark all that are appropriate):

- It were less expensive3
Were more readily available locally ..4
Were easier to install5
I knew more about it6
I had the room for the panels and storage batteries7

My entire home is off the grid

- Yes8
No9
Maybe someday10

OK, I don't use solar or wind power, but I've got one or more portable power packs:

- Yes11
No12

I don't have any portable power because:

- It's too expensive13
I don't have the room to charge and store the unit14
I don't need it15

My portable power equipment includes an AC inverter:

- Yes16
No17
Not sure18

I own and use a portable gas-operated generator when there's a power failure:

- Yes19
No20
Sometimes – it depends on how long I think the outage will last21

My radio's rechargeable batteries are always charged and ready to go; I never have to rely on alkaline batteries in an emergency.

- Yes22
No23
Not sure24

How GMRS And FRS Radio Helped In Last Fall's California Wildfires, Plus An Exciting New SWL, FRS, MURS, And CB DX Registry

Southern California's CREST REACT Team President, Ed Greany, KB6DOL/KAD6554, reports on assistance provided to the American Red Cross by his team during the historic, devastating California wildfires this past fall season. CREST REACT coordinated with COMPUPAC REACT, San Gabriel Valley REACT, Saddleback REACT, and Seacoast REACT; all component teams of the massive Southern California REACT Council. REACT has a healthy and extremely active group of operations in this part of the country, and their call to action during this crisis demonstrates their high level of readiness and service. Here is Ed's report:

I was the person coordinating efforts by REACT on both GMRS and ham radio to assist the Red Cross Chapter in San Bernardino with communications to their Shelter at Norton International Airfield. We REACTers worked side by side with the Citrus Belt Amateur Radio Club in a mutual communications partnership. After awhile, it worked very well.

We were first summoned by Chapter Ops personnel with a frantic plea. They had no communications with the Shelter. We had some "misunderstandings" at the Ontario operation with four shelters when the RACES group refused to allow any communicators other than ham radio operators to assist. While CREST REACT is an ARRL-affiliated club, not all of our members are hams, but many are licensed GMRS operators and *all* are excellent radio communicators. We primarily use GMRS and have a sophisticated repeater system backing us. Upon explaining to Chapter personnel that we use GMRS and ham radio but not either one exclusively, we were told they didn't care—they just need communications.

Apparently, the amateur 2-meter radios with a repeater in Crestline were not able to communicate to Chapter due to being inside a large metal hangar being used as a shelter at the airbase. Simplex was out of the question due to the distance involved.

With that, we immediately put the call out and in a short period of time, had a GMRS base station set up in the Chapter Radio Room and also at the Shelter using the Heaps Peak Repeater in Big Bear. Even though Edison turned off power to the mountain, our repeater maintained continuous duty with its backup generator. We also installed our portable GMRS repeater at the Chapter just for a little communications insurance. After several days' duty it never was required, but it was comforting knowing it was right there ready at the flip of a switch.

FRS was also used both in the Shelter and in the Chapter with our Radio Room monitoring FRS for calls. This is the first time I have seen FRS used in a professional disaster situation, and it worked excellently.

In another situation, members of CREST REACT may be been responsible for interrupting an arsonist starting a fire. We captured his license plate number as his car sped away and found the bottle of gasoline with a sock to show the Sheriff when he was summoned.

REACT members were given a "high five" from the Red Cross for our communications success and are welcome back with open arms, ham tickets or not. Ham Radio often receives credit for efforts of amateurs in disaster situations, but there are many others who volunteer (*particularly licensed GMRS operators—A.D.*) and never seem to be noticed by the public eye.

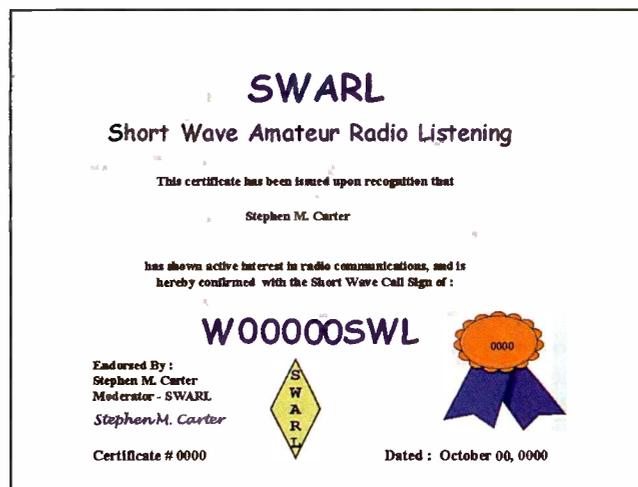
Ed Greany, CREST 25, operating GMRS radio during Old Fire at Red Cross Chapter in San Bernardino, California, on October 28, 2003. (Photo courtesy of Ed Greany)



Excellent report, Ed, and we here at *Pop'Comm* are always working to promote visibility of Personal Radio Service operators, especially GMRS licensees, experienced CB radio monitors, and sideband net members, in emergency operations. Naturally, joining a local REACT team is one very good way for our readers to become personally involved in volunteer emergency and disaster communications response.

A New Resource For CB And SWL DX Hobbyists

Has anyone noticed that CB radio's SSB Network organization seems to have gone AWOL, over-the-hill? During the past year or so, I have received reports from readers that membership inquiries to the venerable SSB organization have been returned by the Post Office as undeliverable. I will note that if the folks at SSB had indeed been planning to shut down the institution, they sent us no press releases or announcements giving even a clue as to their future intentions.



Mockup of an SWARL callsign certificate. (Courtesy of SWARL)

Regardless of whether the SSB Network organization has or has not faded into history, those of us who had been issued SSB Network callsigns will perpetually hold title to those calls. But for those of us who had never taken the opportunity to acquire one of these coveted callsigns, the door appears to be forever closed. There are several offshore CB radio DX groups that will issue members callsigns, of course (see the January 2004 "On-The-Go Radio" column). But for those of us in North America, we now have, much closer to home, another source of not only CB callsigns, but registered SWL (shortwave listener), scanner monitor, and mediumwave DXer (MWDX) callsigns, as well as FRS and MURS operator calls.

A few years back, Steve Carter, VE7HB, VE7001SWL, and VE7001SSB (among other calls), had created a radio hobbyist group known as SWARL, for the Short Wave Amateur Radio Listeners. SWARL operates and maintains an Internet-based hobby and personal radio callsign registry service and an e-mail bulletin board. Steve is based in British Columbia, Canada, and his group uses (International Telecommunications Union) ITU-format-based construction to issue registry callsigns. It is evident that SWARL has taken care that their calls do not duplicate any existing format *specific* to the various officially licensed radio services worldwide.

Registered callsigns are available free of charge at this point in time by e-mail. Just write to swarl@shaw.ca with your full name, city, state or province, and country, and indicate which type or types of call you would like. Service-specific calls are currently available for SSB CB radio, SWL, scanner monitor, and MWDXer, as well as for FRS and MURS stations. A member can thus have up to five different certificates with related callsigns. SWARL will issue your new call (or calls!) on a handsome and colorful certificate, via e-mail, in the form of a JPEG graphics file. Or, if you prefer, SWARL will send you a high-quality printed hard copy certificate for \$3 U.S., to help cover printing and mailing costs. E-mail SWARL at the above address, or visit their website at www.members.shaw.ca/swarl.

The FCC Finally Announces 3-G Band Frequency Allocation

They've only been talking about it for some five years now. In a rulemaking

"Registered callsigns are available free of charge at this point in time by e-mail. Just write to swarl@shaw.ca with your full name, city, state or province, and country, and indicate which type or types of call you would like."

action announced near press time, WT 02-353 (FCC 03-251), the FCC has finally moved to open up spectrum for the "next" generation of wireless telephones and broadband wireless data services. Our current 800-MHz cellular radio bands now support both "first"-generation (AMPS) cellular phone service and second-generation digital wireless phone services (TDMA and CDMA), along with several different packet data services. Additionally, our present-day PCS bands at 1.9 GHz support second-generation wireless phone services (TDMA, CDMA, and GSM) and several different packet data service formats as well.

As expected, the new U.S. third-generation "3-G" wireless phone and data services bands will be placed within the international ITU 3-G band plans, in paired bands at 1710 to 1755 MHz and 2110 to 2155 MHz. These paired bands will be subdivided into five different subbands, labeled A, B, C, D, and E. Subbands A and B will each have 10-MHz bandwidth slices in each paired band (total of 20 MHz of spectrum). Subbands C and D will each have 5-MHz bandwidth slices in each paired band (total of 10 MHz of spectrum). Subband E will have 15-MHz bandwidth in each paired band (total of 30 MHz of spectrum). The FCC rules for this new service are found in Part 27.

Licenses in these bands will be issued for various regions of the country: There will be no nationwide licenses. And these licenses will be awarded by means of the FCC's dreaded auction process, of course. In the case of the 1.7-GHz subbands, ensconced military communications, navigation, and electronic warfare systems already occupy much of this spectrum. These incumbent military users will be moved to other frequency bands, the expense of which is expected to be paid by auction revenues or other fees to be paid by the new 3-G licensees. Congress is still trying to finalize these details as this is being written.

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Here's Deb, owner and moderator of the Free Lance Driver trucking and CB radio group. (Photo courtesy of Deb)



The FCC says that it will not mandate any specific transmission modes ("technologies") for these bands, as long as licensees adopt modes within the ITU 3-G group of technologies standards. For more information on these newly allocated bands, visit the FCC website at wireless.fcc.gov/auctions/data/maps.html.

Free Lance Driver!

Without a doubt, a good number of *Pop'Comm* readers are over-the-road truckers and other *road warriors*, such as regional sales reps and field maintenance personnel who spend day after day on the open road. It comes as no surprise to hear that almost every big rig trucker is equipped with CB radio, and most other types of road warriors worth their fleet fuel cards also carry mobile CB radio on board.

Now long-haul drivers and everyone else interested in the use of CB radio on the road have an excellent Internet resource to turn to: Look for the *Free Lance Driver* group on YahooGroups and on MSN Groups. This Internet and e-mail forum is owned and operated by one Ms. Deb, who has been an over-the-road trucker herself for a number of years. Deb is now at home operating her Free Lance Driver Internet group, continuously posting news and important commercial services for the benefit of those on the road and for others participating in the group. Deb talks about Free Lance Driver for "On-The-Go Radio." She tells us:

Welcome to one of the many "Family Friendly" groups in the trucking industry. My husband and I are both drivers and know what it's like out there. Although our kids are grown and most have their own families, we didn't want to leave out the families and friends who miss us while we're on the road.

There is a lot to do and see here, and your participation (not required) in the group is accepted greatly. I try to provide what may be of interest to all and am open to all comments and suggestions.

This group was started in June of 2002 and has grown. There is a yahoo group also connected to the MSN group that also has optional membership. The only difference between that one and this one is that there you may elect to receive "Daily Digest," rather than individual or no e-mail. I do suggest that if you opt to join at Yahoo, you may want the "Daily Digest" option, as mailings are sometimes frequent in a 24-hour period. You will receive the same ones as you do here except the Shopper's Newsletter will only be posted to the MSN group. There is a sign-up section to receive that as well. It will contain sales and specials for several businesses that are advertisers there in the MSN group. There are over 400 of them at present time.

Again, welcome and enjoy the many pages (some are hidden; you must click on the listings to the left side of your screen and the hidden ones will appear as you go through the list). There is a Special Holiday Shopping section that is updated as it comes in on a regular basis. The Game Arcade section is active. And don't forget to check the message board often as things are updated as far as news, rules and regs, equipment updates, etc.

Wishing you the Best of Safe Travel!

Free Lance Driver is almost a dream come true for me. I am a driver who has decided to hang up the wheel for now. Free Lance Driver is all about Drivers and those associated in the industry. Since I know what it's like, I want to provide as much as I can without charging anything. I basically want all I can get at little or no cost being these drivers have to pay for a lot more than folks would imagine.

So to keep economy going and costs down for drivers, I spend countless hours trying to provide for everyone involved a place where they can find almost anything in one place for free. I do not get paid for the hours I spend here but do try to make a dollar on some of the items that are sold. Not every place on there is a paycheck for me but I still want to provide the information and services to all that find me.

Radios are a big part of the trucking industry. Whatever form of radio they choose, it keeps them going on that long road and helps vent frustrations and get directions. Humor is a big key on that radio because it helps pass the time away. I know there have been controversies in the past about radios being unsafe while driving, but in all actuality, it keeps them alert, awake, in good spirits, and lets them communicate to someone outside that blasted cab after spending hours behind the wheel.

We all know that it comes in handy for emergencies, but if you are close enough, you are also able to communicate with loved ones and friends, unless you are lucky to pick up a skip. The CB has many advantages and doesn't cost anything to use or require a license. Granted a ham radio gets you further at times but the equipment is costly.

Whichever radio they use though, they use it to communicate to the outside world while they are stuck in that cab for hours at a time. This is one of the most useful and economical tools they could provide for drivers. It keeps them going to keep the wheels rolling and in as safe a manner as possible.

There are only two downfalls: the start-up costs for the radio and the few people who opt to use it as a weapon or a sex tool. Outside of that, the radio is a very important tool to drivers today.

Well said, Deb! All Channel 19 CB radio operators, truckers, and other road warriors should be sure to check out the Free Lance Driver group webpage and sign up for the group's e-mail list forum. Go to <http://groups.msn.com/FreeLanceDriver> or <http://groups.yahoo.com/group/FreeLanceDriver>.

Handles and a lot of the old truck driver CB lingo from past days are gone, some of it thankfully. Channel 19 is as alive as ever among truckers mostly speaking in plain language and mostly using whatever name is painted on the side of their trailers being hauled, for identification. You will still hear the occasional "Breaker one-nine!" Maybe I'm stuck in the 1970s, but that call always beckons me to the open road. It is sweet music to my ears. Please keep up your excellent work, Deb.

Stay Tuned

Keep watching future issues of *Pop'Comm* for more CB radio news, as well as the information you need for GMRS, FRS, and MURS! Also look right here for further developments in 3-G technology and other wireless phone and data technology evolution over the next few years.

In the meantime, will spring ever get here? Surely, but none too soon, I am sure you will agree! ■

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.

Then watch mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR (FEC) turn into exciting text messages as they scroll across an easy-to-read LCD display.

You'll read interesting commercial, military, diplomatic, weather, aeronautical, maritime and amateur traffic . . .

Eavesdrop on the World

Eavesdrop on the world's press agencies transmitting unedited late breaking news in English -- China News in Taiwan, Tanjug Press in Serbia, Iraqi News in Iraq -- all on RTTY.

Copy RTTY weather stations from Antarctica, Mali, Congo and many others. Listen to military RTTY passing traffic from Panama, Cyprus, Peru, Capetown, London and others. Listen to hams, diplomatic, research, commercial and maritime RTTY.

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

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

Super Active Antenna

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

Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz-30 MHz.

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

Switch two receivers and auxiliary or active antenna. 6x3x5 inches. Remote has 54 inch whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, \$14.95.

MFJ-1024 \$139⁹⁵

Indoor Active Antenna

Rival outside long wires with this tuned indoor active antenna.

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

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

MFJ-1020B \$79⁹⁵

Compact Active Antenna

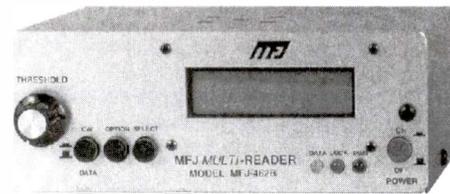
Plug this compact MFJ

all band active antenna into your receiver and you'll hear strong, clear signals from all over the world. 300 KHz-200 MHz including low, medium, shortwave and VHF bands.

Detachable 20 inch telescoping antenna. 9 volt battery or 110 VAC MFJ-1312B, \$14.95. 3 1/2 x 1 1/4 x 4 in.



MFJ-1022 \$49⁹⁵



-- all over the world -- Australia, Russia, Japan, etc. MFJ-462B \$179⁹⁵

Printer Monitors 24 Hours a Day

MFJ's exclusive TelePrinterPort™ lets you monitor any station 24 hours a day by printing transmissions on an Epson compatible printer.

Printer cable, MFJ-5412, \$9.95. MFJ MessageSaver™

You can save several pages of text in an 8K of memory for re-reading or later review.

High Performance Modem

MFJ's high performance PhaseLockLoop™ modem consistently gives you solid copy -- even with weak signals buried in noise. New threshold control minimizes noise interference --

Eliminate power line noise!



MFJ-1026 \$179⁹⁵

New! Completely eliminate power line noise, lightning crashes and interference before they get into your receiver! Works on all modes -- SSB, AM, CW, FM, data -- and on all shortwave bands. Plugs between main external antenna and receiver. Built-in active antenna picks up power line noise and cancels undesirable noise from main antenna. Also makes excellent active antenna.

MFJ Antenna Matcher



MFJ-959B \$99⁹⁵

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

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Select 2 antennas and 2 receivers. 1.6-30 MHz. 9x2x6 in. Use 9-18 VDC or 110 VAC with MFJ-1312, \$14.95.

MFJ-752C \$99⁹⁵

Dual Tunable Audio Filter

Two separately tunable filters let you peak desired signals and notch out interference at the same time. You can peak, notch, low or high pass signals to eliminate heterodynes and interference. Plugs between radio and speaker or phones. 10x2x6 in.

High-Gain Preselector

MFJ-1045C \$99⁹⁵

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

CW, RTTY, ASCII Interface



MFJ-1214PC \$149⁹⁵

Use your computer and radio to receive and display brilliant full color FAX news photos and incredible WeFAX weather maps. Also RTTY, ASCII and Morse code. Frequency manager lists over 900 FAX stations. Auto picture saver.

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

High-Q Passive Preselector

High-Q passive LC preselector boosts your

favorite stations while rejecting images, intermod and phantom signals. 1.5-30 MHz. Preselector bypass and receiver grounded positions. Tiny 2x3x4 inches.

Super Passive Preselector

MFJ-1046 \$99⁹⁵

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

Easy-Up Antennas

How to build and put up inexpensive, fully tested wire antennas using readily available parts that'll bring signals in like you've never heard before. Antennas from 100 KHz to 1000 MHz.



MFJ-38 \$16⁹⁵

greatly improves copy on CW and other modes.

Easy to use, tune and read

It's easy to use -- just push a button to select modes and features from a menu.

It's easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

It's easy to read -- the 2 line 16 character LCD display with contrast adjustment is mounted on a brushed aluminum front panel for easy reading.

Copies most standard shifts and speeds. Has MFJ AutoTrak™ Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312B AC adapter, \$14.95. 5 1/4 x W x 2 1/2 H x 5 1/4 D inches.

No Matter What™ One Year Warranty

You get MFJ's famous one year No Matter What™ limited warranty. That means we will repair or replace your MFJ MultiReader™ (at our option) no matter what for one full year.

Try it for 30 Days

If you're not completely satisfied, simply return it within 30 days for a prompt and courteous refund (less shipping). Customer must retain dated proof-of-purchase direct from MFJ.

MFJ Antenna Switches



MFJ-1704 heavy duty antenna switch lets you select 4 antennas or ground them for static and lightning protection. Unused antennas automatically grounded. Replaceable lightning surge protection. Good to 500 MHz. 60 dB isolation at 30 MHz. MFJ-1702C for 2 antennas.

World Band Radio Kit

Build this regenerative shortwave receiver kit and listen to signals from all over the world with just a 10 foot wire antenna. Has RF stage, vernier reduction drive, smooth regeneration, five bands.

21 Band World Receiver

MFJ's MFJ-8121 new 21 Band World Receiver lets you travel the world from your armchair! Listen to BBC news from London, live music from Paris, soccer matches from Germany and more! Covers 21 bands including FM, Medium Wave, Long Wave and Shortwave. Sony® integrated circuit from Japan, multicolored tuning dial, built-in telescopic antenna, permanent silkscreened world time zone, frequency charts on back panel. Carrying handle. Operates on four "AA"s. Super compact size!



MFJ-8100K \$69⁹⁵ kit MFJ-8100W \$89⁹⁵ wired



MFJ-8121 \$39⁹⁵

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world band

tuning tips *your monthly international radio map*

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

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

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	6180	Radio Nacional, Brazil	PP	0300	11725	RFE/RL, via Morocco	
0000	21615	Radio Australia, via Northern Marianas		0300	4845	Radio Mauritanie, Mauritania	AA
0000	12025	Radio Sweden, via Germany	Swedish	0300	11920	RTV Marocaine, Morocco	AA
0030	6185	Radio Educacion, Mexico	SS	0300	9840	RAI Int., Italy	SS
0030	17710	Radio France Int., via Japan	FF	0300	11585	Kol Israel	
0030	17680	Voz Cristiana, Chile	SS	0300	6150	VOIRI, Iran	unid
0030	4052	Radio Verdad, Guatemala	SS	0300	3340	Radio Misiones Int/HRMI, Honduras	SS/EE
0030	6215	Radio Baluarte, Argentina	SS	0300	9400	Radio Bulgaria	
0050	11800	RAI Int., Italy		0300	4985	Radio Brazil Central	PP
0100	17670	VOA Relay, Thailand	unid	0300	4800	Radio Lesotho	unid
0100	5930	Radio Slovakia Int.		0300	3345	Channel Africa, South Africa	
0100	4780	Onda Musical, Dominican Republic	SS	0320	11885	Voice of Turkey	TT
0130	15180	Voice of Korea, North Korea		0330	9770	Channel Africa	
0130	9575	Medi-Un, Morocco	AA	0330	7100	Voice of the Broad Masses, Eritrea	Amharic
0130	6155	Radio Telefis Eireann, Ireland, via England		0330	7225	Trans World Radio, Swaziland	Swahili
0130	11725	Radio Cairo, Egypt		0400	4830	Radio Litoral, Honduras	SS
0130	7185	Radio Sawa, via Morocco	AA	0400	6140	Radio Melodia, Colombia	SS
0130	5030	University Network, Costa Rica		0400	5500	Voice of the Tigray Revolution, Ethiopia	unid
0130	3250	Radio Luz y Vida, Honduras	SS	0400	4950	Radio Nacional, Angola	PP
0130	6020	Voice of Justice, via VOIRI, Iran		0430	5905	Radio Ukraine Int	
0130	4965	Christian Voice, Zambia		0430	9460	Voice of Turkey	TT
0200	4830	Radio Tachira, Venezuela	SS	0500	11710	Channel Africa, South Africa	
0200	9560	Radio Korea Int., South Korea, via Canada		0500	6250	Radio Nacional Malabo, Equatorial Guinea	SS
0200	4800	Radio Buenas Nuevas, Guatemala	SS	0530	15340	Radio New Zealand	
0200	4815	Radio Transcontinental/XERTA, Mexico	SS	0600	13630	Radio Japan/NHK	
0200	4780	Radio Coatin, Guatemala	SS	0600	7210	Rdf. du Benin	FF
0200	6020	Radio Victoria, Peru	SS	0700	13760	VOA Relay, Northern Marianas	
0200	3360	Radio Exterior de Espana, Spain, via Costa Rica	SS	0700	6030	Sudwestrundfunk, Germany	GG
0230	9720	RTT Tunisienne, Tunisia	AA	0700	11805	Radio Georgia, Georgia Rep/	GG
0230	9965	Voice of Russia, via Armenia	SS	0800	5985	Radio Vlaanderen Int., Belgium, via Germany	Flemish
0230	3320	Radio Sondergrense, South Africa	Afrikaans	0800	5045	Radio Guaruja Paulista, Bolivia	PP
0230	15075	All India Radio	unid	0800	11675	Radio New Zealand	
0230	9775	YLE/Radio Finland	Finnish	0800	11765	KNLS, Alaska	
0230	7180	Voice of Russia, via Moldova		0830	4960	Radio Cima Cien, Dominican Republic	SS
0230	6115	Radio Tirana, Albania		0900	4975	Radio del Pacifico, Peru	SS
0250	7305	Vatican Radio		0900	9605	BBC via Japan	
0300	4910	ZNBC/Radio Zambia	unid	0900	5025	Radio Rebelde, Cuba	SS
0300	4976	Radio Uganda		0900	4919	Radio Quito, Ecuador	SS
0300	3200	Trans World Radio, Swaziland	unid	0900	4765	Radio Rural, Brazil	PP
0300	3255	BBC via South Africa		0900	6060	Radio Nacional, Argentina	SS
0300	4960	VOA Relay, Sao Tome		0930	4940	Radio Amazonas, Venezuela	SS
				0930	6010	HCJB, Ecuador	GG

