



45635

POPULAR COMMUNICATIONS

SEPTEMBER 2003

Is Your Antenna Too Little, Too Much, Or Just Right?

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- **Predicting HOT Radio Days!**

**IBOC
Digital Radio
Update,
Page 46**

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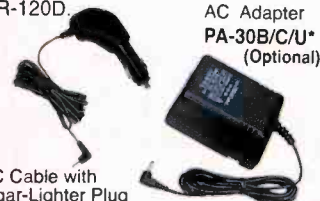
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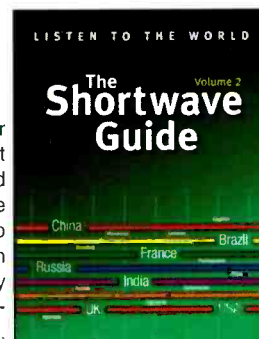
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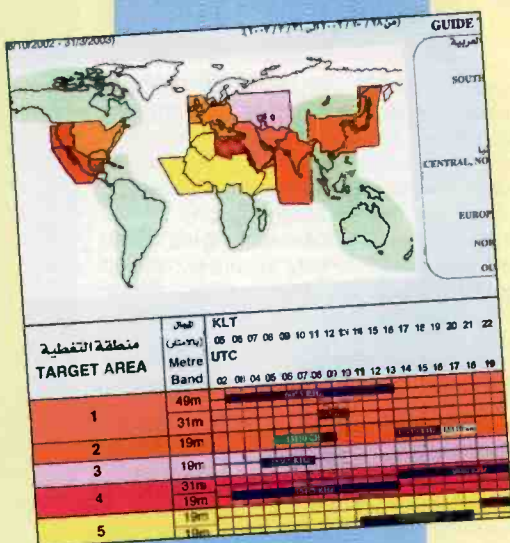
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On The Cover

On The Cover: You won't have any trouble hearing a mega-broadcaster like the Far East Broadcasting Corporation (FEB) from this transmitter site on Saipan on most radios, even with a modest antenna. But how much antenna is just right for your particular listening? Be sure to read Phil Karras' article on page 8, "Sometimes The Best Antenna Is Not The Best Antenna" and find out what you can do to get just the right amount of signal without overloading your receiver. (Photo by Larry Mulvehill, WB2ZPI)

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Pushing Nextel's Button

Just when you think the greedy, whacky world of corporations and Madison Avenue attorneys can't possibly get any worse, along comes Nextel. Their Nationwide Direct Connect™ nationwide rollout is the talk of the industry.

I've got to admit, I'd like a pair of those cell phones with the walkie-talkie feature. Come to think of it, I'd like a half-dozen or so; I'd give one to my wife, daughter, Mom, and even my brothers-in-law Ken and Wes so Wes could reach us direct with a question about something mechanical (that's another story, as they say) and Ken could invite us to have Chinese on Staten Island. But since I'm not sitting in the Trump Towers we'll have to be satisfied with a couple of GMRS walkie-talkies, a phone call, and personal face-to-face chat, which is really better anyway. But just the idea of using a walkie-talkie in New Jersey to talk to someone in California is the stuff unheard of just a few years ago. (Of course, I know that it's not a direct radio-to-radio connection, but it sure does feel like it).

Nextel says more than 60 billion Direct Connect™ calls were completed last year! They report that the service will soon be available in all its coverage areas, including Hawaii. Good stuff, wouldn't you say? Just use the push-to-talk button and you're in contact with your wife or kid a couple of thousand miles away. Sounds pretty simple, doesn't it? Well, one would think so, but no sooner had Nextel's Corporate Bigs rolled out the walkie-talkie feature than they announced that the United States Patent and Trademark Office had approved the registration of its trademark for the wording that lets you operate these little radios: the push-to-talk feature.

Are you thinking what I'm thinking? Glad you asked. Well, the first thing I'm thinking is that someone at Nextel must be drinking the same water as some of our elected representatives.

Nextel's official news release, dated June 20 says,

On June 2nd, Nextel began rolling out Nationwide Direct Connect™, the first and only wireless walkie-talkie service to allow

users to instant communications across the country...these trademarks reflect Nextel's innovative approach to changing the way people communicate in business and personal life...Nextel has brought the service to a new level by enabling customers to use Nextel's Push To Talk service across all America...