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0930	5040	La Voz de Upano, Ecuador	SS	1430	6155	Mediacorp Radio, Singapore	
0930	4805	Radio Difusora do Amazons, Brazil	PP	1430	9655	Deutsche Welle, Germany, via Rwanda	GG
0930	6135	Radio Santa Cruz, Bolivia	SS	1430	21660	BBC Relay, Cyprus	
0930	3310	Radio Mosoj Chaski, Bolivia	Quechua	1430	21685	Radio France Int./, via French Guiana	FF
0945	4992	Radio Ancash, Peru	SS	1500	9635	VOIRI, Iran	
1000	6195	BBC Relay, Singapore		1500	9645	Vatican Radio	
1000	3279	La Voz del Napo, Ecuador	SS	1530	13665	Voice International, Australia	
1000	4781	Radio Oriental, Ecuador	SS	1600	13675	UAE Radio, Dubai	
1000	5952	Radio Pio Doce, Bolivia	SS	1600	11550	Radio Taiwan Int/CBS	
1000	5945	Heilongjiang PBS, Manchuria, China	CC	1630	11690	Radio Jordan	
1000	6160	CKZN, Newfoundland, Canada		1630	15420	BBC Relay, Seychelles	
1000	6035	La Voz del Guaviare, Colombia	SS	1630	11940	Radio Romania Int.	
1000	6105	Radio Panamericana, Bolivia	SS	1830	9425	Voice of Greece	Greek
1000	12085	Voice of Mongolia		1900	11690	RFE/RL via Sri Lanka	unid
1030	5487	La Reina de la Selva, Peru	SS	1900	11720	Radio Filipinas, Philippines	
1030	9785	Radio Netherlands, via Bonaire, Neth. Antilles		1900	11620	All India Radio	
1030	4960	Radio Federacion, Ecuador	SS	1900	12050	Radio Cairo, Egypt	AA
1100	7445	Radio Taiwan Int.		1900	11785	Radio Ndeke Luka, Cent. Af. Rep., via England	
1100	5040	Radio Myanmar (Burma)	Burmese				
1100	3325	Radio Maya de Barillas, Guatemala	SS	1915	11605	Kol Israel	FF
1130	15390	HCJB, Australia		1930	12010	Voice of Russia	FF
1130	15145	RFE/RL, Germany	RR	1930	15120	Voice of Nigeria	
1130	4870	Radio Republik Indonesia - Wamena	II	1930	11990	Radio Kuwait	
1130	4754	Radio Republik Indonesia - Makassar	II	1930	9960	Voice of Armenia	
1130	4820	Xizang PBS, Tibet, China	CC	1930	13605	All India Radio	
1130	6937	Yunan PBS, China	CC	1940	11820	BSKSA, Saudi Arabia	AA
1130	5010	Radio Cristal, Dominican Republic	SS	2000	15205	Deutsche Welle Relay, Rwanda	
1130	13730	Radio Austria Int.		2000	15220	Swiss Radio Int., via Germany	
1200	7295	Radio Malaysia	Malay	2000	15265	Radio New Zealand	
1200	15205	RFE/RL, via Greece	RR	2000	15445	VOA Relay, Morocco	
1200	7280	Voice of the Strait, China	CC	2000	9895	Radio Netherlands	
1200	3235	Radio West New Britain, Papua New Guinea	Pidgin	2000	11955	Radio France Int., via Gabon	FF
1200	5020	Solomon Is. Broadcasting Corp.		2000	15150	Voice of Indonesia	
1200	15290	Radio Jordan		2000	15515	Radio Free Asia, via Northern Marianas	CC
1200	9525	Radio Polonia, Poland		2030	17850	Radio Exterior de Espana, Spain	SS
1230	6165	Voice of Vietnam	VV	2030	11860	RDP Int., Portugal	PP
1230	7320	Magadan Radio, Russia	RR	2030	15345	RTV Marocaine, Morocco	AA
1230	6045	Radio Universidad/XEXQ, Mexico	SS	2030	9990	Radio Cairo, Egypt	FF
1230	11500	Voice of Russia, via Tajikistan	Hindi	2100	12035	Radio Exterior de Espana, Spain	AA
1230	6020	Radio Australia		2100	6050	Radio Nigeria	
1230	9810	Radio Thailand		2100	15505	Radio Kuwait	AA
1230	5005	Radio Nepal	Nepalese	2100	13650	Radio Canada Int	
1300	13795	RFE/RL via Thailand	unid	2100	11760	Radio Havana Cuba	
1300	11990	VOA via Russia	CC	2100	12095	BBC Relay, Ascension Is.	
1300	7455	Trans World Radio/KTWR, Guam	CC	2130	7380	Voice of Biafra Int., via South Africa	
1300	9930	KWHR, Hawaii		2130	11905	Radio Tashkent, Uzbekistan	
1300	15575	BBC Relay, Cyprus		2200	5775	IRRS, Italy	
1300	9820	All India Radio, Panaji (Goa)	unid	2230	11335	Voice of Korea, North Korea	SS
1300	11730	Voice of Greece	Greek	2230	17835	Radio Imperial, El Salvador	SS
1300	9870	China Radio Int.	RR	2230	11635	China Music Jammer	
1300	15545	VOIRI, Iran	AA	2230	9890	VOA Relay, Philippines	
1300	15735	Norwegian Radio, Norway	NN	2300	11975	China Radio Int., via Mali	CC
1300	21820	Radio Australia		2300	21740	Radio Australia	
1300	15385	Adventist World Radio, via UAE	EE/CC	2300	11765	Radio Tupi, Brazil	PP
1400	21600	BSKSA, Saudi Arabia	FF	2330	7285	Croatian Radio, via Germany	Croatian
1400	15065	Radio Pakistan	Urdu	2330	5030	RTV Burkina, Burkina Faso	FF
1400	21480	Radio Netherlands Relay, Madagascar	unid	2330	11830	Radio Anhanguera, Brazil	PP
1400	17620	Radio France Int.		2330	9875	Radio Vilnius, Lithuania	
1414	9387	Radio Pakistan	RR				

radios & high-tech gear

review of new, interesting, and useful communications products

New Repeater MapBook!

Artsci Publications' *Repeater MapBook and Repeater Directory*, 11th Edition has been completely updated and is ready for shipping. Artsci said, "We have the largest, most accurate database available anywhere."

Also included in the book are NOAA weather frequencies for the United States. Billed as "a perfect traveling companion," the *MapBook* contains locations of many hundreds of open repeaters throughout the United States, Canada, and Mexico. Detailed maps show all highways and major cities in each state. Each state has a table of listings of every known open repeater in the state for 10, 6, and 2 meters as well as for 220 and 440 MHz and 1.2 GHz.

The *MapBook* sells for \$14.95 from Artsci, Inc. You can contact them at PO Box 1428, Burbank, CA 91507; Phone: 818-843-2345; Web: www.artscipub.com/mapbook/.

Klingenfuss' 2004 Super Frequency List On CD-ROM

It's new and completely updated: The *Klingenfuss CD* that monitors have come to know and trust. The utility database contains 10,707 special frequencies from their international best-seller 2004 Guide to Utility Radio Stations. There are also 930 abbreviations and 19,523 formerly active frequencies, all on one compact disk for PCs with Windows. Not only can you browse through all that data in milliseconds, but you can also search in next to no time for specific frequencies, countries, stations, languages, callsigns, and time—even combined! It can't get faster than this!

The 2004 CD also includes the latest version (October 2003) of the superb digital data decoding shareware program Radioraft, by French radio amateur F6FLT, and 252 new WAVE-COM digital data decoder screenshots in original format with full colors. Among these are many stations of the International Committee of the Red Cross in the Afghanistan and Iraq war zones. This unequalled product is based on 35 years of experience in the radio monitoring and publishing fields!

For more information on the new *Klingenfuss 2004 Super Frequency List On CD-ROM*, contact the company at Klingenfuss Publications, Klingenfuss Radio Monitoring, Hagenloher Str. 14, D-72070 Tuebingen, Germany; Phone: ++49 7071 62830; Fax ++49 7071 600849; Web: www.klingenfuss.org; E-mail: info@klingenfuss.org. Please tell Jorge that you read about it in *Pop'Comm*!

Cobra Electronics Announces Breakthrough Line Of Advanced Mobile Navigation Systems

Cobra Electronics just announced the introduction of its breakthrough portable mobile navigation systems, differenti-



Cobra's new high-tech vehicle navigation systems are priced at \$999.95 and \$1499.95

ated by industry-first features to benefit drivers looking for time-saving solutions to help them navigate anywhere in North America.

The Cobra SKYNAV 2000 and 3000 models are packed with industry-leading features that eliminate the need to download maps from computers, making them easy to use, easy to read and easy to transport from car to car.

"Cobra's breakthrough line is distinguished by its advanced features and ease of use," said Tony Mirabelli, senior vice president of marketing and sales for Cobra Electronics. "Our 'Plug and Go' functionality allows users to forget about downloading maps and simply beam in an address and be on their way. The devices also feature a large crystal clear, full color screen, combined with a sophisticated look that takes cues from today's vehicle interiors."

The systems provide turn-by-turn directions and clear voice guidance to a specific address or almost two million points of interest including banks, hotels, restaurants and gas stations. The Cobra SKYNAV 3000 allows users to beam an address directly to the unit from a Palm® or Pocket PC® PDA with an infrared port, eliminating the need to key in an address – an industry first.

Powered by Cobra's proprietary A.S.A.P. IITM (Accelerated Satellite Acquisition Protocol) technology, the units provide faster acquisition and uninterrupted navigation, even in urban canyons or dense foliage. In addition, the Cobra SKYNAV 3000 uses a built-in gyroscope that continues to track the driver's position on the map even if satellite signals are lost in tunnels, underpasses or other obstructions.

While many competing systems require the user to spend time installing CDs, on a computer or downloading maps, Cobra's units come conveniently loaded with North American street-level maps. The SKYNAV 3000 model includes a North American street-level detail map of the entire 48 contiguous

states and selected Canadian cities on board the system's 20GB disk drive. The SKYNAV 2000 model comes with major U.S. interstates and one detailed street level regional map (consumers can select from 20 regions) and additional detailed regional maps can be easily purchased by phone or online and instantly accessed on the unit without the need of a computer.

Both units feature the portable navigation industry's largest screen, a 5.2-inch high-resolution, ultra-bright color display which is easy to see during the day or night. Drivers can easily select navigation modes or access the systems' other features by using backlit soft keys. The systems are also lightweight, making them easy to transfer from car to car or to take along on business or personal travel.

"Cobra has a rich heritage in automotive applications and more recently, GPS," said Tony Mirabelli, senior vice president of marketing and sales for Cobra Electronics. "Our entry into mobile navigation is powered by leading technology and features that will position us in the marketplace as a company that will set the pace for future navigation systems."

The products will be available at consumer electronics retailers in the second quarter of 2004. Key features of the Cobra 3000 Mobile Navigation System include:

Portable "plug and go" system featuring turn-by-turn directions and clear voice guidance to an address or almost two million points of interest. Features ASAP II technology for faster satellite acquisition and exceptional signal reception, automatic rerouting and a gyroscope to track position even if satellite navigation signals are lost. Includes North American street-level detail map of the entire 48 contiguous states and selected Canadian cities on board the system's 20GB disk drive (no downloading required). Users can beam addresses to the unit from a Palm or Pocket PC PDA. Features a high-resolution 5.2-inch diagonal 320x240 pixel STN color display with automatic brightness control (day or night) and backlit, intuitive function soft keys for easy access to system functions. The SKYNAV 3000 supports English, Spanish and French languages, features automatic power off when the ignition is turned off and includes an odometer, speedometer, trip timers, a GPS compass and displays elevation readings. The SKYNAV 3000 will be sold at major retail outlets at a suggested price of \$1499.95.

Key features of the Cobra SKYNAV 2000 Mobile Navigation System – Portable "plug and go" system featuring turn-by-turn directions and clear voice guidance to an address or almost two million points of interest. Features ASAP II technology for faster satellite acquisition and uninterrupted signal reception and automatic re-routing if steered off course or detouring. The SKYNAV 2000 model comes with major U.S. interstates and one detailed street level regional map (consumers can select from 20 regions) and additional detailed regional maps can be easily purchased by phone or online and instantly accessed on the unit without the need of a computer (no downloading required). The SKYNAV 2000 supports English, Spanish and French languages, features automatic power off when the ignition is turned off and includes an odometer, speedometer, trip timers, and GPS compass. It will be sold at major retail outlets at a suggested price of \$999.95.

For more information contact Cobra Electronics Corp. at 773-889-3087 or visit them on the Web at www.cobraelectronics.com. Be sure to tell them you read about their new vehicle navigation units in *Popular Communications*.

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A Mobile Station To Span The Nation!

Looking for something nifty to fill that ugly gap in your car's dashboard? Neighbors threatening to hang you from your own antenna tower? Travel for a living—or just for fun—and want to have a full-featured shack in your vehicle? Whatever your reason, whatever your excuse (for those of you who have spouses), HF mobile operation has hit a new peak of high performance and low cost. And next year it'll be even better!

What used to take a pile of big, heavy, clunky gear and a rat's nest of unsightly cables can now be accomplished with a dc-to-daylight transceiver the size of a hotel room Bible (maybe smaller) and off-the-shelf components—all without breaking the piggy bank. These days, rolling ham shacks aren't nearly the compromise they once were, and they offer a world of on-the-move radio fun. Whether on cross-country runs or daily commutes, contesting, ragchewing, or DXing, modern mobile hams do it all!

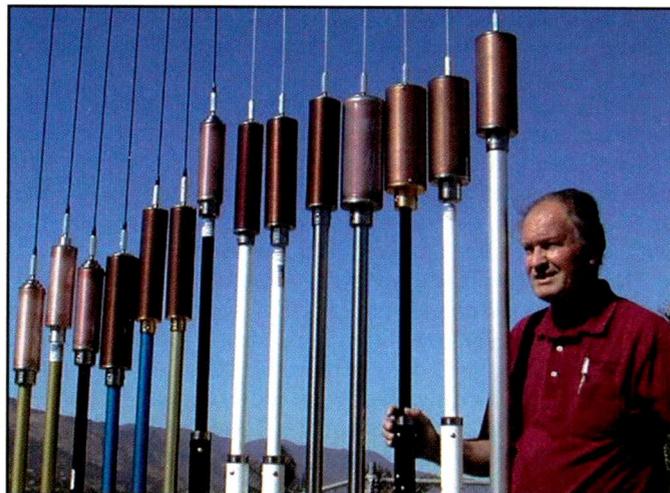
Tiny Radios, Big Power

Technically, just about any radio that can be powered by 13.8 VDC can be made to operate in a mobile environment, but unless you're driving a limousine, you'll have a better luck with today's mini mobile rigs.

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

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

Before getting started, plan your installation thoroughly and read as much as you can. CQ Communications publishes a valuable resource, *The Mobile DXer*, by Dave Mangels, AC6WO. It's \$12.95 and can be ordered by telephone at 516-681-2922 or toll-free at 800-853-9797. *Everything You Forgot to Ask About HF Mobile*, by Don Johnson, W6AAQ, is another excellent choice. Don has forgotten more about the subject than most of us will ever know. The book costs \$8 and is available from your favorite ham radio dealer or Worldradio Books in Sacramento, California. If you're even sort-of-seri-



Here's Charlie Gyenes, W6HIQ, of Wildomar, California, who manufactures a large line of high-quality, high-performance mobile antennas. These are mostly motorized, center-loaded whips suitable for use on cars, boats, or even balcony railings. Check out the entire line at the *Hi-Q-Antennas* website, www.hiqantennas.com. They're so "purdy" it's almost a shame to mount them on the back of the car!

ous about mobile hamming, do yourself a favor and get a copy before you begin!

Where to mount the radio depends on its size, whether it has a detachable head, the type of vehicle it's being installed in, and so on. Older rigs require more space and more robust mounts. Newer rigs are tiny and lightweight.

Whatever your rig, whatever your vehicle, you have a few initial tasks to consider. They are to (1) mount the radio securely (so it won't fly around, becoming a deadly projectile in a crash) and position it to allow easy operation while underway; (2) run a pair of *heavy-gauge* power supply wires from the cockpit-mounted rig *directly to the vehicle battery*; (3) find a sturdy, low-resistance chassis ground point *as close to the rig as possible*; and (4) run a quality coaxial cable from the rig to the antenna mount.

Grounds And Cables

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

Both the positive and negative supply cables should be fused at the vehicle battery. And use clean, new, properly sized bat-

tery terminals when making your power supply connections. Don't jury rig connections that might pass more than a hundred amps of DC!

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

Mobile Antennas

For peak performance, it's best to mount the antenna in the center of the vehicle roof. The trunk and hood decks are next best, and the front or rear bumpers are tied for last place.

Antenna mounts come in all shapes and sizes. Some bolt directly to your car body, some attach to the lip of your car's trunk and some use powerful magnets to hold your antenna in place—but they all simply provide a place to mount your whip antenna. The whip must be insulated from the car body and the coax shield must be connected directly to the car body/frame.

The best antenna for HF mobile newbies is a monoband whip. If you want a simple, inexpensive, and reasonably effective antenna, or if you want to operate on a single band at 20 meters or higher, consider Lakeview's line of Hamsticks (www.hamstick.com). These helically loaded whips are easy to use and easy to tune, and models are available for every band from 80 through 6 meters. Hamsticks sell for about \$25 each and they're compatible with almost every mobile antenna mount. Performance on the low bands isn't spectacular, but from 20 through 6 meters, Hamsticks work fine and are an outstanding value.

If you want a high-performance mobile antenna right off the bat, check out the multiband "screwdriver-type" antennas available through various makers. These motorized monsters can be remotely tuned (from the driver's seat) anywhere from 3.5 to 54 MHz. Most screwdriver antennas offer superior performance and flexibility, but they're not exactly unobtrusive. Everyone (spy satellites included) will see you coming!

Antenna Grounds

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

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

Tips

Unfortunately, most mobile installations experience a pretty hostile environment. Your rig may encounter temperature extremes, voltage swings, mechanical shock, excessive humidity, and a host of other factors that aren't relevant at home. You may also have to deal with electrical noise from the ignition system, on-board computers, blowers, fans, defrosters, and so on. You may even cause interference to your car's electrical sys-

tem! W6AAQ's book covers noise and RFI in detail, as does *The ARRL RFI Book*. If you have noise problems, be sure to follow up with one or both volumes.

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

- As an HF mobile beginner, operate at 20 meters or higher until you bone up on the details of successfully installing and adjusting antennas for 80 through 30 meters (where mobile antenna efficiencies can be devastatingly low).

- An effective noise blanker is priceless. When shopping for a mobile rig, test the noise blankers carefully and check out ham magazine product reviews to see how well the noise blankers work.

- Be safe, not sorry. Enthusiastic ham operators can easily cause an accident when tuning antennas, tweaking knobs, reading SWR meters, jotting logbook entries, etc. Drive first, operate second!

- Never use a cockpit-mounted antenna tuner to "match" your mobile whip. Mobile antennas are physically small and offer compromised performance at best. Don't waste precious decibels by using an in-car tuner! If you require extreme frequency agility, get a motorized screwdriver antenna or place an auto-coupler at the antenna feed point.

Till Next Time

I'll see you on the road! Send your QSL cards, questions, and letters—and mobile photos—to me at *Pop'Comm*, "Ham Discoveries," 25 Newbridge Rd., Hicksville, NY 11801. ■

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Are You Digital Ready?

Over 300 AM and FM radio stations are ready as in-band on-channel (IBOC) digital radio reached an important milestone with its mainstream introduction at the International Consumer Electronics Show in January. Be the first on your block to receive digital AM and FM radio.

Kenwood Introduces First Digital Receiver

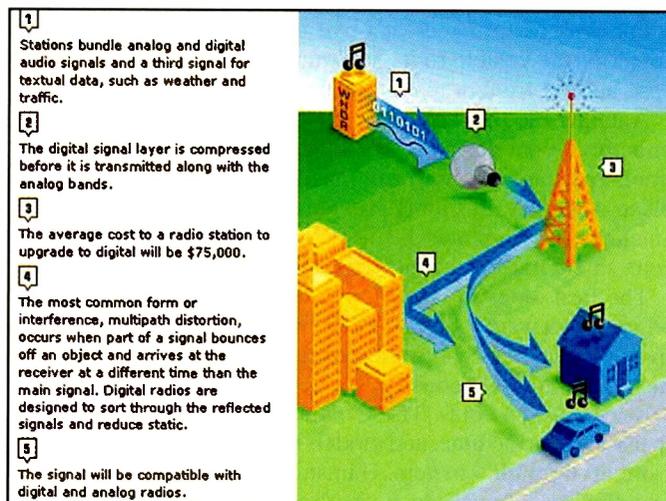
Kenwood has become the first to introduce an IBOC digital "HD Radio" receiver for retail. The Kenwood KTC-HR100 HD Radio tuner, initially debuted a year ago, finally hit the market this year at the International Consumer Electronics Show. Tom Ray, Corporate Director of Engineering at 710 WOR New York, got one of the first production units for test, interfacing it with the Kenwood KDC-722 car stereo. The KTC-HR100 HD Radio tuner will interface with any of the Kenwood Sirius satellite-capable receivers. Installation was relatively straightforward, taking Tom about an hour.

The KTC-HR100 itself is a "black-box" module that remains out of sight once connected to the Kenwood car stereo. It allows for reception of a digital signal when available, automatically switching to the backup analog signal when the digital is out of range. This is a unique feature of what is called the hybrid IBOC transmission mode. In the hybrid mode, a radio station transmits the standard analog signal on its assigned center frequency, while simultaneously transmitting the digital signal on its upper and lower sidebands. Eventually, the hybrid analog/digital transmission mode will be phased out in favor of an all-digital mode. Until then, the hybrid mode permits radio stations to make a smooth transition to digital broadcasting without abandoning analog listenership.

Kenwood, a familiar name among amateur radio operators, has striven to be the high-tech leader in car audio gear. Kenwood was the first to introduce a Sirius satellite receiver, and it also offers a wide range of auto sound equipment. WOR was one of the first radio stations to begin field testing and regular broadcasting with an IBOC digital signal. Tom Ray's KTC-HR100 HD Radio test reports are forthcoming. Visit www.wor710.com and click on WOR-HD for the latest. Check out www.kenwoodusa.com for a look at the complete line of Kenwood HD Radio and Sirius satellite-capable receivers.

First Digital Radio Stations

This might be more fun than the debate over whether or not KDKA Pittsburgh was the first broadcaster in history. When it comes to IBOC digital radio broadcasting, who's on first? Undoubtedly 710 WOR New York was among the first as a long time test platform for IBOC under an FCC Special Temporary Authorization. However, **1400 WJLD Fairfield, Alabama**, claims to be the first AM radio station to convert to IBOC digital broadcasting. WJLD holds top honors as a pioneer in the



The digital signal path from transmitter to you. Diagram courtesy of iBiquity Digital, developer of HD Radio.

region, being the oldest black radio station serving Birmingham since 1942.

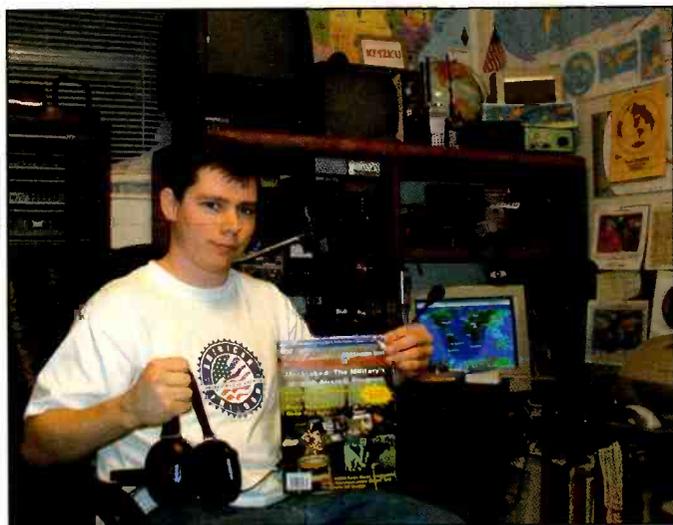
In his initial evaluation of HD Radio, Gary Richardson, WJLD owner and engineer, reports AM digital reception comparable to 15-kHz FM stereo. Alternative rocker 106.7 KROQ-FM Los Angeles has staked a claim to being the first full-time IBOC operation on the west coast. Like WOR, KROQ served as an IBOC test platform prior to commencing regular broadcasting. 101.5 WRAL-FM Raleigh, North Carolina, might have been the first to demonstrate IBOC digital to the general public. During the 2003 North Carolina Auto Show, visitors to the WRAL booth were among the first in the nation to hear HD Radio firsthand.

There are now some 300 AM and FM radio stations broadcasting in IBOC digital. The accompanying list (see "Radio Stations Licensed For Hybrid IBOC Digital"), compiled from the FCC database, is incomplete. Updates will be published periodically as the FCC catches up with its record-keeping and more digital signals sign on.

QSL Information

710 KSPN Los Angeles, California, received a full detail letter and nice color coverage page in 30 days for taped report, signed Mike Worrall, Asst. CE. Mike says that they were operating with NA status until midnight with 10 kW, as they could not switch to the DA mode because of technical problems, which they repaired at midnight. That is the reason they suddenly dropped way under KIRO about that time. I hear 710 Los Angeles quite often during good auroral conditions, but not anywhere near the signal they had that night! The CE was amazed by the signal on the tape. They were totally dominant with KIRO way behind them. I am only 120 air miles from the KIRO trans-

PENDING				New Call	Location	Freq.	Old Call
New Call	Location	Freq.	Old Call	KOGR	Rosedale, CA	88.9	New
WHGB	Marion, VA	1330	WOLD	KCJX	Carbondale, CO	88.9	KNTE
KBTB	Alameda, CA	92.7	KPTI	KLCQ	Eaton, CO	88.9	KWRZ
CHANGES				WLOV-FM	Elberton, GA	105.1	WEHR
New Call	Location	Freq.	Old Call	WKJR	Jasper, IN	91.7	New
WZZK	Birmingham, AL	1320	WRJS	KBGG-FM	Boone, IA	98.3	KRKQ
WNWF	Destin, FL	1120	WBZR	KDMR	Mitchellville, IA	88.9	New
WMWR	Warner Robins, GA	1670	WRNC	WFBI	Greenville, MS	91.5	WMSB
WLBJ	New Albany, IN	1570	WXLN	KNLQ	Cuba, MO	91.9	New
WSFZ	Jackson, MS	930	WSLI	KBZM	Big Sky, MT	104.5	KBFN
WSEN	Baldwinsville, NY	1050	WFBL	KMXE-FM	Red Lodge, MT	99.3	KMXE
WJGK	Kingston, NY	1200	New	KLBU	Pecos, NM	102.9	KENC
WFBL	Syracuse, NY	1390	WDCW	WNBB	Bayboro, NC	97.9	WRUP
WGFT	Campbell, OH	1330	WASN	WUDR	Dayton, OH	98.1	New
WASN	Youngstown, OH	1500	WGFT	WLDW	Philadelphia, PA	96.5	WPTP
WWGS	Georgetown, SC	1580	New	WYTL	Wyomissing, PA	91.7	New
WNPZ	Knoxville, TN	1580	WAHI	WQKI-FM	Orangeburg, SC	102.9	WIGL
KCOX	Jasper, TX	1350	KTXJ	WIGL	St. Matthews, SC	93.9	WQKI-FM
WBOG	Tomah, WI	1460	WTMB	KTXX-FM	Jasper, TX	102.7	KWYX
KHAT	Laramie, WY	1210	KKHI	KELZ-FM	Terrell Hills, TX	106.7	KCJZ
KBHN	Booneville, AR	89.7	New	WPZZ	Petersburg, VA	99.3	WRHH
KSOQ-FM	Escondido, CA	92.1	KFSD-FM	WTMB	Tomah, WI	94.5	WBOG
				KKHI-FM	Laramie, WY	105.5	KIMX
				KIMX	Laramie, WY	96.7	KHAT



Broadcast DXer George Clement in his well-equipped Florida shack, DXing with the Drake SW8 and Radio Shack DX-398 receivers, and Popular Communications at hand.

mitter site and their main lobe goes my direction at an ERP of over 80 kW! Address: KSPN, ESPN Radio 710, 3321 S. La Cienega Blvd., Los Angeles, CA 90016. (Martin, OR)

1251 R. Rhema, Auckland, New Zealand, QSL card and a fantastic pack of goodies: a beautiful large calendar with New Zealand scenes in color, two of their booklets, etc. in 31 days for taped report. Mentioned power of 5 kW, unreadable signature though. Address: Rhema Broadcasting Group, Inc., Private Bag 92-636, Auckland, New Zealand. New Zealand QSL #110. (Martin, OR)

1580 KMIK Phoenix, Arizona, a Radio Disney Phoenix business card with "confirmed 11/21/03" written on the back in

18 days, signed David Griffin, Station Manager. Also returned everything I sent them: report, one dollar, and gift postcard! Address: 2231 East Camelback Rd., Suite 326, Phoenix, AZ 85016. (Griffith, CO)

1640 KMMZ Enid, Oklahoma, nice QSL letter in seven days, mentioning that they are still in the testing mode, directional 10,000 watts day and 1000 watts night. (Martin, OR) Partial-data QSL letter in 9 days, verifying directional antenna pattern aimed 160 degrees and 340 degrees, signed Hiram Champlin, Owner. Address: 316 E. Willow, PO Box 952, Enid, OK 73702. (Griffith, CO)

Broadcast Loggings

550 KFYI Phoenix, Arizona, at 0553 "The Other Side" telephone psychic program, ID as "News/Talk 550 KFYI, the Valley's talk station." Interference from unidentified Spanish on 550 and heavy splatter from local 560 KLZ. (Griffith, CO)

570 WNAX Yankton, South Dakota, at 0730 Art Bell and "Coast to Coast" with an interesting program about HAARP. ID as "The news, farm, and weather station, 570 WNAX, Yankton." Good signal under heavy splatter from local 560 KLZ. (Griffith, CO) Nice to hear Art Bell return to the airwaves on weekends!