Are you also thinking back to the very early days of radio when using the push-to-talk button on a microphone or radio itself was no different from using the Frigidaire's handle to open the icebox? Did Frigidaire see the need to trademark "handle." I wonder what *that* would have done a few years later to the CB world during the '70s. No doubt the handle was an integral part of the icebox, but the company didn't sink to the level of stupidity that Nextel has by mistakenly thinking they had exclusive use to the word "handle." No doubt people were a lot smarter back then, too. I'll bet decisions that grade-school kids make without thinking twice—like flushing the toilet or putting the crayons away—require two decision papers and a legal stamp of approval by 25 over-paid attorneys before today's Corporate Bigs can do the same with their crayons.

I remember drooling over a pair of Fanon Courier CB walkie-talkies many years ago. I can still see them up there on the top shelf, just out of reach with a large black push-to-talk button. Here we are some 40 years later and my Alinco DJ-G5T dual-band ham walkie-talkie is easily one-fourth the size of that old walkie-talkie. Then there's my long-gone old Tram CB with the D-104 desktop mic's push-to-talk button, the large Midland mobile with the push-to-talk handheld mic, the GI Joe CB walkie-talkies Mom and Dad got me one Christmas, and even my brand new Ten-Tec Jupiter amateur transceiver with the desktop mic push-to-talk feature.

Pushing a button to talk on the radio is nothing new. Cops and firefighters do it all the time...and guess what? The radios aren't Nextel. Come to think about it, I've used my ham HT's push-to-talk button to reach the Space Shuttle and orbiting satellites. Just yesterday afternoon I talked

(Continued on page 32)

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Toshiba Launches New Single-Chip RF/IF Receivers for Short-Range, Low-Power Wireless Applications

From the PR Newswire: "Toshiba America Electronic Components, Inc. announced it has broadened its wireless product lineup with the introduction of a pair of new radio frequency (RF)/intermediate frequency (IF) receivers that operate at 240 MHz to 450MHz and provide high-sensitivity with low-power consumption. TA31275FN is an RF/IF detector integrated circuit (IC) for AM/FM radio while TA31273FN is an RF/IF detector IC for AM radio only. Both low-cost monolithic devices incorporate an RF amplifier, a two-level comparator and a local x8 circuit. They are targeted at a wide range of short-range, low-power wireless applications, including remote keyless entry systems, tire pressure monitoring systems, telemetry and RF metering.

"Wireless products are becoming a pervasive part of consumers' lives. The burgeoning list of wireless products ranges from remote locks, security systems, tire pressure monitoring systems and gate openers to wireless keyboards, mice, telemetry and light switches," said Farhad Mafie, vice president of the ASSP Business Unit at TAEC. "As manufacturers rush to bring new devices to market, they face constant pressure to provide high-performance products at lower cost. Toshiba's new low-power, low-cost data communication devices give customers a head-start on adding short-range wireless functionality to a host of existing and new applications without expensive re-wiring."

Finding Marti

Radio Marti has been moving around a bit lately from its 5980 and 6030 frequencies. At press time it was on 6040 in an attempt to dodge a jammer. Let us know what you hear.

Meanwhile, Cuba recently charged that the U.S. government broadcasts violate international law and the island's sovereignty.

Michigan Scanner Law: Fine Increased!

As if a stupid requirement wasn't bad enough, *Pop'Comm* reader Mark Bajek of Westland, Michigan, tells us, "The State of Michigan, effective March 2003, increased the penalty for traveling the roads of Michigan with a scanner in your car. The old fine WAS \$500, the new fine is \$1,000.

"Let's hope we don't try to balance our state budget deficit entirely on the backs of unaware scannists plying the asphalt and concrete byways of Michigan. I'd urge all who don't have permits to apply to the Michigan State Police—even if you have little intention of coming here right now, but in the odd event you wish to in the future.

"The permit is still free, and can be downloaded off the MSP website in PDF at this address: http://www.michigan.gov/documents/com-022_8561_7.pdf; or go to MI.gov, click on state police and go to Misc.forms."

our readers speak out

Scanning On A Dead End Road

Dear Editor:

Even before the September 11, 2001, attack on the United States, I was vilified by some people who saw me simply walking down the street carrying a scanner. Their attitude seemed to be "how dare this guy be listening to Emergency Medical Services, the Fire Department, the Police Department, the U.S. Coast Guard, or any other public safety agency! Nobody who isn't a member should be listening to these agencies. So what if he's an off-duty member of one of them" (I'm an EMT in the EMS).

Blame some of this on the Entertainment Industry. How many times have we seen a movie or TV show where the bank robbers know when the alarm has been triggered and the police are responding because they hear it over a scanner? I've previously written about a "Third Watch" episode where a cop shooter found his targets by going where he'd hear police action on the air. According to that attitude, by simply having a scanner I'm either a bank robber or cop shooter!

Nope. I'm just someone who wants to know where the vehicle with the siren on is headed, or where I might be needed for my EMT skills, or what roads to avoid due to a car accident blocking the way with rescuers already on the scene.

Regarding your July 2003 editorial for the two topics of radio frequencies and what is broadcast on them, there have been frequency guidebooks almost as long as there have been radio listeners. A number of the books were compiled by someone, or several people, listening to find who was using what frequency for what purpose. They'd make a list and share it with friends. Somebody finally decided to publish the lists in a book. Am I a spy because I can buy a frequency guidebook at the store?

As for the content of the broadcasts, I usually follow the basic guideline of the Communications Act of 1934; I'd say I heard a broadcast and not tell anyone what I heard in the broadcast. My only breach of this was yelling to my family that I'd just heard a colleague over the air announcing the crash of American Airlines Flight 587 (November 12, 2001, New York City) a half-mile from my house.

The cell phone issue and the Privacy Act of 1985 still represent the lack of knowledge by the majority of the population that a cell phone is a kind of radio broadcast station. I listen to radio broadcast stations. If you don't want me listening, don't broadcast. Nope, instead regulations are legislated which forbid me (who has been listening for many years before the invention of the cell phones) from listening to a radio broadcast, to "insure" a cell phone broadcast's "privacy."

By the way, even with my scanners having the cell phone frequencies blocked, I have equipment—legal, because of the date of purchase—with which I can still listen to cell phone conversations. I simply choose not to.

Richard C. Berger
New York State EMT
Registered Monitor/SWL Station KNY2SC
Belle Harbor, NY

Dear Richard:

You've hit on the core issues that go far beyond hobbyist monitoring of the *public* airwaves. Legislators seem to forget that radio users are still citizens. Any legislation, whether the federal ECPA or a Michigan law that forbids a mobile scanner without a permit, harms *all* of America and takes us further down the dead-end road called "Loss of Rights."

We Need More Spectrum!

More Spectrum!

A Congressional Internet Caucus forum heard from experts recently on the topic of spectrum, a subject that's on everyone's hot list these days. Speakers made their cases for having more spectrum, particularly a segment of that held by the broadcast industry, freed for wireless Internet services. The broadcast TV band has 67 channels, only seven of which are used in the average U.S. city, said Thomas Hazlett, a senior fellow at the Manhattan Institute. On the other hand, U.S. wireless companies have access to 159 MHz of spectrum, compared with 250 MHz allotted to European carriers. The U.S. industry has made a lot of things happen with a modest amount of spectrum, Steve Berry, a senior vice president at CTIA, pointed out. Hazlett said that the 100 MHz of spectrum sought by the Federal Communications Commission for wireless services over the next 10 years isn't "very ambitious." Greg Waldron, a partner at the communications law firm Covington & Burling, said that Congressional lawmakers have repeatedly passed legislation deeming broadcast spectrum separate and different. Michael Calabrese of the New America Foundation said that the FCC should keep a segment of spectrum open for unlicensed use, as did a former chief of spectrum management at the FCC. CTIA's Berry agreed with a spectrum allocation model that includes sales and leases of the resource, along with some free common areas.

By The Numbers

The FCC has released a list of broadcast station totals as of March 31, 2003. According to the Commission, there are a total of 26,366 broadcast stations in the United States. Of those, 4,804 are AM stations, 6,179 are FM Commercial stations, and 2,400 are FM Educational stations. There 757 UHF Commercial TV stations, 583 VHF Commercial TV, 254 UHF Educational TV, and 127 VHF Educational TV stations. Class A UHF and VHF stations number 493 and 107, respectively. The total of FM translators and boosters are 3,818, with 2,632 UHF translators and 2,094 VHF translators. Low-power TV stations on UHF number 1,596, and on VHF, 522.