600 CMKV R. Rebelde, Urbano Norris, Cuba, at 0603 talk about education in Cuba and Latin America, then romantic Cuban and Spanish music. Good with nothing readable underneath until co-channel WICC faded in. (Chiochui, QC)

640 RFO Pointe-a-Pitre, Guadeloupe, at 0614 a man and woman in French. Poor-fair signal level in a big mess with at least R. Progreso, WNNZ and Mojo Radio. Maybe YVQO Union Radio was in as well, but I'm not sure at all. Very difficult to make anything out on this channel at this time; sounded pretty much like a domestic graveyard channel. (Chiochui, QC)

Radio Stations Licensed For Hybrid IBOC Digital

Call	Location	Freq.	Call	Location	Freq.
WJLD	Fairfield, AL	1400	WNUA	Chicago, IL	95.5
KNX	Los Angeles, CA	1070	WUSN	Chicago, IL	99.5
KCBS	San Francisco, CA	740	WVAZ	Oak Park, IL	102.7
WSBR	Boca Raton, FL	740	WTMX	Skokie, IL	101.9
WRHB	Kendall, FL	1020	KZIA	Cedar Rapids, IA	102.9
WQAM	Miami, FL	560	WASE	Radcliff, KY	103.5
WKAT	North Miami, FL	1360	WPOC	Baltimore, MD	93.1
WHSR	Pompano Beach, FL	980	WTKK	Boston, MA	96.9
WWNN	Pompano Beach, FL	1470	WBOS	Brookline, MA	92.9
WJNA	Royal Palm Beach, FL	640	WROR-FM	Framingham, MA	105.7
WSB	Atlanta, GA	750	WQSX	Lawrence, MA	93.7
WBZ	Boston, MA	1030	WKLB-FM	Lowell, MA	99.5
WWJ	Detroit, MI	950	WAAF	Worcester, MA	107.3
WTWZ	Clinton, MS	1120	WCSX	Birmingham, MI	94.7
KFUO	Clayton, MO	850	WMGC-FM	Detroit, MI	105.1
KXNT	North Las Vegas, NV	840	WDMK	Mount Clemens, MI	102.7
WWTR	Bridgewater, NJ	1170	WDHA-FM	Dover, NJ	105.5
WMTR	Morristown, NJ	1250	WMGQ	New Brunswick, NJ	98.3
WCTC	New Brunswick, NJ	1450	WNEW	New York, NY	102.7
WOR	New York, NY	710	WRAL	Raleigh, NC	101.5
WOLF	Syracuse, NY	1490	WGUC	Cincinnati, OH	90.9
WRMR	Cleveland, OH	1420	WNWV	Elyria, OH	107.3
WPEN	Philadelphia, PA	950	WYGY	Lebanon, OH	96.5
WWDB	Philadelphia, PA	860	WMGK	Philadelphia, PA	102.9
KOAL	Price, UT	750	WMWX	Philadelphia, PA	95.7
WKDL	Alexandria, VA	730	WXTU	Philadelphia, PA	92.5
WTMJ	Milwaukee, WI	620	WIVA-FM	Aguadilla, PR	100.3
KKBT	Los Angeles, CA	100.3	WZAR	Ponce, PR	101.9
KPSC	Palm Springs, CA	88.5	WFID	Rio Piedras, PR	95.7
KROQ-FM	Pasadena, CA	106.7	WPRM-FM	San Juan, PR	98.5
KDFC-FM	San Francisco, CA	102.1	KBKS	Tacoma, WA	106.1
KOIT-FM	San Francisco, CA	96.5	WKWS	Charleston, WV	96.1
KZBR	San Francisco, CA	95.7	WVAQ	Morgantown, WV	101.9
KFAC	Santa Barbara, CA	88.7			
WKIS	Boca Raton, FL	99.9			
WRMA	Fort Lauderdale, FL	106.7			
WEDR	Miami, FL	99.1			
WUSF	Tampa, FL	89.7			
WBEZ	Chicago, IL	91.5			
WDRV	Chicago, IL	97.1			

Stations not listed in the FCC database but recently reported testing:

KTNQ	Los Angeles, CA	1020
WLW	Cincinnati, OH	700
WSAI	Cincinnati, OH	1530
XEN	Mexico City, Mexico	690

710 R. Rebelde, Cuba, at 0331 "Rebelde, la Cubanísima" ID, slogan "La Emisora de la Revolucion," over WOR. (Connelly, MA) I'm sure WOR engineer Tom Ray appreciates this report!

780 KNOM Nome, Alaska, at 1503 a very long weather forecast for parts of Northern Alaska and the Interior, the Yukon Delta, Seward Penn, etc. Blowing snow, temperature -9° at the time. Alone on the frequency, about S7. (Martin, OR)

800 KINY Juneau, Alaska, at 1530 fair above KPDQ Portland, with weather for southeast Alaska, talking about another storm coming their way with small craft advisories, slogan "Hometown Radio." (Martin, OR)

846 Tarawa, Kiribati, at 0800 a good signal with a woman in Gilbertese, a mix of island music, and some U.S. pops, 840 KSWB only there with an open carrier. I can sometimes log Kiribati with KSWB on, but it isn't easy being 6 kHz away. (Martin, OR)

1140 KSLD Soldonta, Alaska, at 1532 fair to good with classic rock music, "Rocky Mountain Way" by Joe Walsh and "Wasted World" by the Allman Brothers Band, into the "Question of the Day on KSLD." Way over anything else on the channel. New! I still need 8 Alaskans to have them all. (Martin, OR)

1160 VSB3 Hamilton, Bermuda, at 2337 BBC talk 10 seconds delayed from parallel 5975 kHz; good signal, slight 1150 WTTT Boston slop. (Connelly, MA)

1550 RASD Clandestine, Tindouf, Algeria, at 2313 parallel 7460 kHz with a pop vocal having Spanish flamenco influences; briefly over co-channel WBSC South Carolina and WZDK Connecticut. (Connelly, MA)

Thanks to Bogdan Chiochuiu, George Clement, Mark Connelly, WAIIION, Patrick Griffith, N0NNK, and Patrick Martin. 73 and Good DX! ■

v.i.p.

spotlight

how you got started in radio

Congratulations To George Clement, KF4ZKU, Of Florida

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

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

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

Our March Winner: George Clement

George tells us,

I live in Keystone Heights, north central Florida, and I enjoy reading your magazine as well as DXing.

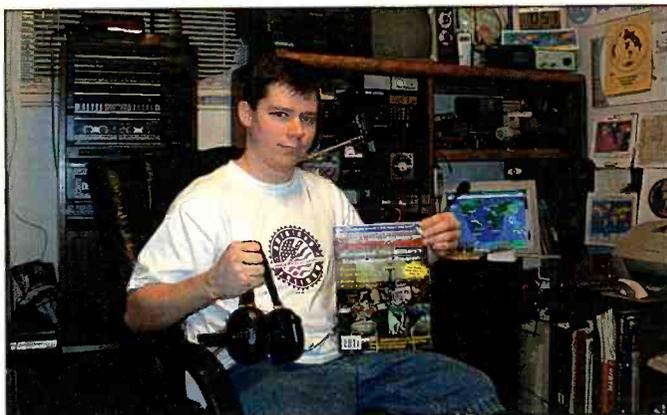
I first got started in AM and shortwave DXing about six years ago, in 1997-98. My first radio that I DXed with on the AM band was a Sony boombox portable with an analog dial and an internal ferrite antenna. The radio had low noise and good sensitivity on AM, especially when I connected it to an external 50- to 100-foot antenna I used for my first shortwave radio, a RadioShack DX-350, with which I began to discover foreign stations, with a notably news and music and culture.

My most vivid moment was when I was listening to the BBC World News report on the sudden and tragic death of Princess Diana in the Paris tunnel car crash. I also listened to local police and the Mir space station on a RadioShack Pro-50 scanner. I discovered I could also hear the hams on the local 2-meter FM repeaters and I wanted to become a ham operator.

I went to RadioShack and met an elmer, and a year later in the summer of '98 I passed my ham exams and became a tech class operator, call sign KF4ZKU. I then purchased a Yaesu FT-736 and began my ham hobby DXing the 2- and 6-meter bands. I enjoy 6 meters the most. My most memorable 6-meter QSO was with LU5VV in Argentina, approximately 5,000 miles away. Later I read an article by Mark Connelly, W1HON, on Transatlantic AM radio DXing and was inspired to try it. I later upgraded to a Drake SW8 and connected a longwire and a 1,000-foot loop antenna strung up around my suburban fence.

For about the past five years I've been attempting to DX all 50 U.S. states, the Caribbean, Mexico, and Canada. I've logged up to 30 on AM. I even DX the TV and FM bands during the summer Sporadic-E and Tropo ducting seasons. On Channel 3 I've logged 12 states, and five states on FM, including Puerto Rico, Mexico and, recently, Nicaragua. I also like to get QSL cards and am active on CB Channel 23 Lower Sideband.

My future plans are to upgrade my antennas, possibly erecting a beverage toward our lake, or build a loop and purchase a Drake R8B. I also plan to go on a DXpedition to the beach in March to see if I can



Here's Florida's George Clement, KF4ZKU, at his well-appointed monitoring post and ham station.

log any trans-Atlantic AM radio. Maybe later I will put up a website with my ham and AM QSL card photos, photos of antennas, TV E-skip captures, and audio clips of stations etc.

I am also looking for local DXers in the Gainesville, Orange Park, or Jacksonville areas who routinely DX on AM. I hope to gain insights to AM DX prospects here in north Florida, as I don't hear of many people in this area into this hobby. Please feel free to e-mail me at Rocketman743@yahoo.com or look me up at QRZ.com. Best of DX and 73s to all.

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Looking For New Frequencies

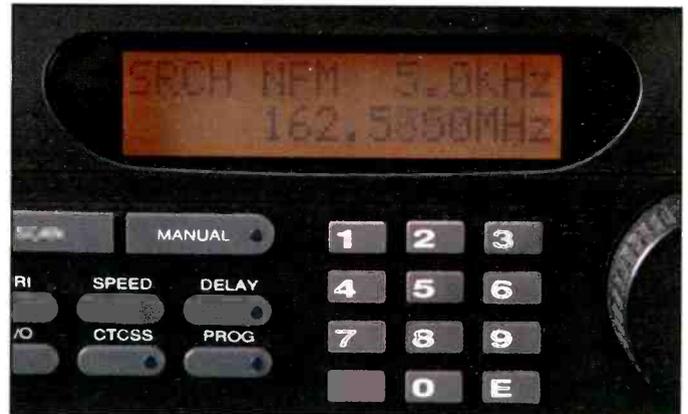
The perpetual problem of scanner enthusiasts everywhere is finding and maintaining accurate frequency information. If you're just getting started with scanning, you're much better off with traditional frequency lists and other "research" type of activities. Get familiar with all that these publications and websites have to offer. If there's a local club, check with them about a detailed frequency list. Often someone has already done a lot of work over the years and is willing to share it with others.

As you begin to learn the details of departments you're monitoring, you'll also find new frequencies and services to plug into your scanner. Once you're familiar with these tools, you'll begin to understand the layout of the bands. It can be very informative to make a list of every possible channel on a band and plug in the information that you already know. How many "holes" are there in your knowledge?

After that's done, you can begin searching for unknowns with confidence that you'll be able to correctly identify the intercepted signal, whether it's really a new frequency for you, or just one you had forgotten about.



If you're searching for frequencies in use at the scene, this Scout from Optoelectronics makes an ideal companion for your scanner. You might also check out the Explorer. Both are available from www.optoelectronics.com.



Searching is much easier on newer receivers than it used to be. Just make sure you set an upper and lower limit that are not too far apart.

If you don't read any of the rest of this column, but actually do those exercises, you'll be way out in front of most scanner enthusiasts and have much information to share with your local club. Take the time to catalog what you know and what you don't know. Look at the channel listings in the back of *Police Call* and see just how many channels there might be. How many can you identify in your area?

Searching For New Stuff

Searching for new frequencies has always been a chore. Not only is it time consuming, but figuring out what's new versus what you already know about is always a lot of fun. On top of that, there's the feeling (or reality) that you're missing something good on the frequencies that you normally listen to while you're wasting time searching.

Adding to the aversion, the search function on most scanners is a bit inconvenient to use, and it is, to say the least, time consuming. Days or weeks can go by with little or no return. But when you *do* find new frequencies, or identify a new user, it makes it all worthwhile. Some new tools have become available to us in recent years to help this process, and even to make your scanner do things that you never thought possible.

The most significant improvement in the searching process has been the power of the computer, combined with controllable scanners and the software that drives them. With software, it is not only possible to search large amounts of spectrum, over time of course, but also to turn your non-productive scanning time into a useful and worthwhile part of your hobby activities.

Even without a computer control system, there are many things you can do to enhance your scanning and searching time, and to convert down time into useful activities. The advent of the voice-activated tape recorder has made a lot of monitoring activities possible that simply weren't viable before. By using a voice-activated recorder (and if you have the equipment, a



If you're really into searching, a spectrum display might be just the thing. This radio from Standard (long since discontinued) featured a spectrum display unit on the left. The frequency being monitored is shown at the top, and each spike on the chart represents a signal above or below the center frequency. There are spectrum display units available as add-on accessories for some of the high-end receivers and professional equipment.

computer control system), you can turn time away from the shack into productive activity.

Even if you don't want to search, but want to simply start plugging a group of those unknown channels into an empty bank of your scanner for a week or month at a time, you can find a lot of traffic—or perhaps nothing, but you won't know until you try!

Searching For Unknowns

It's normally a simple matter to hook up the tape recorder to your scanner, but if you're not familiar with the procedure, check the sidebar. You can also use any of several freeware/shareware/commercial programs for your computer to turn it into a very functional recorder. My favorite for scanner use is Scanner Recorder, a freeware utility built just for scanner and radio recording. You can check it out yourself at www.davee.com/scanrec/index.html. Another popular one is RecAll Pro, which is shareware, but also offers some nice features. It's at www.sagebrush.com/recpro.htm.

Adding a tape recorder to your shack will allow unattended searching. The amount of tape that is used will give you a feel for how much activity is found, even before you listen to it. By playing back the tape, you can at least get a good feeling for the activity in the range you searched and decide if it's worth your time to pursue the active frequencies any further. If you're searching in a frequency area where you know some channels, you may be able to identify some of the traffic already, just based on how they sound. After that, you can pick specific frequencies that you think might be worth following up on.

Perhaps you've heard through the rumor mill that a certain agency uses a specific channel. Here's a great use for the recorder while you're at work, out running errands, or anywhere besides in your shack. Put the scanner on that frequency (or talkgroup, with the new trunktrackers) and set the recorder. You can verify a lot of information in a week just by spending the day on one frequency at a time!

Some scanners (mostly the newer model Uniden base units) feature an "AUX" feature to assist in recording specific chan-

Adding A Tape Recorder To Your System

Before we even get started, let me address the idea of taping in context. There has been some considerable flap over tape-recorded scanner intercepts in recent months. What I'm advocating here is taping as a tool for increasing your scanning time, not for use by any other persons, for sale, or even replay for anyone else but yourself. The Communications Act of 1934 is fairly straightforward on the issue of disclosure—don't do it. If you're going to do any of these things, find another hobby. Ours has been damaged too much already by improper use of equipment.

Hooking up a tape recorder should be a relatively simple procedure, but it can be a bit confusing if you don't understand what all the connections do.

Essentially, there are only two connections to the recorder that we have to be concerned with, and really only one that matters. We need the audio from the scanner to get to the tape recorder's input so that what comes over the scanner is put on the tape. Many newer scanners have a "Line Out" jack just for this purpose. If your tape recorder has an "Aux" or "Auxiliary" input, that's where the connection should be made. The audio level out of a "Line" jack is too high for the microphone input of most recorders.

If your scanner has a "Line" output, but your tape recorder only has a "Mic" input, you can get something called an "Attenuating Patch Cable" from RadioShack. This cable reduces the signal from the higher levels of the line output to a lower level that the microphone input will accept without a problem.

That's all you would have to do. In fact, if you're using a voice-activated recorder, that is it. You turn on the voice activation feature, and the recorder will stop and start for you when it detects the sound from the scanner.

If you don't have voice activation, your recorder will run continuously, and you'll run out of tape pretty quickly. That's where a scanner or computer interface with a recorder comes into play. One of the jacks on most recorders is labeled "Remote" and is for the remote control of the record motor. Finding the right cable can sometimes be a chore, but usually it can be done, at least by using adapters. Now, the computer or scanner has to know when to turn the recorder on and off, but that is usually controlled by channel on a scanner, or by a setting in software.

Once you have both stop and start control (using either method) and audio, you're in business. Good hunting!

nels. This can be very beneficial if you think you've pegged a few frequencies you want to follow. Just set up the recorder to tape only those specific channels and let it run. You'd be surprised at how quickly you can begin to match frequencies with that activity after you return to the shack from listening to the tape. I frequently carry tapes with me in the car to listen through while I'm driving from appointment to appointment, or sitting in rush hour. It's a lot more fun to listen to that stuff than most talk radio programs I've sampled lately.

If you're fortunate enough to have a computer-controlled system, you can really make maximum use of your scanning setup while you're away. Almost any computer-controlled scanner can perform a search and keep track of the hits that occur on

Frequency Of The Month

I've had several e-mails and letters from folks telling me that they've dedicated a bank to the frequency of the month idea. That's great! I've also noticed that I tend to get two kinds of entries: one from those who recognize the frequency as something local and can tell me off the top of their head, and one from people who have no idea what they're listening to, but have obviously been trying to guess over several days or weeks of traffic.

If you don't hear anything on the frequency, leave it in there for a while. It may just be one of those frequencies that doesn't get used often. And it may just be a channel with no traffic in your area—at least it won't slow down your scanning too much.

Our frequency this month is **462.6750**. Have a listen and see what you hear. Of course, you're welcome to enter, even if you don't hear anything! You can send info to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126, or via e-mail to radioken@earthlink.net.

each channel. In addition, you can keep a log of the frequencies that the scanner found active, and the sequence/time and date of the activity. By playing back the tape and following along in the log, it's usually a pretty quick affair to figure out an active frequency, then you can set it up for more detailed monitoring if you're interested. Also, there are a few recorders that feature a time and date stamp on the audiotape. That would make following the log very simple (assuming, of course, that the clock of the recorder and the computer were synchronized).

The number of computer-based recording programs appearing on the market continues to grow, and many of them are getting quite sophisticated. Most simply use the sound card to record just like a voice-activated recorder, and those make a great substitute for the recorder if you don't need to take the tape with you for portability. Or you can convert the files to MP3 format or something that is more portable if you prefer.

Searching Techniques

One of the biggest mistakes we all make getting started is in searching too large of an area. It's very tempting to set

up a search for the entire military air band, for instance, or the federal portions of the UHF band. You might get lucky and find a few things this way, but the odds are against you.

Remember that you're trying to find transmissions that don't take place very often, nor do they last long when they're on. Your scanner has to be in the right place (on the frequency) at the same time as the transmission is occurring. In short, you have a moving target being followed by a moving search engine. In a large block of frequencies, your chances of winning the lottery are probably better.

So if reducing the size of the blocks will improve your chances of hitting something in that block, how small do they have to be? Well, that depends on exactly what you're looking for, and how fast your scanner can search. With a fast scanner, and assuming you're not looking for a frequency that's only used once in a blue moon, 2 to 4 MHz of space is probably about right. "Two to four MHz?" I hear you cry. "Do you know how long it's going to take to do the entire Military band?" Yes, but what else were you using your scanner for during the work day when you're not there?

The second most important skill for a search operation is patience. Particularly with military operations, but it applies everywhere, some of the frequencies are not used on a daily basis. Perhaps some National Guard-type frequencies are only active when they're having exercises once a month. Or training frequencies may only be active during training operations which only take place occasionally. To find these obscure channels, you may have to search the same area of the spectrum over and over for a month and get nothing until the exercise starts. What fun. But it's worth it when you hit something.

Identify targets for your searching. If you glance at almost any frequency guide you'll quickly see that there are pre-deter-

mined band plans for each area of the spectrum. In other words, there are places or frequencies in your scanner's coverage range where we should expect to find something, and places where we shouldn't. For example, our local police occupy 154.830 and 154.845, which are, as it turns out, adjacent channels. Nobody should be on .835 or .840. By simply mapping the available channels against what you already know, you can find a revealing number of holes in your information. A computer spreadsheet makes short work of this, but it can be done with pen and paper, too. Once you've found your missing areas, it may turn out that you have a very narrow range to search in a particular band. This will cut down your time, as well as help with identifying things on the recorder.

My final piece of advice is to develop a tracking system. Computers are great for this, too, but you can do it with a notebook or index cards. Make notes of when you searched what. What day of the week was it? Could you be looking for something that is only used on weekends? Or every third Wednesday when they test the tornado sirens? What did you find on your search? Can you identify any of it, just based on what you already know or can find from frequency directories and other sources? The more information you have, the more useful the system will become in the long run.

A Good Use Of Away Time

Having said all that, maybe this is too much trouble. If you're quite happy scanning the local police and fire frequencies that you already know about, keep scanning. But if you're getting bored, or wonder who else uses some of those other frequencies that your scanner covers, searching, especially while you're away from the equipment anyway, can be a lot of fun. ■

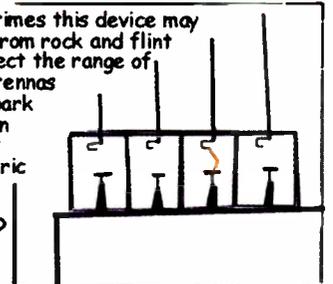
The Adventures of Scanner Dweeb by M.A. Coletta



Unearthed from prehistoric times this device may be the first scanner. Made from rock and flint it may have been used to detect the range of approaching storms. Flint antennas of different lengths led to spark gaps which fired dependant on lightning strikes happening at various distances. A prehistoric weather scanning radio ???

A prehistoric dweeb ???

The first scanner ?



Peter Finds A Simplex

I've admitted that my collecting fancy favors prewar top-of-line table radios dating from between the very early 1930s to about 1941. But, I'm also quick to appreciate the other end of the spectrum—those smaller, attractive table radios that were priced within reach of the average factory worker's depression-era wages. If manufacturers couldn't afford losing sales by adding a costly extra tube or two to boost performance, adding some elements of cabinet style could be done at no cost.



Photo A. This small Philco cathedral uses four tubes and a regenerative IF to improve gain.

Two low-cost depression era radios are shown in **Photos A** and **B**. The small cathedral in **Photo A** is a Philco model 80 Jr. This simple four-tube superhet used a regenerative IF stage to make up for lost stage gain. Philco sold thousands of these radios, and they show up regularly at estate sales and auctions. The radios pictured in this column typically sell for \$100 or less. When I found the 80 Jr. it was in sad shape, and at the time I doubted that the cabinet could be saved. Now I think it was brought back to fine shape.

Another no-frills depression-era radio is shown in **Photo B**. This is also a four-tube radio, but it uses a very simple TRF (Tuned Radio Frequency) design. One-tuned RF stage, a detector, audio amplifier, and rectifier comprise the four-tube lineup. The set's Westminster label probably came from a radio manufacturer that specialized in producing generic sets with off-brand names for store chains. Despite its electrical sim-



Photo B. This small mantle radio is another inexpensive 4-tube radio. It uses a TRF circuit with no AGC. It's also an AC/DC set that uses a resistance line cord. These were often called curtain burners, because careless coiling of the power cord could result in enough heat to start a fire!

plicity, visiting collectors often comment on the set's simplistic, yet attractive, cabinet style. This set was requested from a local barn for the princely sum of five dollars! The cabinet has been refinished. Undoubtedly, the Westminster was one of the least expensive sets made at the time.

Curtain Burners

The Westminster is a so-called "curtain burner"; it used a special line cord that included a built-in resistor to drop the filament voltage. A third conductor of high-resistance wire (typically ranging between 160 and 330 ohms) was internal to the line cord. The pliable AC power cords radiated a bit of heat, which was fine when the cord was stretched out, but pity the unsuspecting housewife who coiled the cord and left the radio near a combustible object such as a curtain!

Simplex Model D

A few months back I spied a Simplex model D table radio on an Internet auction site with a very modest "Buy-It-Now" price. It took all of about 10 seconds to hit the *buy* button and to arrange payment with the seller! What caught my eye was the styling of this radio (see **Photo C**). Just look at the black lacquer trim along the lower border and surrounding the very large oval dial with a tuning eye, the curved arch on the cabinet, and the deco-inspired fretwork over the speaker grille! I turned on the oversized black dial (reminiscent of Zenith), which is back lit by two pilot lamps, and discovered that the broadcast and short-wave band markings are done in translucent green and red let-



Photo C. Even my wife commented on this radio's styling. It's a handsome looking radio with a large black back-lit dial that features multicolored markings and tuning eye. The art deco styling and two tone lacquer finish add to its beauty. Alas, it's all an illusion. The beauty is only skin deep: inside the cabinet lurks a rather luck-luster AC/DC chassis.

Photo D. This ACE tombstone is a 32-volt radio marketed for the non-electrified rural markets. The 32 volts were supplied by a bank of wet cell batteries, usually kept charged by a windcharger system. →



tering! Gorgeous! What a pretentious little radio.

Who Was Simplex?

I suspect most readers are primarily attuned to the rather legendary radio manufacturers; names like Zenith, Philco, and Emerson will strike a far more familiar chord for most of us than would the name Simplex Radio.

The birth of Simplex Radio was announced in a somewhat optimistic news release, published by the *Sandusky Register* on November 16, 1924. The news item mentioned that the soon-to-be-opened radio manufacturing facility might create upwards of 200 new jobs for the Sandusky, Ohio area. By 1937 Simplex had moved its operations—along with its 70 or so employees—to a larger facility, the old Miabohm Motor Company building, in Sandusky. Incidentally, H.C. Miabohm was also a charter member of the Simplex Radio board of directors. Philco acquired a controlling interest in Simplex Radio in 1937. By the end of 1940, Philco owned a 92-percent interest and assumed full ownership in 1944. The Simplex name was retired, reverting entirely to Philco in 1948.

Ace And General

Simplex produced radios under the Simplex name brand, and I've seen other Simplex sets marketed under the ACE and

General brand names. I suspect there were others as it was common for smaller radio companies to market private brand labels for major department stores, and no doubt many of those radios rolled off Simplex assembly lines.

The miniature ACE tombstone, shown in **Photo D**, was marketed in non-electrified rural areas. This tombstone runs on a single 32-volt battery supply, commonly found on farms equipped with 32-volt wind-charger battery power systems. **Photo E** shows a miniature Cathedral bearing the Simplex nameplate. Cathedral radios traditionally used a small peephole bezel for viewing the dial scale, so this large stylish dial sets this cathedral apart. Except for the brand names, the dials and escutcheons on both sets are virtually identical.

During WWII, Simplex, and the other American radio manufacturers, discontinued domestic production as their output was fully committed to the war effort. Simplex Radio's contribution was turning out crucial radar equipment for the Army Air Corp and our allies. After the war's end, the Sandusky plants eventually became involved in television production, reaching 1,500 employees at the peak of the non-war years.

But all things pass, and in 1961 Philco ended operations at Sandusky, opting to consolidate all their manufacturing in Philadelphia. The Sandusky facilities served as warehouses until the buildings were sold in 1964. Despite the poor brand

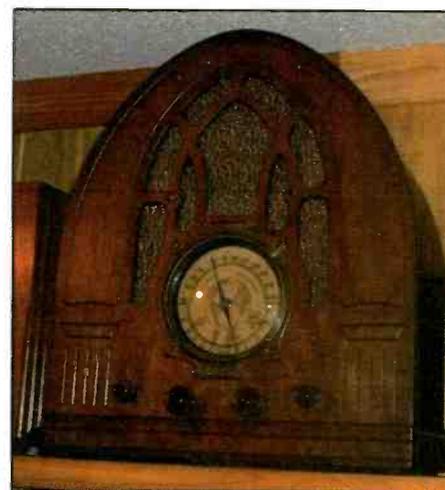


Photo E. Here's another Simplex radio. The large-round dial sets this cathedral apart!

recognition, Simplex Radio was a viable player during the Great Depression. While hundreds of radio companies were formed in the 1920s, only to flounder and fade away within a few years, Simplex was one of the few survivors.

Simplex Restoration

As I mentioned, the radio was a model D and its schematic is in *Rider*, Volume VII (actually, several Simplex schematics are all crowded on page 7-1). It became obvious that Simplex used several basic designs, many with undocumented variations, to produce a myriad of different radios! For example, while my model D

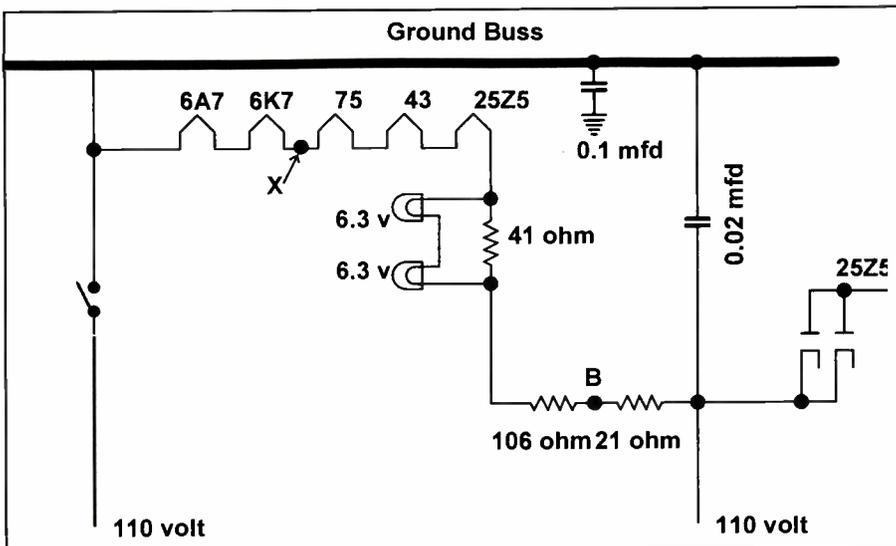


Figure 1. This schematic shows the AC portion of the Simplex model D radio.

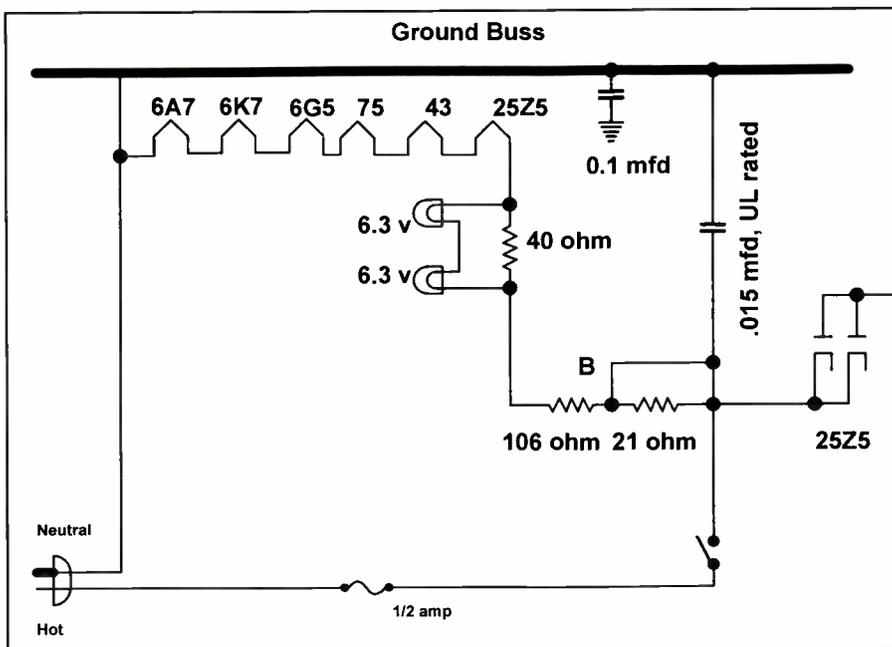


Figure 2. Adding a fuse, polarized plug and new cord, UL rated caps, and rewiring the position of the power switch are first steps in making the radio safer to use.

sported a 6G5 eye tube, the schematic in the book only indicated (by an "X") where the 6G5 filament is connected in those D models that incorporated the tuning eye feature. The Simplex D is an AC/DC design, and we've already covered the related safety issues represent in past columns.

Unfortunately, this Simplex radio not only had those safety issues, it actually raised several other concerns that are the basis for the restoration portion of this column. Actually, the radio was pretty scary and needed several modifications so it would be safe for use by "polite soci-

ety." I don't advocate modifications unless they're related to safety issues—safety always comes first.

Hot Chassis Radios

Some AC/DC radios have a *hot chassis* with one side of the AC line cord directly connected to the chassis; other AC/DC sets use a floating, isolated ground-buss that is bypassed to chassis with a relatively large value capacitor. While there is no direct connection between the AC line and the chassis, a leaky coupling capacitor can expose the

user to potentially lethal voltages.

Figure 1 is a simplified version of the Simplex D schematic, edited to show the AC line and filament wiring and the line-to-chassis bypass capacitors. The 0.1-mfd line bypass cap is too large for a line bypassing. Typical values are now 0.015 mfd or less, and line bypass caps should be UL approved. Mouser and Panasonic carry approved bypass capacitors.

AC/DC sets powered on DC power outlets need to have the plug properly orientated to work—the radio will pass DC through the rectifier only if the plug polarity is correct, with the positive leg feeding the rectifier anode (plate).

It's good practice to equip these radios with new cords and modern polarized plugs. Here's why. If the set is off, there is a 50/50 chance that there is AC line voltage between the 0.1-mfd capacitor and the chassis, and that's large enough to give you a pretty left jolt if you come between the radio and a nearby ground. A leaky capacitor, and all wax capacitors have leakage, increases the risk. No wax-paper capacitors are UL approved for AC line bypass service. They can fail shorted, greatly compounding the risk of electrical shock. The chassis is bolted to the cabinet with metal hardware, any stray voltages on the chassis are exposed on the screw heads below the cabinet.

The pilot lamps are in series with the filament wiring, and if the socket insulation fails, AC voltage could be applied to the chassis. You could get a nasty surprise changing pilot lamps if the set is plugged in. If the rubber shock absorber mounts for the tuning capacitor failed, the floating ground (and AC voltage) is on the chassis and exposed hardware! Not good! Typical of most AC/DC sets, the power switch breaks the ground return on the chassis.

Needed Changes

Following are the modifications I made to the radio. Figure 2 shows how the radio has been rewired for a polarized plug, with the neutral side connected directly to the floating ground buss system in the radio. The wider blade on a polarized plug is the AC neutral connection. The cord is usually marked with ribs to indicate the neutral wire side of an AC cord. Always verify that the plug and cord are wired correctly using an ohmmeter *before* powering up the radio—never assume anything. Measure it twice. The AC "hot" lead from the line cord is now switched

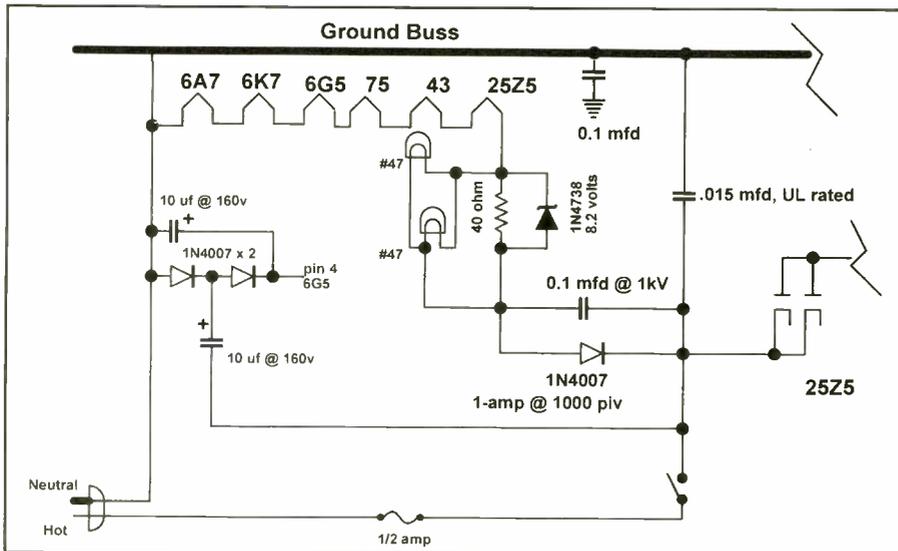


Figure 3. A silicon diode replaces the dropping resistor for the filament voltage. This modification requires a Zener clamping diode on the pilot lamps to protect them from the initial power-on surge. A voltage doubler improves the eye tube illumination by increasing the B+ voltage for the target.

and fused and the fuse and holder are installed under chassis. **Photo F** shows these details.

Unexpected Leakage

I like to check my work as it progresses. It's all too easy for a small wire clipping or solder blob to cause problems. I found the AC neutral was measuring around 20 k-ohms to the chassis, and this wasn't right! After much consternation and tail chasing, I finally traced the leakage to the tuning capacitor. The leakage path was between the capacitor frame and chassis. I then eventually traced the problem to faulty rubber grommets! Those are the mounting grommets used to protect the tuning cap from vibration and to insulate it. I had replaced the brittle, dried out parts just to avoid this sort of problem. I suspect the manufacturer used lamp-black (carbon) as a coloring agent and that this caused the grommets to act more like resistors than insulators. You may never see this, but it's something to be aware of in case you ever run across a similar problem.

Ballast Tube Or Resistor?

Refer back to **Figure 1**. The three resistors on the schematic were originally a single octal-based component, designated as K38B2 in the Rider's literature. The part was mounted on an octal base (I'm not sure if this component was a fancy ballast tube,

or an enclosed power-resistor assembly). The part was missing in my radio, and someone had substituted two wire-wound power resistors mounted on an octal base (see **Photo G** to view this kludge).

The purpose of the resistors (which total approximately 168 ohms) is to reduce the AC line voltage to the total filament voltage. Three of the tubes have 6.3-volt 300-mA filaments, while the 43 audio tube and the 25Z5 rectifier have 25-volt 300-mA filaments. That adds up to a total filament voltage of 68 volts. Adding another 6 volts for the pilot lamps brings

it up to 74 volts. Now, add another 6.3 volts for the 6G5 eye tube that is present in this set, and the filament voltage requirement now totals close to 80 volts! If the line voltage averages around 120 VAC, we need to drop the AC line voltage 40 volts.

Solving Ohm's Law

Ohm's Law formulas let us find the needed resistance if we know the voltage and current. We know the voltage (E) is 40 volts and that the current (C) is 0.3 amps. Thus,

$$R = E/I, \text{ or } R = 40/0.30, \text{ or } R = 133 \text{ ohms}$$

To prove our results: $E = IR$, or $40 = 0.3 \times 133$. We need a resistor of around 133 ohms. Simplex used a 106-ohm resistor, a value that was better suited for the lower 110-volt line voltages in the 1930s. Regardless, the power formula $P = E^2/R$, or $P = (40)^2/133$, shows this resistor wastes almost 12 watts as dissipated heat in the radio cabinet! Now, chances are that you aren't going to find exact odd-value resistors, so use the next largest common resistor value in your restoration.

A Better Way

Let's get rid of the dropping resistor! First, look at **Figure 3**, the revised schematic drawing for my Simplex D radio. I've added several important changes. For starters, the pilot lamps and their associated 41-ohm dropping resistor

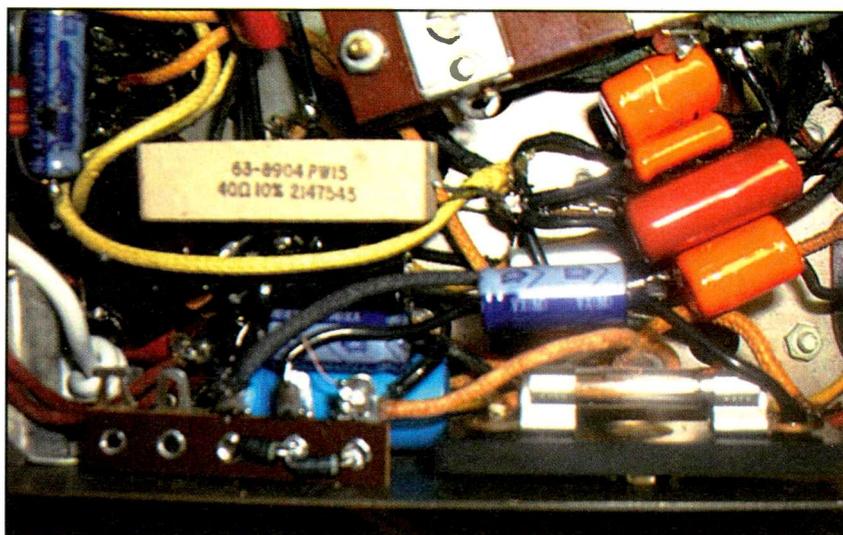


Photo F. Under-chassis work in progress. Most of the caps have been changed. A new line cord and polarized plug have been installed, along with an under-chassis mounted 1/2-amp fuse. A terminal was installed for the voltage doubler used to increase the target voltage on the tuning eye.

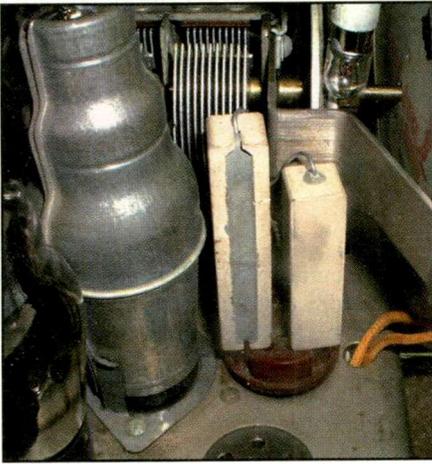


Photo G. Someone had substituted two wire-wound power resistors for the original ballast.

have been moved to the “cold” side of the filament string. (I used a 40-ohm resistor to be practical.) There is an important, but not so obvious, reason for doing so. A failed open tube filament (before the pilot lamps) could place the full AC potential across the exposed pilot lamp sockets. Placing the pilot lamps at the AC neutral end of the string eliminates that hazard. It’s a small point, but worth noting.

Dropping Filaments With A Series Diode

Now, remember that Simplex filaments total about 80 volts. Here’s a simple way to get that voltage: replace the dropping resistor with a silicon diode! *The silicon diode drops the power—not the voltage—by one-half.* It’s a common misconception that the diode will drop the voltage by one-half. This is *not* so, and please don’t fall into that trap. You need to multiply the AC line voltage by .707 to get the effective AC voltage; for example, $120 \times .707 = 84$ volts). Close enough; that extra four volts is easily absorbed when divided up among the tubes in the filament string! The diode action can cause hum or buzzing in the radio, but bypassing with a 0.01- to 0.005-mfd disc capacitor (1-kV rating) should keep that from occurring (see **Photo H**).

Also be aware that you won’t be able to measure the filament voltages, now a complex waveform, with your shop’s RMS voltmeter! You’ll need a true RMS AC reading voltmeter to do so! My shop’s Fluke 8060A is an example of a true reading AC meter. An inexpensive 1N4007 silicon diode (1 amp at 1000-volts piv) will do.

Pilot Lamp Surge

Pilot lamps became more popular when new rectifier tubes started to include a 6.3 filament tap; the 35W4 and 35Z5 are two common rectifiers with that feature. It’s a bit unusual to find pilot lamps in series filament sets using the Simplex D tube lineup. The diode voltage-dropping scheme introduced an unexpected problem: the pilot lamps flashed open when the set was turned on.

Cold tube filaments draw quite a bit of current as they warm up; this surge was safely absorbed by the dropping resistor. The hard-limiting diode action instead dumps the surge current across the pilot lamps and the associated 41-ohm resistor. A 1N4738 8.2-volt Zener diode, wired across the lamps as shown in **Figure 3**, limits the voltage surge to an acceptable level. The Rider schematic shows the pilot lamps are wired in series, but the factory wiring in my set has the pilot lamps wired in parallel.

One other small point: The set cannot be used on DC line voltages if the diode modification is performed, the filament voltage will be too high.

Improving Eye Tube Performance

The Simplex D used a filter choke instead of the dynamic speaker field coil for power supply filtering. Instead, the speaker field coil is across the B+ voltage and ground! That was unexpected, as it added to the production costs. Unfortunately, the eye tube requires a tad more B+ than is available in the radio. Adding a voltage doubler (also shown in **Figure 3**) to boost the B+ voltage to pin 4 of the 6G5 made a substantial improvement in the green target’s visibility. The original eye tube had a very fuzzy and poorly defined wedge pattern caused by heater-to-cathode leakage. A new tube solved the problem. The original tube worked fine in a transformer-powered set.

Rube Goldberg?

Unfortunately, at one time someone attempted to do a partial restoration. They decided it would be a great idea to use 2-volt #49 lamps instead of 6-volt lamps, and that the lamps should be wired in parallel across the 6K7 IF tube filament. That worked fine for the lamps, but resulted in a meager 3-volts on the 6K7 filaments, and the poor radio bare-

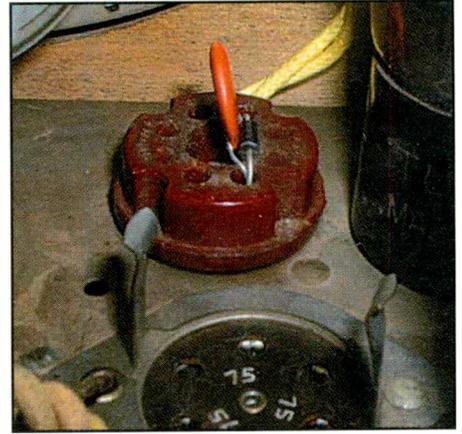


Photo H. The filament dropping resistor is replaced with a silicon diode. Eliminating the dropping resistor allows the radio to run much cooler.

ly worked! (Could that be why its last owner decided to sell it?) The wax caps were stacked in layers, making it difficult to recap the set. Even with modern components, the chassis got pretty full by the time I was finished! A few small problems remain; for instance, the short-wave reception could be improved. One of these days I’ll get around to it!

Eye Tube Eye Candy

In any event, the radio now plays fine on the BCB, is safer to use, and is proudly displayed on a shelf in the “Wireless Connection” editorial office. It will never be a daily player, but my enjoyment comes from having it nearby to look at it! ■

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The Somersaulting Sun

Every 11 years, the sun's magnetic field does a somersault. Normally, the sun, like our planet, has a north and south magnetic pole. However, during March 2000, the sun's south magnetic pole disappeared, and a north magnetic pole emerged to take its place. Yes, the sun had *two* north magnetic poles!

For nearly a month, the sun's southern magnetic pole migrated north and became a band of south magnetic flux around the sun's equator. This is a fairly normal side effect of the sun's magnetic dynamo reorganizing itself during the course of the solar cycle.

By May 2000 the sun's south magnetic pole had returned to the sun's southern spin axis. But it did not stay there. By 2001 the solar magnetic field completely flipped. The solar magnetic north pole is now at the southern solar spin axis, while the magnetic solar south pole is at the northern solar spin axis.

Again, it takes about 11 years for the sun's activity to go from quiet to active and back again. Our study of the sun in past solar cycles has revealed a normal reversal of the solar magnetic field, usually occurring near the period of maximum solar activity.

Research with the Solar and Heliospheric Observatory (SOHO) spacecraft has revealed the process by which this reversal may be accomplished. Studies have revealed that coronal mass ejections (CMEs) play a major role in this reversal. The

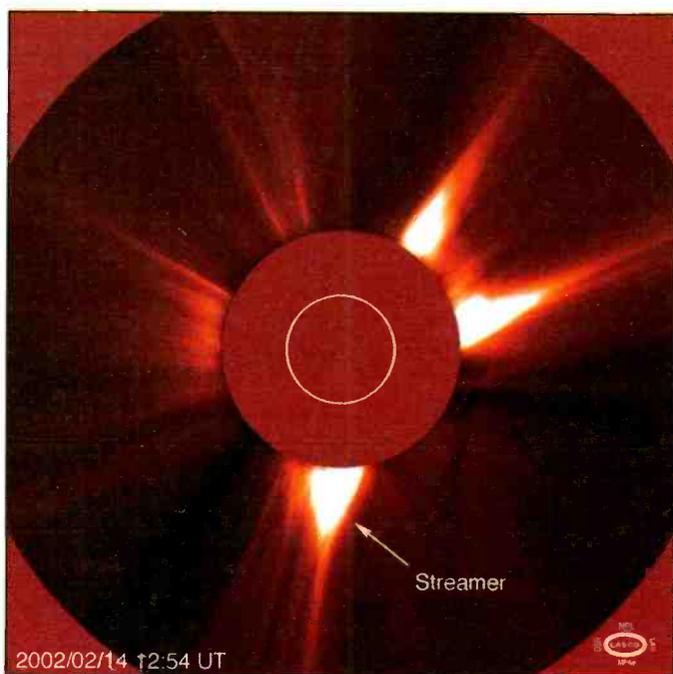
sun's magnetic flipping is the cumulative effect of more than a thousand of these huge eruptions that blast billions of tons of electrified gas into space. These CMEs carry the sun's old magnetic field away, allowing a new one with a flipped orientation to form.