Amateurs Lose LF, Gain 5 MHz

The FCC has denied a request by the amateur radio community to grant them a slice of the 136-kHz band. Instead, the Commission agreed to give amateurs five 2.8-kHz-wide channels near 5 MHz. The five frequencies—at 5332, 5348, 5368, 5373, and 5405 kHz—were granted despite concerns by the

NTIA that federal government users might need this band in the future. The FCC has granted operation on USB only, with a maximum effective radiated power limit of 50 W. The channels will be available to General and higher class licensees only.

Bad Boys!

Score one for the good guys. Rayon Sherwin "Junior" Payne was sentenced to nine months in prison for multiple counts of operating an unlicensed FM radio facility. Payne was handed the sentence in the United States Middle District of Florida, Orlando Division, by Judge David A. Baker. The conviction and sentencing is the result of an investigation that began in 1999 after the FCC's Tampa, Florida, Office received complaints from residents and broadcasters in the Orlando, Florida, area of interference to the reception of licensed broadcast stations in the area. Payne pled guilty to two counts of unlicensed radio operation and agreed to forfeit all equipment used in connection with the unlicensed operation in February of 2003. He was also given a one year supervised release after his imprisonment, during which time he must perform 50 hours of community service.

The FCC has issued a monetary forfeiture to Scott E. Kamm, licensee of amateur radio station NOUGN, for willful and repeated violations of Commission Rules (Sections 97.101(d), 97.113(a)(4) and 97.119(a). Kamm is alleged to have intentionally interfered with communications on Amateur Radio Service frequency 146.310 MHz, transmitted music on his amateur station, and failed to identify his amateur station by callsign. The FCC issued a monetary forfeiture in the amount of \$12,000.

The Commission came down hard on another wayward Amateur, Omar A. Ebanks, for willfully violating Section 301 of the Communications Act of 1934. It seems Ebanks operated a radio station on 93.9 MHz without FCC authorization. This has earned him a \$10,000 fine.

Judge Rules In FTC's Favor

A California federal court has ruled that Comstar Communications can no longer market its cell phone radiation protection shield. WaveShield protection patches, which are designed to fit over mobile cellular telephone earpieces, were said to block up to 99 percent of radiation and other electromagnetic energy emitted by mobile phones. The Federal Trade Commission brought a complaint against Comstar and charged the company with making unsubstantiated scientific claims, saying that the shields do not work as advertised. ■

Sometimes The Best Antenna Is *Not* The Best Antenna

Experimenting To Find The Optimum Skyhook For A Wideband Receiver

by Phil Karras, KE3FL

In the March issue of *Popular Communications* Ken Reiss had a wonderful article in his "Overheard" column called "Preamps, Attenuators, Filters, And Other Things That Can Cause Problems" (pages 44 through 49). In it he explained why some of the scanners we use today have the problems they do and why some of the things we think we need are just about the worst things to help fix those problems. One of the last things Ken wrote in that piece was, "You can do a lot with just antennas, which is the place where you should probably start."

This article is going to start right there, with antennas. While this won't be a definitive article on all antennas and all wideband receivers (WBRXs), it will look at some things that I've tried and the results I've gotten. It should give you some ideas as well, and if so, I hope to hear from you.

I've tried a number of different antennas with the Alinco DJ-X10 and I've noticed a very interesting thing: sometimes, the best antenna is not always the best antenna. If this is true, just what is the "best" antenna?

First, we need a working definition of the "best" antenna. A radio operator—a CBER or ham—often thinks that the best antenna is one that is resonant at the frequency of interest and has an impedance of 50 ohms. Often, if not always, these are contradictory requirements, and you will hear arguments on the air about it from time to time. But, in general, for these services a resonant antenna is definitely within the realm of the best antenna.

To an SWL (a shortwave radio listener), perhaps one definition of the best antenna is one that receives all desired frequencies equally well from all directions. I'll try to clarify just what some of today's wideband receivers require as an antenna and just what makes the best antenna. Sometimes having it all is not the best we can have and, in fact, can often be just about the worst with today's WBRXs.