The data shows that it takes more than a thousand CMEs, each carrying billions of tons of gas from the sun's polar regions, to clear the old magnetism away. When it's all over the sun's magnetic stripes are running in the opposite direction, the reversal, or flipping, of the sun's magnetic poles complete.

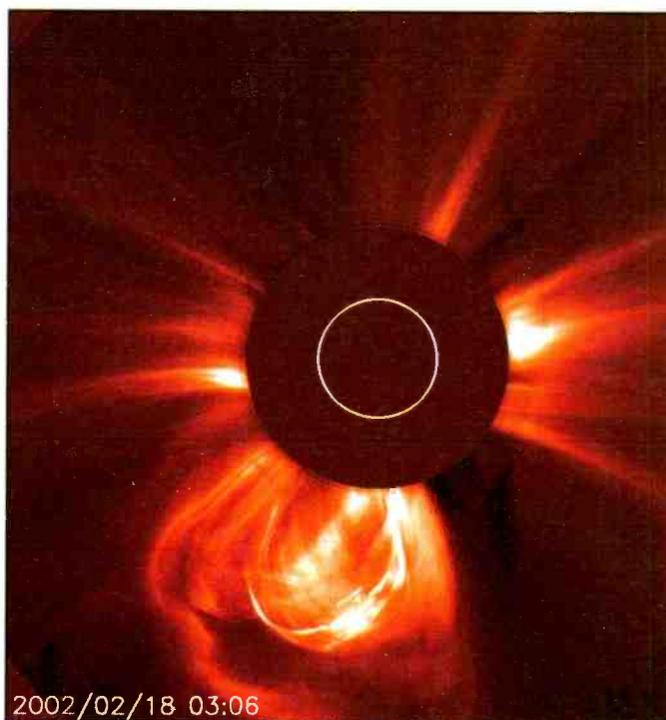
Apparently random CMEs turn out to be signs of the sun's diligent housekeeping. It keeps sweeping away, out into space, untidy magnetic fields created by sunspots and other contortions in its atmosphere. It leaves the sun with its main magnetic field completely overturned, and its north and south magnetic poles swapped around. The process can be long and drawn-out, and can be quite violent. The climax comes in a busy period of CME activity after the count of sunspots has peaked, every 11 years.

How does the sun's magnetic pole reversal affect our planet? How does it affect the propagation of radio signals?

The sun's magnetic field permeates the entire solar system, and beyond. This region is called the heliosphere. The magnetic field is called the Interplanetary Magnetic Field (IMF),



A magnetic structure called a streamer is seen emanating from the bottom of the solar disk (the sun's southern axis). It is a twisted magnetic loop, rising from the south pole of the sun, that has trapped hot, electrified gas within, which is glowing brightly. (Photos courtesy NASA and the European Space Agency)

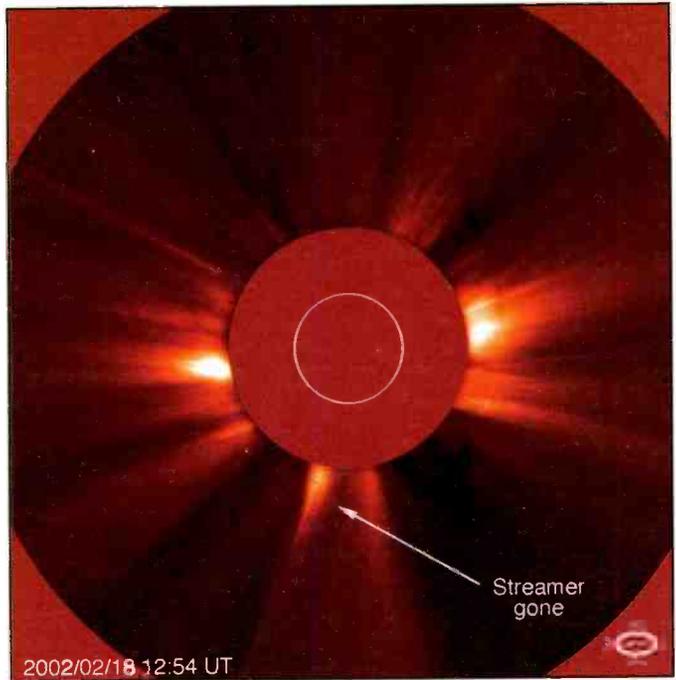


Four days later, a coronal mass ejection (CME) erupts from the same region (white and red area near the bottom). The white loop-like structure in the center of the CME is the streamer being carried away.

which interacts with the earth and is a primary cause of space weather. Sprawling out away from the sun is a "current sheet." This is a vast, expanding surface where the polarity of the sun's magnetic field changes from north (plus) to south (minus) and is 10,000 km thick, extending past the orbit of Pluto. The entire heliosphere is organized around this giant sheet, which carries an electrical current that is about 16 orders of magnitude less than that of the current carried in an ordinary light bulb.

Ordinarily, the current sheet circles the sun's equator, spreading out in a wavy pattern that might resemble a dancer's skirt that flies up while the dancer is spinning around. During the double north pole event of March 2000, however, the current sheet was radically disturbed. It was altered so much that its topology changed from a skirt to a giant seashell.

As the earth orbits the sun, it dips in and out of the wavy current sheet. On one side the sun's magnetic field points north, or toward the sun; on the other side it points south, or away from the sun. South-pointing solar magnetic fields tend to cancel earth's own magnetic field. Solar wind energy can then penetrate the local space around our planet and fuel geomagnetic storms. (We report the IMF's orientation using the Bz index. When the Bz is negative, it indicates a southerly orientated IMF). Starting with March 2000, the predominant orientation of the IMF has been negative, giving rise to the number of geomagnetic stormy days.



After the CME is gone, the streamer has disappeared as well, indicating that the magnetic structure was carried away with the CME.

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

Classification of A-indices is as follows:

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

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

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

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

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

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

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

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

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

Optimum Working Frequencies (MHz) - For March 2004 - Flux = 100, SSN = 46 - 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
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INDIA	13	14	14	14	14	14	11	10	10	10	9	9	9	9	9	9	9	9	8	10	11	12	13	13
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CHINA	18	17	13	11	11	10	10	9	9	9	9	11	16	13	11	11	10	10	10	9	9	9	10	16
SOUTH PACIFIC	32	31	30	27	25	23	21	19	18	17	16	15	15	17	17	16	15	14						

Geomagnetic storms cause a degradation of radio signal propagation as a result of ionospheric recombination. This recombination is similar to what takes place during the hours of darkness, with a lowering of the frequencies each ionospheric layer can refract. On the other hand, a stormy geomagnetic field can spark auroras, which can support Aurora-mode VHF propagation. Geomagnetic storms can cause long-term (hours to days) degradation, or depression, of the maximum usable frequencies (MUFs), reducing the critical frequencies by as much as 50 percent of normal.

As we move further away from the solar cycle maximum, and the reversal of the sun's magnetic poles, we see a normal rise in geomagnetic activity. However, this finally calms down as we approach the solar cycle minimum. We are expecting the current cycle's ending sometime in 2007, so we have another couple of years where the geomagnetic activity may remain active to stormy on a fairly regular basis.

Current Solar Cycle 23 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for November 2003 is 67, only one point up from October. The 12-month running smoothed sunspot number centered on May 2003 is 69, down one point from April. The lowest daily sunspot value during November 2003 was recorded on November 6 with a count of 9. The highest daily sunspot count for November was 132 on November 27. A smoothed sunspot count of 41 is expected for March 2004.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 153 for November 2003, the same as for October. The 12-month smoothed 10.7-centimeter flux centered on May 2003 is 135, staying about the same as April. The predicted smoothed 10.7-centimeter solar flux for March 2004 is about 100, give or take about 18 points.

The observed monthly mean planetary A-Index (Ap) for November 2003 is 31, just one point lower than October. The 12-month smoothed Ap index centered on May 2003 is 21, only one point higher than April. Expect the overall geomagnetic activity to be active to disturbed for most of the month.

HF Propagation

March is one of the optimal DX months. As the Spring Equinox approaches, the gray-line begins to run straight north and south. With reasonably high average 10.7-centimeter flux numbers and the return of sunlight to the polar north, north-south openings on 11 through 25 meters are quickly improving. However, since we are now in the moderate phase of solar activity, east-west path openings on higher HF frequencies will be short and unreliable.

Sixteen meters will only occasionally remain open into the late evening. Daytime paths will not degrade much until mid-summer. You will see consistently early closures, or completely dead conditions at times, if you live closer to the North Pole.

Twenty-two and 19 meters will remain in good shape. Both short and long path circuits are often reliable and solid. Nighttime paths are rarer than last year at this time. If the flux is high enough, expect good openings during the evening hours in the United States, which are sunrise hours across Russia, Africa, and both the Near and Far East. Expect a fair amount of short and long path DX from these areas of the world.

Between sunset and midnight, expect occasional DX openings on all bands between 15 and 41 meters when solar activity is high. Conditions should favor openings from the east and south. These bands should peak for openings from Europe and Africa near midnight.

From midnight to sunrise, expect optimum DX conditions on 31 through 90 meters, and occasionally, 120 meters. Conditions should favor openings from the west and south. Some rather good openings on 19 and 22 meters should also be possible from the south and west during this time.

Noise levels are slowly increasing as we move toward the spring season. Geomagnetic storms will increase, disrupting the mid- and high-latitude ionosphere. During the Spring Equinox, earth's magnetic field is sufficiently perturbed by solar wind particles flowing into the auroral zone (between 50 and 70 degrees north geographic latitude) to cause the ionosphere to be depleted. During days of typical post-solar cycle maximum disturbance (coronal hole mass ejections, high-speed solar winds with a southerly oriented interplanetary magnetic field), an increase in geomagnetic storms will degrade many paths, while VHF openings off of the auroral zone may increase.

As spring and summer approaches in the Northern Hemisphere, daytime MUFs continue to drop, while the nighttime MUFs will start to increase. At the same time, the Ap is on the rise, so take advantage of the current excellent conditions while they last and listen to the world! Look for gray-line DX in the mornings and evenings on lower frequencies.

VHF Ionospheric Openings

The possibilities for ionospheric openings on the VHF bands usually improve during March and the spring months. Many of the solar-ionospheric relationships that can produce ionospheric openings on the VHF bands tend to peak during these equinoctial periods.

A seasonal increase in short-skip openings due to sporadic-E (*Es*) propagation generally takes place during March, and an occasional low-VHF opening may be possible during this month. *Es* openings most often occur during the daylight hours over distances between about 1,000 and 1,400 miles. There is also a good chance for an increase in widespread auroral activity during March, accompanied by auroral-scatter-type openings on VHF up to 2 meters.

Conditions should be optimal during March for trans-equatorial (TE) scatter propagation between the southern tier states and countries deep in South America. The best time for TE openings should be between 8 and 11 p.m. local time. Check TV Channel 2 for DX from South America.

I'd Like To Hear From You

Do you have propagation or solar weather questions you would like to see answered in this column? Please send them to me either by post or e-mail. In addition, I have created an online discussion forum for you to come and ask questions about propagation and space weather. There is also a series of other topic areas, including shortwave listening and antenna design. Come join in at <http://hfradio.org/forums/>. For live space weather information, please check out my live propagation center at <http://prop.hfradio.org>.

Until next month, I wish you great DX. Happy hunting! ■

Radio Denmark Is Dead

Several times in recent years we have reported on the steady de-evolution of Radio Denmark—from the discontinuance of English, to the closing down of their own transmitters, to cutbacks in on-air time. Anyone could see where this path was leading, and now, if they haven't held the wake just yet, it's quite likely not far off.

The people in Copenhagen who make such decisions have come to the conclusion that, since they now only broadcast in Danish, and the overseas Danish audience is so small that it isn't worth the expense of keeping the shortwave service on the air! Thus it was decided to discontinue the Radio Denmark shortwave service at the end of this past year.

You can see how they played this game: chip away at content and infrastructure. and then, when you've reduced it down to bare bones, you can show that it's no longer relevant, which makes the kill justifiable.

Fifty years ago Radio Denmark (then the Voice of Denmark) was a highly popular station. Its English language broadcasts (especially the "Saturday Night Club," hosted by Marianne Linard) were well heard and well received in North America. Some years later, the power of the 100-kW transmitter at Herstedvester was cut by half because of "environmental concerns," which reduced the station's coverage. The station had stopped issuing QSLs in 1989, and by 1990 the downhill slide had begun in earnest. The Herstedvester facility was closed in favor of relays over Radio Norway's facilities, the length of the transmissions was cut to just 25 minutes, and Danish was the only language in use. Today there is nothing left.

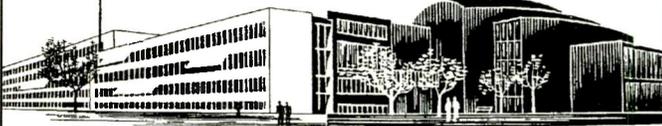
World Music Radio, which was active from Holland and other European sites during the 1960s to 1990s, now has a license to operate from—would you believe—Denmark! It's not on the air just yet and apparently will begin with Internet broadcasts, but it does have approval to use shortwave, although the power should only be around 10 kW. More on this as soon as it is available.

The University For Peace (UPEACE) cut off the power to the building housing RFPI's transmitters late last fall, finally following through on their threats to shut down the station. RFPI is attempting to fight back using the Costa Rica legal system. UPEACE, echoing the current line followed by several consultants these days, says the Internet and other forms of communication are the way to go. The university says shortwave has no place in its future plans, but the real reason behind all this is that UPEACE needs the space being used by RFPI for its own expansion. Meantime, word has it that RFPI has been given some land near San Jose and, once it has moved its facility, expects to be back on the air with its message of worldwide peace, harmony, and goodness for all.

The plug has been pulled on the **Voice of the Mediterranean**. Based in Malta but relayed by other stations, it went off the air at the end of last year. VOM was a joint effort by Malta and Libya. Libya had come to the conclusion that the broadcasts no longer served any purpose, so they discontinued their half million-dollar support for the operation.

Listen to
THE VOICE OF DENMARK

*The Danish short wave transmissions are beamed to
North America, South America, Africa, India and the Far East*



To North America on 31.51 m—9.520 kc/s.
Daily 1.30—2.30 and 3.00—4.00 GMT. E.S.T.: 8.30—9.30 and 10.00—11.00 p. m.
DX-bulletin: Wednesdays 2.20—2.30 a. m. and 3.50—4.00 a. m. GMT.

To South America on 31.51 m—9.520 kc/s.
Mondays, Wednesdays and Fridays 23.00—24.00 GMT.

To Far East, Australia and New Zealand on 19.78 m—15.165 kc/s.
Tuesdays, Thursdays and Saturdays 9.00—10.00 a. m. GMT.
DX-bulletin: Thursdays 9.50-10.00 a. m. GMT.

To South Asia on 19.78 m—15.165 kc/s.
Tuesdays, Thursdays and Saturdays 14.00—15.00 GMT.
DX-bulletin: Thursdays 14.50-15.00 GMT.

To Africa and the Near East on 19.76 m—15.180 kc/s.
Tuesdays and Fridays 5.00—6.00 a. m. GMT.
Presumably from Jan. 1st 1958 from 16.40—17.40 GMT. 19.78 m—15.165 kc/s.

For listeners in Near East 19.78 m—15.165 kc/s.
Daily 17.40—21.15 GMT rebroadcast of Danish home service.

Presumably from Jan. 1958 special broadcasts to Danish ships daily 10.00—10.30 GMT.
Far East 19.78 m—15.165 kc/s, 15.00—15.30 GMT. South Asia 19.78 m—15.165 kc/s,
16.00—16.30 GMT. Mediterranean and Middle East 19.78 m—15.165 kc/s, 00.00—00.30
GMT. South America 31.51 m—9.520 kc/s, and 01.00—01.30 GMT. North America
31.51 m—9.520 kc/s.

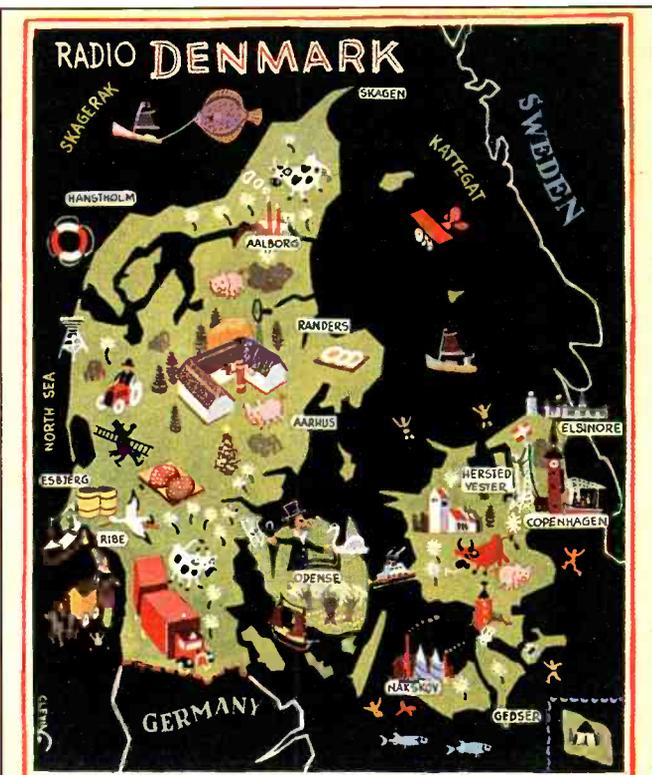
Listeners all over the world are invited to send reception reports together
with their criticisms and programme suggestions to
the SHORTWAVE DEPARTMENT, RADIO HOUSE,
COPENHAGEN V, DENMARK
Answer by letter or QSL-card

Back in the late 1950s Radio Denmark, then the Voice of Denmark, had a fairly comprehensive schedule—but that was then.

There is an odd coincidence in the Libya/Malta story, though. The current B03 schedule for Radio Jamahiriya doesn't list any broadcasts from Libyan transmitter sites! They all seem to come via France. So what happened to the high-power facilities in Libya itself?

Although it is very much in the "early days" yet, a group called **World Christian Broadcasting** is planning a new shortwave station on Madagascar. Meantime, WYFR is now being relayed by the Radio Netherlands facility on that island, running from 1900 to 2100 on 6020.

Kol Israel has done some further cutting back and consolidation. English broadcasts have been reduced to 15-minute segments at 0500 (on **9435**, **11605**, and **17600**), 1115 (**15640** and **17545**), and 1730 (11605 and 17545). All the other transmissions are in Hebrew. In a nutshell, Israel's overseas network (Reshet Hei) has been discontinued. The Hebrew Network (Reshet Bet) now also carries the shrunken English, French, and Farsi programming—the only non-Hebrew languages still being offered.



Copenhagen, 10/15, 1957

DEAR LISTENER,

Your report of 8/17/1957 concerning our broadcast on 9520 kc/s, 31.51 m, 50 kw, call letters OZF6, at 0200-0230 GMT on 7/24 1957, beamed to North America is hereby verified.

Sincerely yours,

Paul Berg
SHORTWAVE DEPT.

One of Radio Denmark's QSLs circa 1957.

Iran is also making cutbacks, although we think this may apply just to their English programming. It doesn't seem likely that VOIRI would drop everything considering the huge investment it put into transmitting facilities just a few years ago.

Deutsche Welle facilities are now carrying Radio Multikulti on Sundays at 1130 on 15275. This is a Romy language program. Radio Multikulti is a domestic FM station based in Berlin.

We don't know if it's still in use but, late last fall, Radio Espana Exterior instituted a special feed for its personnel in Iraq. This program ("Aqui Espana") was airing on Sundays 21610 from 1405 to 1500.

Here's a good one. It seems the BBC is interested in making contact with people who listen to them on shortwave (as opposed to satellites, Internet, local relays, etc.). These are the audience-friendly folks who chopped off service to North America and have a decades-old policy of issuing no-data acknowledgement cards as QSLs. At any rate, if you'd be interested in providing them with information on your reception, you can let them know at bbconair@bbc.co.uk They'll put your name on an e-mail list and let you know when they want to hear from you.

Reception conditions have been extremely volatile in the few weeks prior to this writing, with monster solar storms whacking the ionosphere on an almost daily basis. Reception has been completely knocked out at times. On the plus side, sometimes reception is greatly enhanced on certain bands and from certain

Abbreviations Used In This Month's Column

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

areas, so don't be surprised if the loggings this time include some unusual stations.

A copy of the 2004 edition of *Passport to World Band Radio* is now in the shack of **Cero DeGennaro** of New York for his steady contributions. That's courtesy of **Universal Radio** in Ohio. If you've never done so, we strongly suggest getting a copy of their big free catalog, filled with everything from the latest in shortwave radios to antenna connectors. Drop them a line at 6830 Americana Parkway, Reynoldsburg, OH 43068, call 614-866-4267, or send an e-mail to dx@univeersal-radio.com.

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

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

ALBANIA—Radio Albania, 6115 at 0242 with weekly musical program and Albanian folk songs. (Brossell, WI) 0253. (DeGennaro, NY)

ANTIGUA—BBC Relay, 5975 at 0318. //6005 via Ascension. (MacKenzie, CA)

ARMENIA—Voice of Armenia, 9960 in GG at 1930 with talk, IS, and anthem at 1940 and into EE service at 1941. (Burrow, WA)

ARGENTINA—Radio Nacional, 6060 in SS at 0935 with news. (DeGennaro, NY)

ASCENSION ISLAND—7160 with "Europe Today" at 1641. (Foss, Philippines) 11855 with talks and interviews in unid African



Marianne Linnard hosted the very popular "Saturday Night Club" on Radio Denmark back in the mid-1950s.

language. (Brossell, WI) **12095** at 2104. (DeGennaro, NY) **21470** at 1400. (Jeffery, NY) VOA relay, **11855** with "Africa World Tonight" at 2008. (Brossell, WI)

AUSTRALIA—Voice International, **13655** with rock, talk at 1550. (Barton, AZ) Radio Australia, **6020** with news at 1230 and **11650** with ID at 1130. (Northrup, MO) **9580** with news of Pacific at 1005. (DeGennaro, NY) **21615** via Northern Marianas in Indonesian at 0005. Also **21740** IDing as "Asia Pacific Network" //17795 and off at 2358. (MacKenzie, CA) 21740 with Asia/Pacific monitored at 2310. (Jeffery, NY) 21820 with program on Robert Fitzroy, inventor of the weather forecast. (Foss, Philippines)

BELGIUM—Radio Vlaanderen Int., **5985** via Germany in Flemish heard at 0815. (DeGennaro, NY)

BOLIVIA—Radio San Miguel, **4902** with pops and rustic vocals in SS, TCs, and IDs, two of which came during 0247 sign off anmts. (D'Angelo, PA) (t) 0225-0248 close after short anmt. (Alexander, PA) 0240 with lively pops and local tunes. (Strawman, IA) Radio Guanay, Guanay, **4761.6** with "musica Andina" at 2310. (Wilkner, FL) Radio Pio Doce, Llalagua Siglo XX, **5952** at 0951 in QQ and SS. (DeGennaro, NY) Radio Mosoj Chaski, Cochabamba, **3310** at 0935 with long talk in QQ, vocals at 0952. (D'Angelo, PA) Radio Santa Cruz, Santa Cruz, **6134.8** with music and commercials in SS at 0921. (DeGennaro, NY) Radio Yura, Yura, **4716.7** returned at 2310. (Wilkner, FL) Radio Eco, Reyes, 4409.9 in SS at 2357. (Wilkner, FL) Radio Emisoras Camargo, Camargo (t) **3390.2** with music and man host in SS at 2340. (Wilkner, FL)

BRAZIL—Radio Guaruja Paulista, Marila, **3235** with vocals, man in PP at 2326. Poor but improving with //5045 booming in

(D'Angelo, PA) 2338 with talk, vocals, ID. (Paszkievicz, WI) Radio Cultura Araraquara, **3365** at 2340 with PP talk over movie themes, jingle, and ID. (D'Angelo, PA) Radio Educacao Rural, Campo Grande, **4754.3** at 0002 with music and man in PP hosting, TCs and song intros. (D'Angelo, PA) Radio Congohas, **4775** at 2345 with pop vocals and man in PP. Fair, with swisher QRM. (D'Angelo, PA) Radio Nacional, Macapa, **4915** in PP with news, anmts at 0414. (DeGennaro, NY) Radio Aparecida, Aparecida, **11855** with domestic news at 2041. (DeGennaro, NY) Radio Anhanguera, **11830** with soccer coverage in PP at 2330. (D'Angelo, PA) Radio Brazil Central, Goiania, **4985** with Brazilian pops at 0132, IDs at 0147 and 0200. (D'Angelo, PA) 0410 with music vocals. (DeGennaro, PA) **11815** with religious talk at 2340, ID 12355. //4985. (Montgomery, PA) Radio Clube Paranaense, Curitiba, **6040** with futebol at 0105. (Strawman, IA) Radio Difusora, Roraima, **4875** with music and PP talk at 0258. (MacKenzie, CA) 0408. (DeGennaro, NY) Radio Rural, Santarem, (t) **4765** at 0101 with male and female annrcs, possible ID. (Montgomery, PA) 0914 with music vocals, commercials, call-ins. (DeGennaro, NY) Radio Difusora do Amazonas, Manaus, (p) **4805** with heavy audio reverb, seeming sports coverage at 2327. (Strawman, IA) 0953 with domestic news in PP. (DeGennaro, NY) Radio Brazil, Campinas, **4785** with ID at 0345, accordion music. (DeGennaro, NY) Radio Senado, Brasilia, **5990** with PP music at 1005. (DeGennaro, NY) Radio Nacional Amazonas, Brasilia, in PP with news at 1016, music at 0006. (DeGennaro, NY) **11780** with pop music at 0257. (MacKenzie, CA) 0310 with mention of "Radio Brazil." (Brossell, WI)

BULGARIA—Radio Bulgaria, **9400//11900** at 1730 with IS, ID, schedule, news. (Barton, WA)

BURKINA FASO—Radio Burkina, **5030** at 2225 with FF talk, highlife and tribal music, ID at 2300. (D'Angelo, PA)

CANAD—RCI, **13650** beamed to North Africa at 2112 with SWL Mailbag. (DeGennaro, NY) CKZN, St. John's, **6160** at 0958 with ID, news. (DeGennaro, NY)

CHILE—Voz Cristiana, **6070** with religious messages in SS monitored at 1010. (DeGennaro, NY)

CHINA—China Radio Int., **9755** via French Guiana with ID at 1430 and program on Tibet. (DeGennaro, NY) **9870** in RR at 1300. (Brossell, WI) 11900 at 1325. (Northrup, MO) **13650** via Cuba in CC at 2358. (Barton, AZ) **15415** at 1250, off at 1256. Also **17680** in unid language at 1107. (Jeffery, NY) China National Radio, **4480** with man/woman in CC talk at **2145**, //7935. (D'Angelo, PA) Xizang PBS, Tibet (p), **7385** with CC music and talk in listed Tibetan at 2244. (D'Angelo, PA) Voice of the Strait, **7280** in CC at 1247. (Foss, Philippines) Heilongjiang PBS, Harbin, **5945** in CC at 0945. (DeGennaro, NY) Music Jammer,

11635 monitored at 2250, //11885, **15550**. (MacKenzie, CA)

COLOMBIA—Radio Melodia, Bogota, **6139.8** at 0402 with operatic vocals and frequent IDs, SS anmts. Also at 0950. (D'Angelo, PA) 0959 with ID, news, and this day in history. (DeGennaro, NY)

COSTA RICA—University Network, **5029** with religious talk heard at 0130. (Paradis, ME)

CROATIA—Croatian Radio, via Germany, **7285** heard at 2324, co-channel with Voice of Vietnam. ID 2323, sports 2324, skiing news at 2329. Off at 2330. (Montgomery, PA)

CUBA—RHC **11760** in SS at 1320. (Northrup, MO) 2103 with news and sports in EE. Also **17705** in PP at 0027 (MacKenzie, CA). **15230** in SS at 1325. (Northrup, MO) Radio Rebelde, **5025** at 0-927 with international futebol scores. (DeGennaro, NY)

CYPRUS—BBC Relay, **15575** at 1317. (Brossell, WI) **21660** at 1434. (Jeffery, NY)

DOMINICAN REPUBLIC—Radio Cima Cien, **4960** at 0415 with lively LA music, some SS rap and many canned "Cima" IDs. (Alexander, PA) 0841 with Caribbean music. (DeGennaro, NY) Onda Musical, **4780** at 0105 with SS talk, jingle and ID, long talk, possible news items. (Montgomery, PA)

ECUADOR—HCJB, **6010** with religious programming at 0940. Also **9745** at 0257. (DeGennaro, NY) **15140** in SS at 1330. (Northrup, MO) Radio Federacion, Sucua, **4960** in unid language at 1028. (DeGennaro, NY) La Voz del Napo, Tena, **3279** with religious messages in SS at 1010. (DeGennaro, NY) Radio Quito, Quito, **4919** at 0921 with ID "La Voz del capitol, Quito" and "El Condor Pasa. (DeGennaro, NY) La Voz del Upano, Macas, **5040** with continuous Latin vocals from 0932, woman with ID. (D'Angelo, PA) Radio Oriental, Tena, **4781.4** at 1008 with ID, ad string, TC and vocals. (D'Angelo, PA) 1040 on **4782**. (Brossell, WI) Radio El Buen Pastor, **4815** with talks in SS and QQ at 1040. (D'Angelo, PA)

EGYPT—Radio Cairo/Egyptian Radio, **9990** in FF at 2020 (Brossell, WI) 2035. (DeGennaro, NY) **11725** at 0148. (Barton, AZ) **12050** in AA at 1900. (Paradis, ME)

EL SALVADOR—Radio Imperial, Sonsonate, **17835** at 2045 with religious programming, yelling, shouting preacher, and occasional religious music. IDs at 2105, 2136. Usually irregular but heard quite often lately. (Alexander, PA) 2235 in SS with vocals, ID. (D'Angelo, PA)

ENGLAND—BBC, **7325** in SS at 0343. (MacKenzie, CA) **15105** in FF at 1209. (Jeffery, NY) **15190** at 1325 and **15285** in CC at 1330. (Northrup, MO)

EQUATORIAL GUINEA—Radio Nacional Malabo, **6250**, 2154 with instrumental music to female with ID monitored at 2159 and 3 plus 1 time pips followed by news in SS. (D'Angelo, PA) 2151. (Montgomery, PA)

ERITREA—Voice of the Broad Masses, Asmara, (p) **7100** at 0348 with music, local

language, mention of Africa at 0355, then woman with echo and fan fares. (Montgomery, PA)

FINLAND—YLE/Radio Finland, **9775** with news in Finnish at 0230. (Brossell, WI)

FRANCE—Radio France Int., **4890** via Gabon in FF at 0415. Also **6175** in SS at 0415. (DeGennaro, NY) **15300** in FF at 1243 and **21580** in FF at 1412. (Jeffery, NY) **17620** with news for Africa at 1400. (Paradis, ME)

FRENCH GUIANA—RFI Relay, **21685** in FF at 1445. (Jeffery, NY)

HAWAII—KWHR, **9930** with religious program at 1302. (Brossell, WI) **17510** with gospel music at 0035. (MacKenzie, CA)

HONDURAS—Radio Litoral, La Ceiba, **4832** in SS at 0220. (Brossell, WI) 0430 with EE "Searchlight" program. Into SS at 0443. (Alexander, PA) 1235 with ID, music. (Wilkner, FL) Radio Misiones Internacionales/HRMI, **3340** at 0310 with mix of SS talk and relaxing music. EE ID at 0422 including San Bernadino postal address for reports. (D'Angelo, PA)

GABON—Radio France Int. relay, **4890** in FF at 0430. (Paradis, ME) **11955** in FF at 2015. (Brossell, WI) **15530** at 2014 with news in unid language. (Jeffery, NY)

GERMANY—Voice of Germany, **5905** at 0313 in RR. (MacKenzie, CA) Sudwestrundfunk, **6030** at 0710 with pop/rock and man in GG. ID and jingle at 0730 and news. More pop at 0735. (D'Angelo, PA) Pan American Broadcasting, **15650** at 1455 with various brokered religious programs including "Waymarks" and "World Bible Mission." (D'Angelo, PA)

GREECE—Radio Makedonias, **7450** at 2155 with music, woman with ID as "Radio Makedonias FM." High-pitched tone served as top of hour time pip. (Montgomery, PA) Voice of Greece, **9425** in Greek at 1857, ID at 1900 and continued with talk. (MacKenzie, CA) **11730** in Greek at 1315. (Barton, AZ)

GUAM—Trans World Radio/KTWR in CC at 1300. (Barton, AZ)

GUATEMALA—Radio Maya de Barillas, **3325** with SS talk, marimbas at 1050. (Brossell, WI) Radio K'ekchi, San Cristobal Alta Verapas, (p) **4845** at 1230 in SS, struggling with transmitter problems. (Wilkner, FL) Radio Verdad, Chiquimula, **4052.5** with IDs at 1122, Christian music. (Wilkner, FL) Radio Cultural, Coatan, **4780** with ID at 1235. (Wilkner, FL)

INDIA—All India Radio, Bhopal, **3315** at 0020 sign on. Open carrier to flute IS at 0023, brief vocal and Hindi anmts. News at 0030. //**4820** and **4860**. (D'Angelo, PA) AIR, Port Blair (Andaman Is) **4760** from 1135 with talks in presumed Hindi and flute music. (Brossell, WI) AIR Chennai, **4790** at 0002 with mix of Hindi vocals and man in Tamil talk. Close at 0044 with anmts over flute. Next knighted noted at 0000 sign on. (D'Angelo, PA) AIR, Kolkata, **4820** from 0026 sign on with anmts in HH, time pips 0030 and news in HH. //3315 and **4860** at sign on. (D'Angelo, PA) AIR, Delhi, **4860** at 0026 with anmts in HH and HH news at 0030. //3315 and 4820. (D'Angelo, PA) AIR, Bangalore, **9690** with long talk by woman at 1350. (Barton, AZ) AIR, Panaji (Goa) **9820** with Sinhala vocals at 1318. (Strawman, IA) AIR, Aligarh, **11620** at 1625 in RR and 1915 in EE. (Brossell, WI) 2043 with Hindi vocals, EE talk. (DeGennaro, NY) AIR, Bangalore, **15075** in unid language monitored at 0245. (Jeffery, NY)

INDONESIA—Radio Republik Indonesia, Palankaraya, **3325** at 2156 with II talk and vocals f/by Jakarta news. (D'Angelo, PA) RRI Ternate (p) **3345** at 2153 with group singing until off at 2200. (D'Angelo, PA) RRI Makassar, **4753.4** with II talk by man/woman until Coconut Islands theme and Jakarta news at 1200. //4870. noted again at 2135. (D'Angelo, PA) RRI Wamena, **4870** at 1144 with man in II hosting music program until local ID at 1159, SCI and Jakarta news relay at 1200. (D'Angelo, PA) 1154 (p) in II with music, man anncr. (Montgomery, PA) Voice of Indonesia, **15150** at 2000 with EE news, commentary, local music, US pops. (Alexander, PA)

IRAN—VOIRI, **6150** heard at 0306 with Koran and man in presumed Farsi to sign off at 0330. (D'Angelo, PA) **7320** with news at 1930. (Paradis, ME) **9635** at 1601 with "Crises of the Iraqi Nation," ID, and "the Iraqi Opposition." (Burrow, WA) **15545** at 1315 in AA. (Brossell, WI)

Radio Ndeke Luka
Fondation Hirondelle: TOI ETM RANCU

Radio Ndeke Luka is a FM and shortwave broadcasting network serving the whole République centrafric. It is a joint project of the Fondation Hirondelle in th Switzerland..

The radio aims to contribute to the restauration of peace in the country by broadcasting news and information programmes that are professional, credible, and reliable.

QSL for *Richard A. D'Angelo*

We are pleased to verify your reception of Radio Ndeke Luka, Bangui, RCA

Date : *6 Oct 03*
Time : *19:58 UTC*
Frequency : *15.10123*
Date : *15.10.03*
sign : *RDH*

Richard D'Angelo got this reply from Radio Ndeke Luka in the Central African Republic but aired over DTK facilities in Germany.

IRELAND—Radio Telefis Eireann, **6155** via England with sports news and rugby at 0130. (Paradis, ME) **21630** via Ascension with talk of winter weather in Europe, commercials at 1848. (MacKenzie, CA)

ISRAEL—Kol Israel, **11585** in HH at 0305 with comments, western music on the Reshet Bet Network. (MacKenzie, CA) **11605** in FF at 1915. (Brossell, WI) 2000. (Paradis, ME)

ITALY—RAI, **9745** with pops, ID, IS at 1955. (Brossell, WI) **9840** to South America at 0307. (DeGennaro, NY) **11800** opening EE at 0051. (Barton, AZ) European Music Radio (p) **5775** via IRRS at 2153 with pop program. No ID except for IRRS at 2159 close. (D'Angelo, PA) Italian Radio Relay Service, **5775** at 2140 with EE programming and RTTY QRM. ID and address at 2234 f/by chorus and off. (Alexander, PA)

KUWAIT—Radio Kuwait, **11990** with rap and rock at 1950. (Brossell, WI) Middle East news in EE at 2057. Off at 2059. (DeGennaro, NY) **15505** at 2115. (Barton, AZ)

JAPAN—Radio Japan/NHK, **7140** in JJ at 1630. (Foss, Philippines) **9825/9835** with children's music program in JJ at 0920. (Barton, AZ) **11910** in JJ at 1945. (Brossell, WI) **13630** with pops at 0615. (Barton, AZ) **17710** in FF at 0023. (MacKenzie, CA) Radio Nikkei (*ex R. Tampa—gld*) **3925** in JJ monitored at 1115. (Barton, AZ)

JORDAN—Radio Jordan, **11690** at 1455 with pops, news, "Radio Jordan, 96.3 FM" at 1504. (Burrow, WA) 1630 with classical and semi-classical music, RTTY QRM, news headlines at 1700. (Strawman, IA)

LIBYA—Radio Jamahiriya, **15435** in AA at 2010. (Brossell, WI) (*This frequency may be inoperative by now.—gld*)

LITHUANIA—Radio Vilnius, **9875** with news, comment, music at 2330. (Paradis, ME)

MADAGASCAR—Radio Netherlands Relay, **21480** in unid language at 1405. (Jeffery, NY)

MALAYSIA—Radio Malaysia, **7295** at 1250 with pop/rock in presumed Malay. (Foss, Philippines) 1620 with music dedication program. (Burrow, WA)

MALI—RTV Malienne, **9625** in local language at 1437. (DeGennaro, NY)

MAURITANIA—Radio Mauritanie, **4845** at 0210 with long AA talks, vocals at 0245 and ID at 0300 f/by Koran recitations. On late for Ramadan. (D'Angelo, PA) 0253 in AA with comments and singing. (MacKenzie, CA) 0303. (DeGennaro, NY)

MEXICO—Radio Educacion, **6185** with EE ID at 0029, jazz piano. (Montgomery, PA) 1023 with romantic vocals. (DeGennaro, NY) Radio Transcontinental de America/XERTA (t), **4815** at 0229 in SS with continuous romantic ballads. Off suddenly at 0258. (D'Angelo, PA) Radio Universidad/ XEXQ, **6045** at 1210 sign on with anmts and into classical music. (Wilkner, FL) Radio Huayacocotla, **2390** at 2330 with rancharo music. (Wilkner, FL)



Rich D'Angelo prowls the bands with a Ten-Tec 340 at a DXpedition to French Creek State Park in Pennsylvania

MOLDOVA—Voice of Russia relay, **7180** with "Timelines" news program at 0230. (Paradis, ME) 0300 with world news. (Brossell, WI)

MOROCCO—Medi Un, **9575** with AA vocals and local instrumentals at 0124. (Strawman, IA) RTV Marocaine, **5980** in AA at 0322. (DeGennaro, NY) 11920 in AA at 0244. (MacKenzie, CA) **15335** at 1110 and **15345** at 2010. (Brossell, WI) VOA Relay, **15445** at 2002. (Jeffery, NY)

MYANMAR (Burma)—Radio Myanmar, **5040.6** at 1110 with music, woman in Burmese, more music. (Montgomery, PA) 1116 with talk by woman and regional vocals. (D'Angelo, PA) 1120 with melodic flutes, local language. (Wilkner, FL)

NETHERLANDS—Radio Netherlands, **5955** in DD at 0941. (DeGennaro, NY) **9895** to Africa with a report on conditions in the Sudan at 2017. (Brossell, WI)

NETHERLANDS ANTILLES—Radio Netherlands Relay, Bonaire, **9785** with interview at 1030. (DeGennaro, NY)

NEW ZEALAND—Radio New Zealand, **9885** with South Pacific news at 1135. (DeGennaro, NY) **15265** at 1935 with music, ID, news. Also **15340** at 0550 with ID, news at 0600. (Alexander, PA)

NIGERIA—Radio Nigeria, Ibadan, **6050** at 2106 with man in EE talks, democracy in Nigeria, group vocal, ID, possible anthem and apparent sign off. (D'Angelo, PA) Voice of Nigeria, **11770** ending EE at 1935 and into FF "Ici La Voix du Nigeria." (Brossell, WI)

NORTH KOREA—Voice of Korea, **9335//11710** at 1510 with report of a new gym in Pyongyang. (Burrow, WA) **9650** in JJ at 0924. (Barton, AZ) **11335** in SS at 2245. (MacKenzie, CA) **11710** in FF at 1847. (MacKenzie, CA) **15180** at 0129 with music and woman anncr. (Jeffery, NY) KCBS, **11710** at 1245 in KK. (Brossell, WI)

NORTHERN MARIANAS—VOA Relay, Tinian, **13760** monitored at 0700. (Barton, AZ)

NORWAY—Norwegian Radio, **15735** at

1320 with U.S. country, Hank Williams, etc. (Brossell, WI)

PAKISTAN—Radio Pakistan, **9425** (t) at 2232 in EE/Urdu with news, prayers. (Miller, WA) **11570//15065** heard at 1557 with IS, pips, ID, and into news. (Burrow, WA) 15065 at 1350 with Urdu talks, Pakistani vocals. Three pips at 1400 and woman with ID, news. (D'Angelo, PA)

PERU (Note: all Peruvians are in SS and music is usually domestic folk, indicated by "OA.") Radio Imperio, **4386.6** at 1043, ID at 1047. (D'Angelo, PA) La Voz de la Selva, Iquitos, **4824.4** at 1016 with music, time checks. (DeGennaro, NY) 1026 with OA vocals, SS talk, ID, TC, ads. (D'Angelo, PA) Radio Santa Monica, Cusco, **4965** at 0951 with anncr hosting OA vocals, TCs, anmts, IDs. (D'Angelo, PA) Radio Andina, Huancayo, **4995.5** (t) at 0135 with seeming news. (Montgomery, PA) RadioTarma, Tarma, **4774.9** at 2318 with music, anncr, ID jingle. (Montgomery, PA) Radio Horizonte, Chachapoyas, **5020** with OA music, anncr, IDs, time checks. (Montgomery, PA) Radio Melodia, Arequipa, **5906.4** at 0810 with Latin pops, little talk, canned IDs. (Alexander, PA) Radio San Nicholas, Rodriguez Mendoza, **5471.8** at 1020 with man anncr and music. (Wilkner, FL) Radio Imperio, **4386.6** at 0948 with religious talks to live audience. (D'Angelo, PA) Radio Oriente, Yurimaguas, **6188** at 1024 with lively OA vocals, TC, ID, ads. (D'Angelo, PA) Radio Huanta 2000, Huanta, **4746** in QQ and SS at 0939. (DeGennaro, NY) Radio del Pacifico, Lima, **4975** with religious talks at 0906. (DeGennaro, NY) Radio Atlantida, Iquitos, **4790** at 0935 with vocals. (DeGennaro, NY) Radio LTC (t) **5005.5** at 1002 with woman anncr, possible news. (Montgomery, PA) Radio Libertad, Junin, **5039.3** at 1030 with ID by man. (Wilkner, FL) Radio la Reina de la Selva, Chachapoyas, **5486.7**, with ID by man at 1032. (Wilkner, FL) Ondas del Huallaga, Huanuco, **3329.6** at 1017 with TCs, religious programming. (Wilkner, FL) Radio Ancash, Huaraz, **4992** heard at 0944 with birthday anmts and ID with each. (DeGennaro, NY)

PHILIPPINES—Radio Pilipinas, **11720** at 1902 with drama in Tagalog, EE ID monitored at 1910, and into rap. (Burrow, WA) **15190** at 1912 with soft vocals to 1929 when ID, sign off anmts in EE. (D'Angelo, PA) VOA Relay, **9535** in VV at 2238, **9890** in EE at 2243 and **11760**. Also **17820** at 0018. (MacKenzie, CA) **9780** in VV at 1608, mixing with Yemen. (Strawman, IA) **15195** in CC at 0139. (Jeffery, NY)

PORTUGAL—RDP Int., **11860** with futebol match at 2045. (DeGennaro, NY) **11945** at 1950. (Brossell, WI)

ROMANIA—Radio Romania Int., **11820//11940** with IS, ID, news in EE at 1700. (Burrow, WA)

RUSSIA—Voice of Russia, Armavir, **6155** at 0339. (DeGennaro, NY) **7390** in RR at 1215. (Barton, AZ) **9965** in SS at 0235 and

12010 closing FF at 1957. (Brossell, WI) Magadan Radio, **7320** with call-in program at 1231 in RR. (Brossell, WI) VOA via Russia, **11990** in CC at 1320. (Brossell, WI)

RWANDA—Radio Rwanda, **6055** with group singing at 2054 under Slovakia but in the clear after Slovakia went off. (D'Angelo, PA) Deutsche Welle Relay, **9655** at 1435 to Central America in GG. (DeGennaro, NY)

SAO TOME—VOA Relay, **4960** at 0300 with news for Africa. (Paradis, ME) 0305 with VOA News ID. (MacKenzie, CA) **11975** at 1955. (Brossell, WI)

SAUDI ARABIA—BSKSA, **11820** with AA talks at 1940. (Brossell, WI) **21600** in FF at 1423. (Jeffery, NY)

SEYCHELLES—BBC relay, **15420** with "Sportsworld" monitored at 1636. (Jeffery, NY)

SINGAPORE—Mediacorp Radio, **6150** with pops, "Perfect 10, 98.7 FM," ID, and local ads. (Burrow, WA) BBC Relay, **6195** at 1015. Also **15360** at 0815. (Barton, AZ) **9740** heard at 2301. (Strawman, IA)

SLOVAKIA—Radio Slovakia Int., **5930** at 0100 with IS, ID, news and "Sunday Newsreel." (Paradis, ME)

SOUTH AFRICA—Channel Africa, **3345** at 0300 with IS, PP talk. (Montgomery, PA) 0320 with male host and two guests discussing jobs and employment. Again at 2151 to 2200 close. (D'Angelo, PA) **9770** at 0334 with music, discussion on democracy there. (Miller, WA) **11710** with news at 0500. (Barton, AZ) **15265** at 1704 with news, features, ID. (Burrow, WA) Radio Sondergrense, **3320** with singing in presumed Afrikaans at 0235. (Brossell, WI)

SOUTH KOREA—Radio Korea Int., **5975** at 1618 with music, Korean economic and health reports, "Let's Learn Korean." (Burrow, WA) **9560** via Canada with news at 0200. (Paradis, ME) **9760** via Canada in SS heard at 1010. (DeGennaro, NY)

SPAIN—REE, **6055** in EE at 0019 and **12035** with AA sign on at 2100. (DeGennaro, NY) **11910** in SS at 1317. (Brossell, WI) **15110** in SS at 1900 with schedule and news. **17560** opening in AA at 2000. Also **21700**, **17850** with sports in SS at 2045. Also **17850** at 1800. (Barton, AZ) (Burrow, WA) **15170** in SS at 1320. (Northrup, MO)

SRI LANKA—Deutsche Welle Relay, **15205** with "Inside Europe" at 2005. (Brossell, WI)

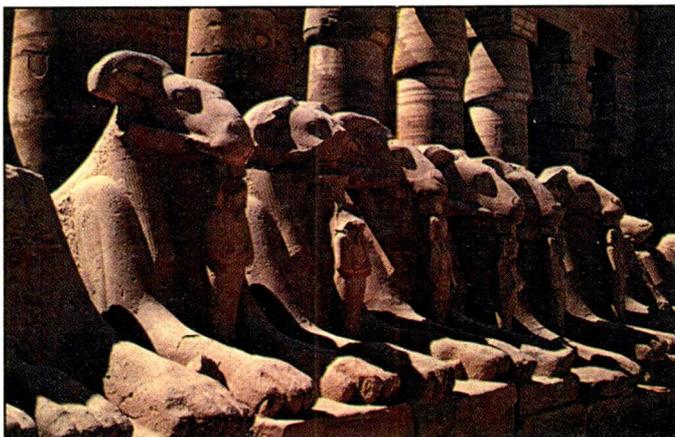
SWAZILAND—Trans World Radio (t) **3240** at 0305 with long talks in unid African language. (Montgomery, PA)

SWITZERLAND—SRI, **15220** at 2005 via Germany. (Brossell, WI)

TAIWAN—Radio Taiwan Int., **7445** opening at 1100. (Barton, AZ) **11550** in EE at 1604 with local news, weather. (Burrow, WA)

TAJIKISTAN—Voice of Russia relay, **11500** in Hindi with RR folk songs at 1243. (Brossell, WI)

THAILAND—VOA Relay, **11735** at 2335 to 0000 close. (D'Angelo, PA) **11870** in EE at



These guys are probably all former SWLs, turned to stone by some of the things one runs across on the shortwave bands. The card is from Radio Cairo.

1906, //12015 and 13710. (MacKenzie, CA) 17670 in unid language at 0107. (Jeffery, NY)

TUNISIA—RTT Tunisienne, 7275 with Mideast music at 0530. (Barton, AZ) 9720 in AA at 0244. (DeGennaro, NY) 12005 at 1955 with apparent radio drama. (Brossell, WI) 15450 in AA at 1330. (Paradis, ME)

TURKEY—Voice of Turkey, 6020 with news and ID at 0404 and 0407. (Montgomery, PA) 9460 in TT at 0440 and 11885 in TT at 0249. (MacKenzie, CA) 9665 with news heard at 2300. (Paradis, ME)

UGANDA—Radio Uganda, 4976 heard at 0300 with IS, ID and into programming. (Paradis, ME)

UKRAINE—Radio Ukraine Int., 5905 at 0316 in UU. (DeGennaro, NY) 0430 with "Music From Ukraine." (Paradis, ME)

UNITED ARAB EMIRATES—UAE Radio, Dubai, 13675 at 1625 with music, ID, news. Into AA at 1633. (Burrow, WA)

USA—Voice of the NASB, via WRMI, 7385 at 0329 with National Association of Shortwave Broadcasters ID and talk about this weekly special program in DRM and analog. Elder Jacob Myers (WMLK) talking about the Assemblies of Yahweh. Encouraged reports for a special QSL card. (D'Angelo, PA)

VATICAN—Vatican Radio, 7305 heard at 0250 with "Today's Gospel." (Paradis, ME)

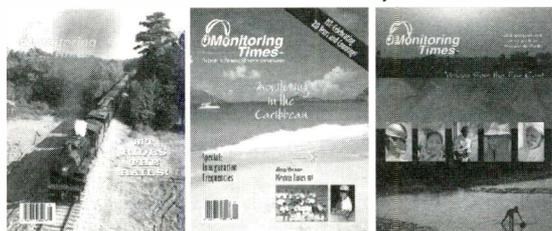
VENEZUELA—Radio Tachira, San Cristobal, 4830 at 0007 with LA music and man DJ. (D'Angelo, PA) 0250 with non-stop LA music with a few SS anmts, ID at 0315. Off at 0402. (Alexander, PA) Radio Amazonas, Puerto Ayacucho, 4940 in SS at 0944. (DeGennaro, NY)

VIETNAM—Voice of Vietnam, 6165 at 1242 with VV talk, vocals, lots of flutes. (Paszkievicz, WI) 13740 at 1620 with talk about eco-tourism projects in Vietnam. (Foss, Philippines)

ZAMBIA—Radio Zambia, 4910 in unid language with children's choir at 0310. (DeGennaro, NY) 0314 in local language with conversations, mentions of Zambia. (Montgomery, PA)

And there, fingers weary, we conclude things. Like they do with live sports on TV, draw a circle around each of the following in recognition of their fine work this time: Stewart MacKenzie, Huntington Beach, CA; Robert Wilkner, Pompano Beach, FL; Marty Foss, Guinayangan, Philippines; Rick Barton, Phoenix, AZ; Robert Brossell, Pewaukee, WI; Richard D'Angelo, Wyomissing, PA, and DXpedition to French Creek State Park, PA; Bruce Burrow, Snoqualmie, WA; Mike Miller, Issaquah, WA; David Jeffery, Niagara Falls, NY; Mark Northrup, Gladstone, MO; Brian Alexander, Mechanicsburg, PA; Robert Montgomery, Levittown, PA, and French Creek State Park, PA; and Ciro DeGennaro, Feura Bush, NY. ■

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Back To The Moon?

The press has been reporting of late that there is a bold plan circulating inside NASA to possibly begin a new space program to put men on the moon once again! I will be thrilled if this happens.

Those of us old crows who witnessed the Apollo program of the 1960s will never forget the day we all held our breath as we listened in on that first moon landing. I have always been proud to say I was of the generation present when we made such a bold step. I have many young friends who, when I wax nostalgic about the good old days of early manned space flight, can't help but say "What's the big deal?" I can only reply by saying "You had to be there!" They cannot understand what a difficult and tremendous undertaking landing a man on the moon was, and we did it during very turbulent times when wars were being waged, the country was in political turmoil, and we were all living under the threat of the bomb. But for a brief moment the entire world was united as we watched mankind dip a cautious toe into the vast cold ocean that is space.

Taking the ocean analogy a bit further, since then we have indeed remained in the shallows, only looking out at the vast unexplored sea with telescopes, but occasionally sending out robots to do our exploring for us. But it doesn't feel real unless one of our own can experience the adventure with human eyes.

So let's go to the moon! But like in the past, I'm sure we'll hear the nay-sayer's standard arguments against manned space travel: "It's too dangerous, expensive, and a waste of resources,"—especially in light of today's earth-bound problems and the recent *Columbia* tragedy.

Consider this, though: What if throughout man's history, we always waited for better times? What if early explorers were convinced that sailing across the oceans was too dangerous and too expensive? What if the Wright Brothers had waited? What if Lindberg had waited until all was right with the world?

I believe that a return to the moon is just what this weary old planet needs. Yes, even with today's advanced technology, it will still be very expensive and very risky.

More men and women will undoubtedly die in the conquest of space, but if somehow you could ask all those who have gone before, all those who have died if it was worth their lives, I think they would all shout "Yes!"

Let's once again unite the world in a common goal. Let's give humankind something to be proud of again! Let's not only go back to the moon! Let's do all those things we dreamt about doing in space but never got-around to because of the problems down here on earth. Let's build space stations and moon bases as a stepping-stone to exploring other planets.

To those who think this is a foolish endeavor, ponder this: There will always be strife among humans. There will always



The author has lunch with NASA astronauts Carlos Noriega (right) and Steve Robinson, who may be on the first space shuttle to fly since the *Columbia* tragedy. (Photo by Mike Dunlap)

be dictators and wars and disease and terrorism. All these problems will continue no-matter how much money we throw at the problems. But as a species we have the chance to do something that defines us as explorers, and not as just evolved predators, with guns and bombs preying on each other. Let's leave our mark on the universe. Let's leave something that, despite all our flaws, says we were noble creatures capable of doing great things. Until we went to the moon man's greatest endeavor had always been war.

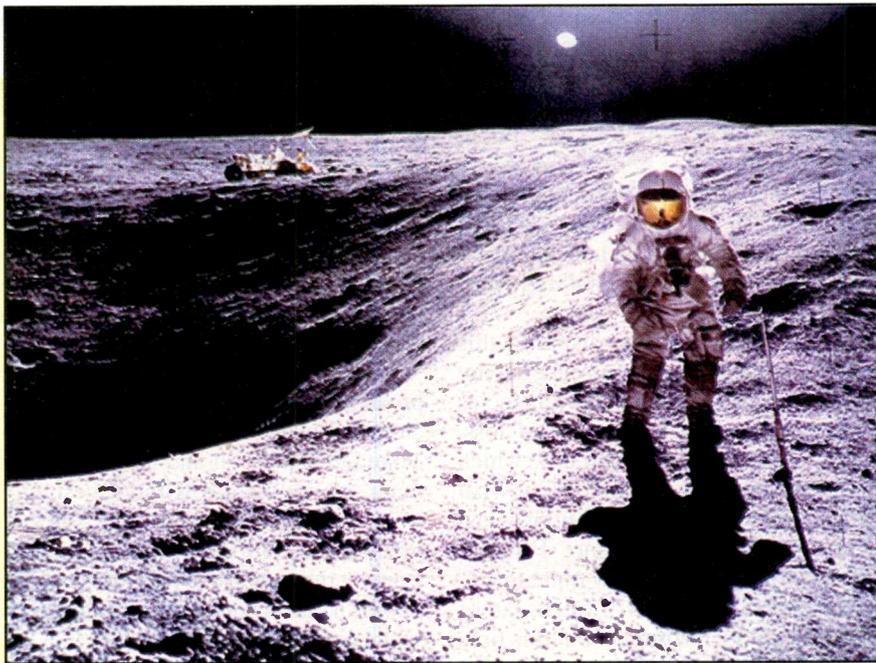
And besides, all those problems will be waiting for us when we get back!

Utility Monitors: Witnesses To History, Both Bad And Good

Unfortunately, my generation has also experienced a host of tragic events that are forever etched on the brain, like acid on iron. Whenever an anniversary of an event comes around, such as the Kennedy assassination, the *Challenger* explosion, or the "Attack On America," every one of us can recall with crystal clarity the exact things we were doing when we first heard the shocking news. Many of us were more personally involved through radio monitoring.

But unless you lived in New York City, were at Cape Kennedy, or were one of the few who was at Dealey Plaza on that fateful day, most of us experience these tragedies through our radios remotely.

Imagine what it might have been like to have been a radio monitor in Dallas on the day the President was assassinated. Imagine if you could go back in time or by some freak mag-



Will we return to the moon? NASA has a bold new plan to do just that! (Photo courtesy NASA)

netic space anomaly capture on modern equipment the radio signals that reverberated around the planet as the events of the day unfolded.

Rarely does one witness an historical event first-hand. I will never forget the sight of the space shuttle *Columbia* coming apart over my Texas location, tracing a white arc of debris across the winter sky like broken chalk on a cobalt-blue celestial blackboard.

I have always been very interested in space and manned space flight. In fact, when I was a small lad in school in Westerville, Ohio, I won an art contest at school by drawing in exquisite detail a *Mercury* capsule. My reward was to travel to Columbus, Ohio, to meet astronaut John Glen just after his historic flight. I can actually say I got to shake the hand of an original *Mercury* astronaut!

That day cemented in my psyche a love for anything that flew in space. From *Mercury* to *Apollo*, if it had anything to do with space flight, I followed it.

One of the radio monitoring events I'll never forget is the time some space/radio monitoring friends of mine gathered with me on a high-mesa overlooking a star-filled West-Texas summer sky. We were waiting for *Columbia* and the International Space Station to come bounding over the horizon, flying in loose formation as the shuttle chased the station for docking. The very second the pair of

space-ships appeared, our scanners erupted to life with their voice communications. We cheered and marveled at what we were hearing and witnessing.

But as happy an event as that was, it takes on even more significance since *Columbia* no longer exists. As I touched on briefly a couple months ago in this column, the tragedy not only claimed the lives of a brave crew, it also claimed a fellow Amarillo citizen, a man I went to school with, Rick Husband.

Although I didn't really know Rick, I had met him in passing. In fact, as a teenager I probably passed him in the school halls on a daily basis. I find it strange that although we shared a passion for aviation, technology, science, and space exploration, our life paths never intersected after high school.

Rick became an astronaut and I became a technology writer. His exploits in space are just the type of things I'd go on to passionately write about. Only now I realize, I *should* have known him. I wish I had.

Fate is such a strange and ironic force that it would only be as his life was ending (and sadly in sight of his hometown) that our paths would cross for the final time. It's still haunts me that a classmate of Rick's would be on hand to photograph his tragic and untimely end.

Sad to say that on that dark day in question, as *Columbia* was hurtling out of the darkness, I was NOT monitoring the

flight on any of my receivers. Not that I hadn't planned on it. Since the launch I had been following the mission of Amarillo's astronaut and STS-107 very closely. I had intended to get up early that morning and monitor the re-entry on TV and on my radios, but the night before I had stayed up way too late writing, and as *Columbia* began its fiery re-entry I was *fast asleep!* Luckily a friend of mine, Paul Hart, was not sleeping in and was monitoring the flight closely. An aviation buff and pilot, Paul currently works for an aerospace contractor and formerly worked for Grumman Aerospace and is as big—if not bigger—a fan of things that go whoosh as I am.

My wife woke me from my deep slumber and said someone was on the phone telling me to get my lazy butt out of bed and come to the telephone, NOW! I'm not a fast riser and it took a few seconds for the cobwebs to clear my head before I said to my wife, "Whoever it is, take a message and tell them I'll call them back later!" I grunted as I pulled the covers over my head. I vaguely remember my wife saying something into the cordless phone and then hearing her gasp.

Then she said those words that hit me like a bucket of cold water. "It's Paul Hart. He says NASA has lost contact with the space shuttle and they think it is breaking up over Texas!"

I bolted awake. Somehow in my daze a part of me remembered that the reentry corridor of the shuttle ran just south of Amarillo. Jumping into a pair of pants and grabbing my always at-the-ready digital camera I dashed outside. Although I was shirtless on that frigid February morning, I didn't feel the cold. I looked up into the sky and immediately saw the jagged contrail of *Columbia's* destruction splayed across the atmosphere like a deep ugly scratch. A shiver of shock ran through my system as if I was standing on an exposed electrical cable. Before my unbelieving eyes, the space shuttle *Columbia* was raining down over Texas.

Without thinking I somehow managed to turn on the camera and snapped the pictures you see printed here. Although in shock, somehow the photojournalist inside me was awake and screamed at me to take some pictures of this tragic, and yet historic, event.

I wouldn't realize until some hours later that mine were some of the first daylight pictures of the *Columbia* taken shortly after the shuttle emerged from the dark-

ened west half of the country. Later I would send the photos to NASA to aid in their investigation. Since I have heard nothing from NASA I do not know if my photos were of any help.

As the contrail of debris headed southeast and over my horizon I headed back inside, shivering from the shock and suddenly aware of the winter chill on my bare back. By now my wife had turned on the TV, and we watched in mute horror as live video showed glowing, burning debris falling out of the sky on the Dallas-Ft. Worth metroplex.

I rushed to my monitoring shack, where I have no less than three television sets (I used them extensively during the invasion of Iraq). I turned them all on, and the news networks were all now broadcasting video views of the death of *Columbia*. Immediately I turned up the volume on all my receivers, scanners, and monitors and begin searching for NASA-related frequency lists.

On VHF, FAA air traffic controllers were broadcasting NOTAMS for pilots to avoid the effected area because of falling debris. I tuned in one of the tried and true NASA launch support frequencies on HF, 10.780 MHz (USB), but heard nothing.

Later that day the Coast Guard became active on 8.983 MHz (USB) with helicopters searching the waters off the Florida coast. But when it became clear that none of the shuttle debris made it that far, the searching aircraft were ordered to return to base.

I did hear some military aircraft on UHF talking about the crash, and soon fighter planes working primarily on 243.000 (guard), 282.800 (SAR), and 311.000 MHz (STRATCOM PRIMARY) began a search along *Columbia*'s flight path. They were possibly F-16 Fighting Falcons from Naval Air Station Joint Reserve Base, Fort Worth, Texas, tasked with search operations and security. I also monitored an orbiting Texas Air National Guard C-130 Hercules from Fort Worth assisting in coordinating search operations. Some of the military callsigns I heard were, ROPER 87, OKIE 01, SANDY 02, DARKSTAR 11, SENTRY 51, and OMAHA 01. SENTRY and DARKSTAR I identified as AWACS from Tinker, AFB Oklahoma.

I spent the rest of the day monitoring the radios, answering the non-stop ringing phone (requests from friends to come over and listen in), and applying some intense photo-enhancing algorithms to the photos I took.

Sadly, as the day drew on it became very apparent that no survivors would be found. My photos were published in the local newspaper and newswires and soon the prestigious BLACKSTAR photo agency called asking permission to sell them to international newspapers and magazines. The telephone rang well into the night with magazines, television stations, and newspapers all wanting to purchase the photos.

As a photojournalist, usually this would have pleased me to no end, but my sudden popularity with the news agencies was tempered by a deep sense of loss. Luckily it was a very hectic day, which kept me from really thinking about what I had just witnessed. Later that night when it quieted down, it hit me. I'm not ashamed to say I shed a few quiet tears.

One morning a couple of weeks later I was again awoken abruptly, but this time it was by what sounded like very low-flying jets. Jumping to my feet I hurriedly ran outside to see several NASA T-38s flying the "missing man" formation over nearby Llano cemetery, obviously in tribute to Amarillo's fallen astronaut. It was a stirring sight and heralded the public memorial services that would take place later that day. At lunchtime I made a trip out to Amarillo International Airport (now renamed Rick Husband International) to get some snapshots of the NASA T-38s and to grab a bite to eat at my favorite hangout, the "Old English

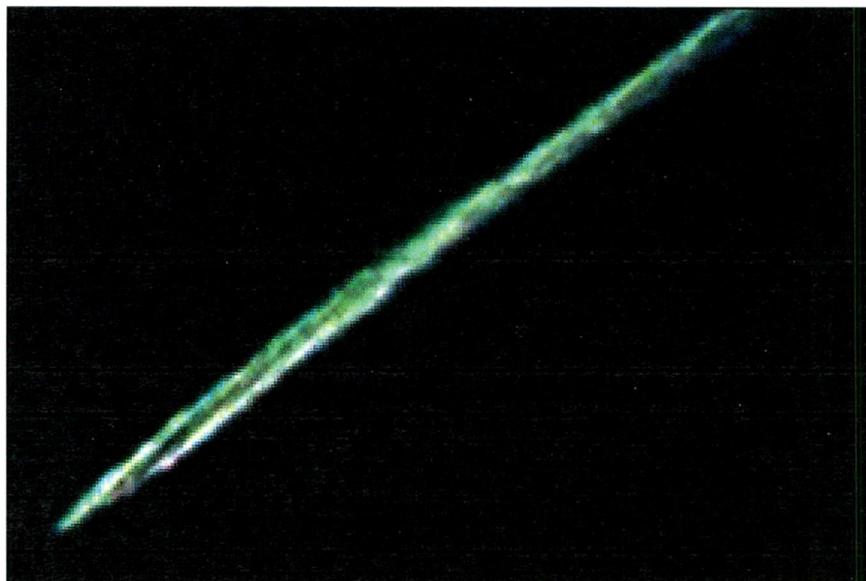
Field House" restaurant, situated on the south side of the airport.

Going inside, it was a pleasant surprise to see real-life NASA astronauts sitting at my favorite table. Since I knew they were in Amarillo for the memorial services to take place later on that day, I debated approaching them. But I really wanted to meet them, give them my condolences and let them know how much we appreciated the risks they took as space explorers.

Summoning up my courage I approached them. They were more than gracious and even invited me (and my friend Mike Dunlap) to sit and have lunch with them, which we did without hesitation. Mike and I gave them our heart-felt sympathies and told them how shocked we were by the loss. I also told him about the photos I had taken and how much the space program meant to me.

As we talked, the lunch turned from being somber to very pleasant. Mike and I had a great conversation about the future of manned space flight. As it turned out, the NASA pilots we had the great honor of talking with were Carlos Noriega and Steve Robinson, both veteran shuttle pilots who should be the next ones to go up when shuttle missions resume. In all, we got to spend a leisurely 30 minutes chatting about everything aeronautical and astronautical.

Before we left they graciously let us take some pictures with them. Later I



Computer enhanced "vivid light" photograph of the space shuttle *Columbia*'s final plunge over West Texas shows details otherwise hidden in normal light. In this photo one can clearly see hot-spots and individual debris trails.

snapped some photos of their T-38s doing touch and go's.

"Return To Space Project"

A Reminder...So what is the point of this spacey column?

Later this year the space shuttle will hopefully return to space and I once again ask all readers to begin sending me their frequency lists and loggings that might have anything to do with NASA communications. From HF to UHF, I'd like to publish them before the next shuttle launch, which is possibly slated for September 2004. Let's begin now to collect those frequencies so we'll be ready to monitor by launch time.

I would like this to be the ultimate (and most accurate) NASA monitoring resource, complete with frequencies, call signs, and modes. All contributors will be given full credit.

As you compile your information don't forget to list support agencies, such as Coast Guard, Air Force, and Civil Air Patrol frequencies.

Send all of your loggings to me via the e-mail listed above.

Air Force One's Secret Trip Catches MILCOMers Off Guard!

MILCOM monitors are still buzzing about President George Bush's secret trip to Iraq on Thanksgiving. Many are wondering how some of the hard-core dedicated Air Force One monitors didn't have a clue that Bush had snuck out of Crawford in a civilian car, made his way to the Waco airport unnoticed (he even got stuck in traffic) and flew all the way to Iraq from Texas without their hearing as much as a peep on their radios!

True, it did occur on a holiday when most monitors would be (hopefully) paying more attention to their families, but it does go to show (despite what many privacy experts who blast radio monitors think) that it is possible to keep a secret in this country!

My hat is off to the Secret Service who planned this to the smallest detail. They obviously took great pains to make sure no one was the wiser. Friends of mine who live close enough to Crawford report radio traffic indicated nothing was out of the ordinary.

But there were clues. Usually all Secret Service channels are digitally scrambled. On the day that Bush snuck out of

Crawford they were in the clear, no scrambling whatsoever.

With hindsight always being 20/20 this should have been the tip-off that something was up. Fake communications chatter (as if all was normal) was reported on Presidential protection Secret Service frequencies in the area. Officially this is called *spoofing* and it made it seem as if the "POTUS" was still in Crawford getting ready to enjoy his Thanksgiving dinner. This is smart because the Secret Service knows the press camped out near Crawford monitor their communications.

Some reports claim that even certain Secret Service agents at Bush's Crawford ranch did not know he had left the compound, but I think that is highly unlikely.

Bush made the 45-minute ride from the ranch to the airport in an unmarked vehicle. He joked about encountering traffic for the first time in three years, Bartlett said. Usually the President's motorcade speeds through red lights and traffic jams.

Sources at the Waco airport say it is not unusual to see Air Force One leave at any given time without the President onboard. Many times have they seen the aircraft head back to Andrews without the POTUS after dropping him off in Waco. The plane's departure was explained by the ruse that it needed maintenance in Washington D.C.

Because it is standard procedure to change call signs from SAM (plus numbers) to Air Force One whenever the President is onboard, and knowing that sharp-eared monitors would pick up on the change, the aircraft did not change calls on departure from Waco.

The President stopped at Andrews Air Force Base outside Washington to change planes and pick up some aides. Monitors in the area of Andrews did not hear anything regarding the arrival and departure of Air Force One.

On the day before Thanksgiving, I did Intercept ORDERWIRE wide-band FM communications here in Amarillo on 375.550 MHz and 390.550 MHz, which are sometimes associated with Air Force One when it is in Crawford. However, since we had friends and family over I didn't get any time to explore their source further. It's possible that they did have something to do with Bush's secret departure but I can't confirm this.

Reporters and photographers who had accompanied him from Texas were asked to take the batteries out of their phones. The reporters who joined in Washington after gathering at a hotel near the base were taken in an unmarked van to Air

Force One's hangar. They were ordered to surrender their cell phones, pagers, and other electronic devices, stashing them in envelopes held by security officials until the plane was airborne.

According to a story published in the *Washington Post*, Air Force One was spotted shortly after dawn on Thanksgiving off the western coast of England. A pilot of a yet-to-be-identified commercial aircraft radioed air-traffic controllers and asked, "Did I just see Air Force One?" Controllers radioed back to the pilot that the aircraft in question was a "Gulfstream V" in a tone of voice that led the pilot to believe he had better go along with the bogus identification. The pilot radioed back a simple surprised "Oh!"

Three hours before landing in Baghdad, the President checked with the Secret Service again and was assured that the trip remained secret. News broadcasts, relying on official announcements, still said he was celebrating Thanksgiving Day with his family at his ranch near Crawford, Texas.

Air Force One landed in Baghdad in the dark, showing no lights. The airport in Baghdad was blackened and Air Force One, once on the ground, could not be seen. Bush's motorcade traveled from the plane to the mess hall with lights out on most vehicles.

Bush left Baghdad in the same way he came in, radio silent and under the cover of darkness, supposedly without any terrorist supporters of Saddam Hussein being any the wiser.

One sharp-eared MILCOM monitor, "TAHFencer" did pass on to us the following logs that could have been evidence of Air Force One's secret trip, but at this time their significance is not understood.

Here are TAHFencer logs (Frequency, KHz: Call, all times ZULU):

11175: SAM 6719 20:39 SAM 6719 pp w/ commercial number in Washington, D.C. "ROYAL CROWN," Their SATCOM died and they just brought it back up, heard some traffic "on that frequency that was on a different code." Wants to confirm they are cleared to go voice with them in schedule (sounds like) 3," told they are cleared to go voice on SATCOM, they test while on the phone patch ROYAL CROWN hears the "key burst" but no audio, 6719 has ROYAL CROWN L/C on SATCOM req they "pass the frequency, will standby," 6719 "got everything loud and clear, I'll be turning over" and ROYAL CROWN will be waiting for them.

11175: SAM 6719 20:50 SAM 6719 pp w/ commercial number in Washington, D.C. "ROYAL CROWN," tried again on SAT-

COM but nothing heard, ROYAL CROWN had him broken and tried to call 6719 but he didn't hear it, tries it again while on the phone patch, ROYAL CROWN gets "a couple blasts" but no voice.

11175: VANGUARD 79 22:53 VANGUARD 79 pp w/ DSN 318-462-0621 (?) "DRAGON ops," has unheard "fault codes" on aircraft told they "will not clear." Suggests they RTB, they reply they will RTB. Ground party requests they provide hourly ops normal calls to Andrews Global until they "get in range of (DRAGON ops)" UHF transmitter. Ground party says they (RE: DRAGON ops) are in the "Yemen/ Somalia area."

11175: SAM 6719 23:15 SAM 6719 pp w/ Andrews SAM cmd, reporting dept. 23:15z eta 01:45z has "1 px."

11175: VANGUARD 79 01:18 VANGUARD 79 with Puerto Rico request they pass to DRAGON ops they are "ops normal" 01:18Z.

11175: VANGUARD 79 01:54 VANGUARD 79 calling SKYBIRD, Ascension answers has her good/readable.

11175: REACH 638T 02:44 REACH 638T pp w/ Andrews cmd post then meteo, ETA their station 04:45z is A1 status has rolling stock cargo 7 px is ??? Dover, will be "taking 80215 home to Westover."

TAHFencer wonders if SAM 6719 or VANGUARD 79 were possible parts of Bush's entourage or aircraft assigned for protection of Air Force One.

Reader's Logs

Many thanks to our ever-faithful UTE monitors who dutifully submit their logs every month. These guys are the real UTE monitoring experts and you'd do well to read their interception reports and strive to be as good at pulling signals out of thin air as they are. However, we want to hear from the beginning UTEs as well. Don't be shy. Even if you only have a few stations to report, send them in!

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

5696: CAMSLANT Chesapeake rqsting CG Rescue 1503 to relay to CG Helo 6001 to **5696:** CG Rescue 1701 rqsting guard for 1701 and Helo 6570 from CAMSPAC Pt Reyes. Enroute medivac mission. (DS2)

5696: CAMSLANT Chesapeake wrking CG Auxiliary BPR w/ radio check. Auxiliary radio will call on telephone after CAMSLANT questions whether they should be operating on this frequency. (DS2)

5696: CAMSLANT Chesapeake wrking CG Auxiliary BPR w/ radio check. Auxiliary radio will call on telephone after CAMSLANT questions whether they should be operating on this frequency. (DS2)

6950.0: Lima Victor (O/M SS): 0200 USB calling Lima Alpha w/ no response. (RP)

7361.5: T1Z159 (1/159th Avn Bn, Simmons AAF, Ft Bragg NC): 1643 USB/ALE sounding. (RP)

7448.5: USACE1010 (U.S. Army Corps of Engineers): 1754 USB/ALE sounding. (RP)

7510.0: USACE1010 (U.S. Army Corps of Engineers): 1947 USB/ALE sounding. Also noted sounding on 07448.5. (RP)

8047.0: HQ3NGB (Army NG HQs, Crystal City, VA): 1757 USB/ALE TO HONNGB (unidentified NG Bureau, possibly Honolulu??). (RP)

8050.0: O/M (IT): 0208 USB w/unheard station. (RP)

8124.0: MENEMAUROA (Venezuelan Air Defense site): 0034 USB/ALE TO CDDA (Venezuelan Air Defense HQs, El Liberador Airbase). These units also noted on 09950.0 at 0031. (RP)

8187.0: SCLC222 (Communications Logistics Center, 222nd Motorized Infantry battalion, Venezuelan Army): 2205 USB/ALE TO CLC22 (Communications Logistics Center, 22nd Infantry Brigade). (RP)

8846.0: New York (MWARA CAR-B): 1400 USB w/ Coast Guard Rescue 1503 (HC-130, CGAS Elizabeth City) w/ flight route information. CG 1503 not declaring IFE but because of high winds at their altitude & distance from home base wants to avoid any unnecessary routing. New York tells CG 1503 that they cannot approve their request for direct to Elizabeth City because of active military flights and that CG 1503 should request that routing from Giantkiller. (RP)

8864.0: Gander (MWARA NAT-B): 2103 USB w/ Sikorsky helo 2048K (self id) in radio checks. 14/11 RP3. Unusual to hear helos on MWARA freqs. Possibly a test flight. (RP)

8906.0: New York (MWARA NAT-A): 2047 USB w/ Otis 83 (KC-130, VMGR-252, MCAS Cherry Point, NC) in position report. (RP)

8906.0: New York (MWARA NAT-A): 2053 USB w/ Reach 8631 (not heard) trying to find right freq for Reach 8631 to contact Shannon. (RP)

8906.0: New York (MWARA NAT-A): 2125 USB w/ Otis 85 (KC-130, VMGR-252, MCAS Cherry Point, NC) handing them off to Santa Maria on 5598.0. (RP)

8908.0: O/M (SS): 2248 USB w/O/M (SS). Appears to be familiar conversation, lots of chuckling and laughing. (RP)

9095.0: Extensive encrypted data comms: 2157 USB. (RP)

9050.0: DT1 (unidentified): 1503 USB/ALE sounding. (RP)

9050.0: CO2 (unidentified): 1437 USB/ALE sounding. (RP)

9050.0: 2159: USB/ALE handshake (missed) followed by encrypted voice. (RP)

9081.5: T1Z137 (1/137th Avn Bn, OHNG Canton OH): 1624 USB/ALE sounding. Also noted sounding on 07650.0. (RP)

9103.0: O/M (IT): 2156 USB w/O/M (IT). (RP)

9120.0: O/M (Arabic): 2148 USB w/O/M (Arabic). 14/11 RP3. Caught at end of transmission. Only caught sign off. (RP)

9150.0: O/M (SS): 2246 USB w/O/M (SS). (RP)

11105.0: 123 (Canadian Military): 1450 USB/ALE TO CIS201 (Canadian Military). These units also noted on 12185.0. (RP)

11105.0: CIP46 (Canadian Forces): 1834 USB/ALE TO CIP36 (Canadian Forces). (RP)

11187.0: Halifax Military: 2200 USB w/ Trident 42 (U.S. Navy P-3C, VP-26 NAS Brunswick) confirming they have not reached their flight level and will pick up their IFR later. Passes "Ops Normal at 2142" and requests QSL. Halifax Military relays that Moncton ATC clears Trident 42 to FL24. NOTE: This is first time I've heard this old USN freq used by Halifax Military. (RP)

11625.0: SCLC131 (Communications Logistics Center, 131st Motorized Infantry Battalion, Venezuelan Army): 1240 USB/ALE TO SCLC107 (Communications Logistics Center, 107th Special Forces Battalion). (RP)

12022.0 001: (possible U.S. Army unit): 2001 USB/ALE sounding. (RP)

12191.0: SCLC501 (Communications Logistics Center, 501st HQs Battalion, Venezuelan Army): 1129 USB/ALE TO CLC51 (Communications Logistics Center, 51st Jungle Infantry Brigade). (RP)

12191.0: SCLC514 (Communications Logistics Center, 514th Jungle Infantry Battalion, Venezuelan Army): 1343 USB/ALE TO CLC51 (Communications Logistics Center, 51st Jungle Infantry Brigade). (RP)

12191.0: SCLC512 (Communications Logistics Center, 512th Jungle Infantry Battalion, Venezuelan Army): 2059 USB/ALE TO CLC51 (Communications Logistics Center, 51st Jungle Infantry Brigade). (RP)

12191.0: CLC51 (Communications Logistics Center, 51st Jungle Infantry Brigade, Venezuelan Army): 2236 USB/ALE TO SCLC513 (Communications Logistics Center, 513th Jungle Infantry Battalion). (RP)

13357.0: Recife (Y/L Portuguese-MWARA AFI-1/SAT-1): 2114 USB w/ aircraft (O/M Portuguese-identifier missed-probable Varig flight) w/ position report. (RP)

13455.0: SCLC433 (Communications Logistics Center, 433rd Motorized Cavalry Group, Venezuelan Army): 2207 USB/ALE TO 4MA9 (probable Special Operations Unit, Venezuelan Army). SCLC 443 also noted w/ 4MA8 on this freq at 2204. (RP)

13455.0: SCLC433 (Communications Logistics Center, 433rd Motorized Cavalry Group, Venezuelan Army): 2249 USB/ALE TO CLC43 (Communications Logistics Center, 43rd Motorized Cavalry Brigade). (RP)

13475.0: MONTECANO (Venezuelan Air Defense site): 2211 USB/ALE TO CDDA (Venezuelan Air Defense HQs, El Liberador Airbase). The units also noted on 09950.0. (RP)

14569.0: SCLC513 (Communications Logistics Center, 513th Jungle Infantry Battalion, Venezuelan Army): 2123 USB/ALE TO CLC51 (Communications Logistics Center, 51st Jungle Infantry Brigade). (RP)

14790.0: COF (Commander Venezuelan Riverine Forces): 2256 LSB TO PNME1 (probable Riverine Patrol post). (RP)

18666.0: ME1 (FBI, Memphis TN): 1526 USB/ALE TO QT2 (FBI Quantico VA). (RP)

19103.5 001: (possible U.S. Army unit): 1949 USB/ALE TO T1Z228 (1/228th Avn Bn, Soto Cano AB Honduras). (RP)

This month's UTE log contributors are Ron Perron (RP) and Dwight Simpson (DS2). Thanks for your submissions. Each and every one of your contributions is appreciated.

Maritime Muddle

From Richard Webb comes this important letter regarding maritime distress channel monitoring. UTE monitors could save lives by monitoring **2182 kHz**. Please read on:

As a *Pop'Comm* reader and UTE monitor, as well as a ham, I've been one who turns to the utility monitoring column soon after opening my Braille copy of *Pop'Comm*.

I'm an active participant as a net control on the Maritime Mobile Service NET, 14.300 MHz. At our recent biannual meeting in Mobile, Alabama, I had the pleasure of touring the facilities of WLO in Mobile since our net manager is the owner/operator of that station.

For newer readers and members of the UTE monitoring community a look at WLO and its current configuration might be a fun read for them. I wish I'd had my XYL bring her camera as this old blind man doesn't operate those things. We would have gotten some nice pictures to send you.

The antenna farm alone is worth the look, but the transmitter and receiver sites are both fascinating to look at.

That however is not why I'm writing you, though I wanted to throw this suggestion out. As you know, seagoing vessels are no longer required to stand a radio watch on 2182 kHz. Supposedly the GMDSS system is going to be all the help vessels in distress need. However there are some problems with this line of thinking.

First and foremost, vessels under 300 gross tons are exempt from it, which means that many smaller vessels, such as fishing vessels and pleasure craft, won't upgrade to the newer GMDSS equipment due to its cost. Also GMDSS isn't as foolproof as you might think. Just ask Rene Stigler, the current owner and operator of WLO about this and he can tell you some horror stories.

We on the Maritime Mobile Service net are fielding more calls for assistance from maritime mobile stations that can't get assistance on usual maritime channels. Naturally 2182 kHz in the daytime hours is virtually useless unless stations are monitoring.

Though some coast guard stations still monitor, often the radios are turned down or they're out of range of the station seeking

assistance. Many of these stations requesting help on the ham bands aren't licensed hams, but we assist them anyway because we're their only hope.

Some of us in the know who are active with maritime communications on ham frequencies feel that people are going to have to die needlessly before our government decides to rethink its policy on this issue. I strongly believe that ships should still maintain radio watch on 2182 kHz. Also, other nearby vessels can render needed assistance to a craft in distress without calling on the Coast Guard.

When you consider that every time the coast guard sends out resources on a SAR mission over \$200 thousand dollars is

expended. It would be a much better utilization of finite public resources to require all vessels to stand a radio watch on 2182 kHz, as was once the case.

I'm hoping that in a future column you'll discuss the pros and cons of the new GMDSS system where it impinges on safety. If you'd like more information, contact Rene Stigler in Mobile Alabama at rene@shipcom.com or via his redirect which is k4edx@mmsn.org.

Thanks for you letter, Richard. And, to everyone else, don't forget to let me know what you're hearing on the utility frequencies by sending in your logs. As always, I also welcome your questions, comments, and monitoring post photos.

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without resorting to a "you're either with us or against us" mentality, listen to foreign broadcasts and discuss what we hear.

If you take a close look at the Patriot Act, as I have, you'll quickly see that there's no real benefit for you and me. Bottom line with the Patriot Act is this: Be careful what you read, check out at the library, or buy at the newsstand because Uncle can now get a list of your favorite reading material. Are *you* a terrorist? In today's twisted reality, if you're even moderately outspoken, if you're sending or receiving mail from certain foreign countries (program schedules, QSLs, and the like), if you're buying books on survival or even studying various religions or languages because you want to understand your world a little better than the guy next door, you could be suspect. Strange times, wouldn't you say?

The other day I read extracts of the report on the big August blackout that left millions in the United States and Canada powerless. I'll bet you had your radios

running during that fiasco. Of course, the first thing many people thought was terrorism. No, terrorists didn't *have* to do this: the infrastructure and supervision was flawed from the get-go. A couple of official causes have emerged. First, utility officials in Ohio, where the largest blackout in American history is said to have originated, were totally unaware of the impending cascading failure. Second, tree limbs that maintenance crews didn't trim properly—that's right, *tree limbs*—reportedly came in contact with overhead powerlines causing short circuits that led to the failures. I don't know about you, but I sure wouldn't want to be a member of *that* bucket brigade!

Point is, once again, *you've* got to be ready on a moment's notice to help your family, friends, and neighbors when disaster strikes. Here we have all this concern about terrorism and "the enemy" when, frankly, more lives and money are lost every year from our own stupidity and neglect than from terrorism.

Face it, stuff happens and people make mistakes, but for heaven's sake, especially in our post-9/11 world, would a sane person think our power grid and system would be a little more protected? So because we've learned once again that it isn't, you've got to be part of the solution. No, we can't go to Ohio and do FirstEnergy's job for them, so we'll each develop an emergency plan, have extra batteries, flashlights, and radios, both for monitoring and two-way contact, because when push comes to shove, it's all about how prepared you and your family are when it comes to an emergency.

Are we better off today than a year ago? Let's think for a moment about *radio* itself in its purest form: equipment. Not yours or mine, really, but our troops. Wherever they are, they're doing a fantastic job under the worst possible conditions.

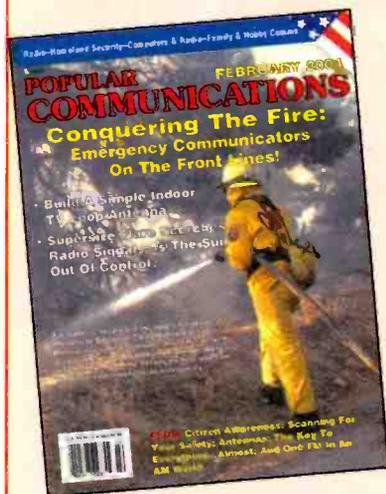
I've read numerous reports and even received e-mails and letters from troops in the thick of it in Iraq asking if they can get donated radios—FRS, CB, whatever works—so they can communicate in convoys and in their tent cities because the military supply system in many instances is either antiquated or just plain broken. It seems that things just never change for the better. We've got all the high-tech gizmos "as seen on TV" in the command centers, satellites giving commanders near-yardstick positioning, yet in some instances we've got troops moving about without proper radio equipment. Now, I ask Don Rumsfeld how untidy is *that*?

My up close and personal experience in Gulf War I found our Army unit scrounging for scrap wood and nails to build fighting position covers, without two-way VHF radios for more than half the conflict, and me providing a daily news summary to 22,000 troops and commanders using a portable Sangean shortwave receiver. I guess those megabuck radios Uncle buys don't receive signals, they just *send* 'em. Even I suspected we'd be a little more with it this time around, but when even ONE company commander is asking for radios from folks back home so his troops can live to *get* home, something is terribly wrong. This is, after all, the 21st Century, not World War I!

If Dick Cheney is reading this, what do you say, Mr. VP? Does Halliburton know anyone in Washington that can supply our troops with some lifesaving radios? Certainly there must be a multi-million dollar contract Uncle Don can fix—for the right price. ■

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House Approves E-911 Legislation

The House Energy and Commerce Committee approved legislation to the tune of \$500 million to further the implementation of E-911 technology. However, the legislation would exclude grants to states that previously diverted funds for E-911 services. The approval of the legislation comes after earlier deficiencies in public agencies' ability to locate wireless callers dialing 911 from cell phones.

announcement in tandem with its action to open up 12.9 GHz of spectrum, divided between the 70-, 80-, and 90-GHz bands. This spectrum will support various next generation wireless services, such as voice, data, and broadband for both fixed and mobile networks. The 1710- to 1755-MHz and 2110- to 2155-MHz spectrum will be licensed as indicated on the Table below.

Iridium License Modified

The FCC has modified the licenses of Iridium Constellation, LLC and Iridium, US LP, authorizing Iridium to operate satellites in the "Big LEO" mobile-satellite service (MSS) system. The authorization, in the 1620.10- to 1621.35-MHz frequency band (Globalstar Channel 9) continues until November 14, 2003, or until levels of usage and U.S. Government requirements no longer justify the need for additional spectrum, whichever occurs first. The Commission made the ruling in order to "further important public interest requirements by supporting stated communications needs of U.S. forces in Iraq and the Middle East region."

Spectrum Earmarked For Unlicensed Devices

The FCC has made an additional 255 megahertz of spectrum in the 5.470- to 5.725-GHz band available for unlicensed devices. The Commission's Report and Order earmarks the spectrum for use by unlicensed National Information Infrastructure (U-NII) devices, including Radio Local Area Networks (RLANs), operating under Part 15 of the FCC's rules. This increases the spectrum available for use by unlicensed devices in the 5-GHz region of the spectrum by nearly 80 percent, and is a significant increase in the spectrum available for unlicensed devices across the overall radio spectrum. This action will also harmonize the spectrum available for these U-NII devices throughout the world, enabling manufacturers to reduce product development costs by allowing the same products to be used in many parts of the world.

America West Cell Phone Policy

America West Airlines has modified its cell phone use policies, joining the growing list of major commercial airlines that are making changes. America West announced that, effective immediately, passengers on board its jets may use their cell phones after landing, while the aircraft is taxiing to the gate. Additionally, prior to takeoff, passengers may use their cell phones only when the cabin door is open or with permission from the captain during a departure delay.

In addition, the Commission also adopted several allocation changes consistent with the results of the 2003 World Radio Conference and an agreement reached with the U.S. Department of Defense and the National Telecommunications and Information Administration (NTIA). These changes will ensure that critical Federal Government operations are protected from harmful interference. In addition to the allocation changes, to provide federal users with additional protection from harmful interference, the Order requires that U-NII devices operating in the 5.250- to 5.350-GHz and the 5.470- to 5.725-GHz bands employ dynamic frequency selection (DFS)—a listen-before-talk mechanism—and transmit power control (TPC). (ET Docket No. 03-122) ■

More Spectrum For 3G

Ninety megahertz of spectrum has been released for 3G wireless services. The new allocations by the FCC are in the 1700- and 2100-MHz bands. The commission made the

Spectrum Table

Total Block	MHz	Geographic Pairings	Area
A	20	1710-1720 and 2110-2120 MHz	Economic Area (EA)
B	20	1720-1730 and 2120-2130 MHz	Regional Economic Area Group
C	10	1730-1735 and 2130-2135 MHz	REAG
D	10	1735-1740 and 2135-2140 MHz	Cellular Market Area (CMA)
E	30	1740-1755 and 2140-2155 MHz	REAG

Radio Rhino: Aimed At Uganda—Based In Berlin!

The relatively easy access to shortwave audiences these days has created a seemingly endless parade of new clandestine broadcasters. The latest to pass by the reviewing stand is Radio Rhino International, aimed at Uganda but based in Berlin. The broadcasts are airing weekdays from 1500 to 1530 and weekends from 1500 to 1600 on **17870** (they began on 17555 but were scheduled to be on 870 for the 2003 “B” season.). Former President Milton Obote and a colonel who was a losing presidential candidate are behind the broadcasts. In fact, the two host the program themselves and claim to be working to promote press freedom, democracy, and the rest of the “usual suspects.” The mailing address is RRIA Project, c/o Allerweltshaus eV, Koernerstr. 77-79, 50823 Koln, Germany. The e-mail is mail@radiorhino.org, and they’re on the Web at radiorhino.org. The broadcasts are aired by Germany’s Julich transmitter site.

As nearly as anyone can tell so far, Mexican clandestine **Radio Insurgente** on **5800** is operational, although the power level seems exceedingly lightweight. We’ve had no luck despite frequent evening checks of the frequency, but a few others have noted some kind of Spanish speaking station around 0300 and later. This one is definitely tough. Furthermore, since it’s apparently operating from within the country it is vulnerable to discovery and eradication by the Mexican authorities.

The anti-Vietnamese **Degar Radio** is active in Vietnamese from 1300 to 1330 on **7380** via Chita, broadcasting in Vietnamese. This one seems not to be active on a daily basis and, even when it is on, is a little shaky.

Radio Amani, run by the Afghanistan Peace Organization, is on the air via Armivar, Russia, on Fridays from 1630 to 1700 on **15615** promoting human rights, security, peace, and democracy.

World Falun Dafa Radio, the station that really gets the Chinese government’s collective blood pressure up, is currently using KWHR (Hawaii) for broadcasts Monday to Friday from 1500 to 1600 and Saturdays/Sundays from 1500 to 1600 on **9930**. Another broadcast, aimed at Europe, is from 2100 to 2200 on **5925**.

We may have mentioned that the long-running **Voice of National Salvation**, run by the North Korean government for over 30 years, has been closed down. The (North) Korean Central Broadcasting System now occupies the former VONS frequencies, **3480**, **4120**, **4457**, and **4557**. We remember when you couldn’t get anyone outside the shortwave hobby to even admit this “National Salvation” station even existed!

Here are a few logs, which have accumulated over the past few weeks:

Sudan Radio Service (funded by the U.S. Agency for International Development) logged on **17630** and then opening on **17660** at 1700, running overall from 1600 to 1800 and aired over a Merlin/UK transmitter. Heard with IDs in several languages, news in English, and later in Arabic. (Richard D’Angelo, PA)

EDC Education Development Center, Inc., Washington, DC

Richard A. D’Angelo
2216 Burkey Drive
Wyomissing, PA 19610

Dear Listener,

Thank you very much for your reception report. Sudan Radio Service (SRS) is happy to know we are being heard so far outside our target area. Based on the details of your letter, we can confirm that you heard Sudan Radio Service. Please accept this verification letter as a small token of our appreciation.

If you have further questions, please send us a letter or email us at srs@edc.org. We hope you will keep listening to SRS!

Best Regards,



Jeremy Groce, Radio Programming Advisor
Sudan Radio Service
EDC, Inc.

1000 Potomac Street, NW • Suite 350 • Washington, DC 20007 USA • Phone: 202.572.3700 • Fax: 202.298.6038

Rich D’Angelo (PA) got this fast reply from the new, U.S.-run Sudan Radio Service.

Voice of Oromo Liberation, 15670 via Julich, noted at 1709 with flute music and long talks. News at 1730. (D’Angelo, PA)

Sawt-al-Islah (the Voice of Reform) on **15705** from 1915 tune in, with long Arabic talks and a couple of music bridges. Went off at 2001, but jamming on the frequency continued until past 2025. (D’Angelo, PA) (*This one is aimed at our “friends” in Saudi Arabia.—gld*)

Voice of the New Sudan, presumed, **6985** at 0330 with Horn of Africa music and Arabic talks by several announcers. (D’Angelo, PA) 0420 with man in what sounded like Swahili, with possible ID at 0423. The signal slowly deteriorating but was able to hold it until past 0500. (Robert Montgomery, PA)

Voice of Peace and Democracy, 4550 at 0320 with long talks in Tigrinya, Horn of Africa vocals, and another long talk. Off after a final musical selection which began at 0346. Overall, the signal was poor. This is parallel **6350** and uses the same transmitter as the Voice of Tigray Revolution. (D’Angelo, PA)

Voice of the Iran Revolution, 3910 heard at 1310 in Farsi and jammed. (Miller, WA)

Radio Rhino International, 17555 from 1551 IDing as "Radio Rhino, the Voice of Freedom." Off at 1559. (Robert Montgomery, PA)

Voice of Democratic Eritrea, via Germany, noted on **15670** at 1748. (Charlton, ON)

Voice of Biafra International, 7380 noted from 2135 with EE talk about Nigeria, some talk in vernaculars, many IDs. Mentioned coming from Washington, D.C. (*the program, not the transmission—gld*). This is broadcast on

Saturdays only. (Brian Alexander, PA)

Voice of the Iraqi People on **9563//9570//11710** at 0000 in AA with many mentions of Iraq, running to past 0030. (Alexander, PA)

Now here's the usual note asking for your input in the form of your logs of clandestine stations, info about their schedules, copies of any QSLs you may dig out of them, background information (organizations, addresses, transmitter locations, etc.) and anything else you think would be of interest. As always, your help is greatly appreciated!

Until next time, good hunting! ■

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connection radio communications humor

Super Size Me!

The other day I sat in my favorite chair watching my favorite TV program, which I remembered at the time, but have since forgotten because there were more macho commercials than there was program. Big, beefy SUVs racing to get a big beefy cheeseburger.

I do remember going out immediately afterwards and getting a super-sized pack of greasy fries and a super-size double-stacked-extra cheesy mystery meat burger. I guess advertising works because I had no *real* burning desire for one of those artery-clogging monsters—not until they pushed me over the brink! So, off I drove. My PJ *top* looks like an old beach shirt, but let's just say it's a good thing I didn't get pulled over after rolling through that stop sign on the way home. Hey, when they entice me with all that good stuff I just can't help myself!

Our uniquely American passion for all things large is pretty unusual. I was listening to a British ham the other day talking about us and our super-size lifestyles. He was amazed that everything we do and have is big. The QSO with the Massachusetts ham didn't last more than a couple of minutes; poor fellow in Bawstun couldn't think of much to say in response other than to give a quick weather report.

It did get me thinking, though. The guy in the UK is right; we drive everywhere, only getting out of our big SUVs if the drive-up line at the fast-food window is long. We've got drive-up banks, pharmacies, libraries, liquor stores, and hardware stores. What I always find funny is how there'll be 25 cars at the fast food's drive-up window, and two people inside at the counter.

It's no big secret that a good percentage of us radio folks are, well, a bit pudgy. That's the beauty, so to speak, of radio. Whether AM, FM, shortwave, or ham, you only *hear* the voice or see the words on your computer screen. That's why when they came out with slow-scan TV I wasn't standing in line. Don't have it, never will.

Maybe bigger is better. But tell that to all the companies hawking exercise equipment. We do still call it "exercising" don't we? Or is it "fitness gear"? Whatever the Madison Avenue folks call it, that's what we'll call it! I call it nuts. On one hand there are hundreds of commercials for fat-burning; from pills and diets to fitness gear, fitness centers, and even cruises where you can visit the fitness center. Maybe I'm crazy, but if I'm taking a cruise to the Bahamas, the sole purpose is to eat, relax, eat some more, have a little fun, and stay away from the fitness room. The pool is one thing, but working out while on vacation—particularly on a cruise—is like sitting there watching *Wheel Of Fortune* while wearing a tux and new Florsheims.

My issue with all of this super-size business is electronics, radios, and cell phones. If I had the room, had the money, or even the time to watch it, I just don't see the need for one of those big-screen TVs. Think about it: why would I want to see Dr. Phil any bigger? I get frightened watching Dan Rather just on my 21-inch console. Do they *deliver* those big screen TVs to your home in a semi? I saw a woman lugging a regular-size TV on top of a shopping cart the other day and watched her

wedge it into the SUV. She certainly had the room for it in there. I wonder if a big-screen monster would fit in there.

Some days I really wonder what's driving the electronics industry. I once had a cell phone that was larger than my thumb, with large visible keys—and it worked. Nothing fancy, no *Star Trek* flip-top, beam-me-up-Scotty toy that rings in 55 different tones and plays the Cuban National Anthem backwards. No, just a phone I could see and use. Seems to me, though, that they're getting *smaller* all the time. Super-sized SUVs, TVs, meals—lots of overweight super-size Americans (despite what Madison Avenue wants us to believe, doctors tell a different story)—and cute *little* phones. Strange world, isn't it?

The same is true for our radios. I was shopping around the other day for a ham HT that would also scan the public safety frequencies. There are plenty on the market, but they're all so small I'm afraid I'd lose it in my pocket. (Do you suppose I could sue someone if I lost my HT because it was too small? It's got to be *someone's* fault!) I haven't bought one yet. I figure that sooner or later the business pendulum will swing back again and radios will get bigger. Of course by the time that happens I won't be able to see it even if it were as big as that pack of super-size fries I just ate.

Some radio manufacturers still make radios—and large radios, at that—with dials. Ten-Tec comes to mind right away with their Jupiter transceiver. It's got a lot of bells and whistles, and it's big. It probably could have been made at least half the size, but they didn't. I really like that.

Look at all those mobile CBers, hams, and scanner folks on the road. I can't help wondering how they mount the radios in the vehicle. There's no dashboard, so unless they're using Velcro or duck tape—neither of which I'd recommend for a mobile radio installation—they must have them strapped to the big seatback or bolted to the roof. I suppose that in rare cases they've got their significant other to hold the radio while they talk and drive. That's not going to happen in *my* car, though. In my car I've got everything as it should be: an old Cobra CB bolted to the dashboard and my scanner on an old hump-mount that tips over when I go around corners too fast. Same thing at home—lots of radios, cables, and even some *super-size* radios from the glory days. They go along perfectly with my super-size extra-pepperoni pizza that I'll be picking up at the drive-up in 10 minutes.

Solution To
Puzzle on
page 29.



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