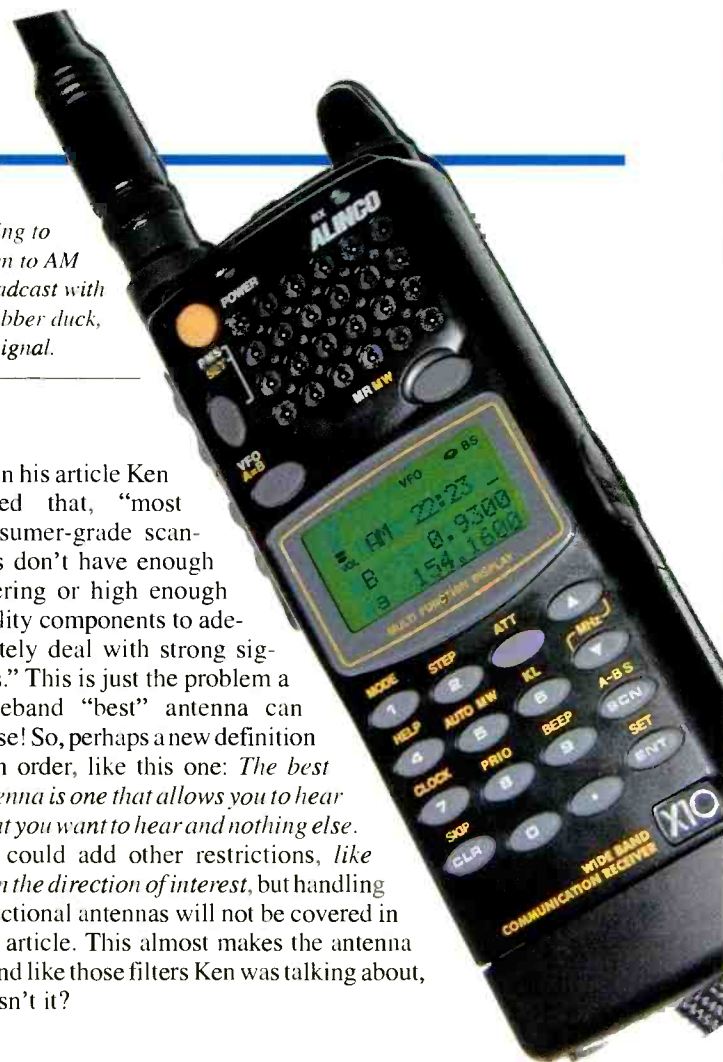
Scanners are a little different. The DJ-X10 scanner wideband receiver receives from 100 kHz up to 1.9999 MHz. Within this bandspread, we have numerous FCC defined services or bands of interest. Generally, an antenna that's good for one is not good for another. Even if we could build an antenna equally good for this entire frequency range, it would probably not work at all well, at least not for our consumer grade WBRXs.

Trying to listen to AM broadcast with a rubber duck, no signal.

In his article Ken stated that, "most consumer-grade scanners don't have enough filtering or high enough quality components to adequately deal with strong signals." This is just the problem a wideband "best" antenna can cause! So, perhaps a new definition is in order, like this one: *The best antenna is one that allows you to hear what you want to hear and nothing else.* We could add other restrictions, like *from the direction of interest*, but handling directional antennas will not be covered in this article. This almost makes the antenna sound like those filters Ken was talking about, doesn't it?

The Comparison

For comparison, I used two radios for listening and testing: a RadioShack DX-440 for AM/SW (AM, SSB, and CW)/FM (Sangean ATS-803A) and an Alinco DJ-X10. The DJ-X10 is one of the newer all-digital WBRXs and it also happens to be a scanner. I used the DX-440 to test my ideas in the SW, FM, and AM bands since it has a tighter front end and is not as wideband as the DJ-X10. This enabled me to see where the problems were; whether with the antenna or in the way the radio was built and filtered.



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AM inductive coupling to a long wire nets a better signal.

I've organized the antennas I've tried and my results by band. I expect that you will need to experiment to see what works best for your receiver/scanner, and it may be completely different from what works for me or someone else, but this article should give you a good place to start experimenting. Also, keep in mind that band conditions vary and the antenna that was good yesterday might not be good enough or may be *too* good today.

Needless to say, this can make results very confusing at times.

The DJ-X10

I have not tested anything other than the rubber duck antenna for frequencies beyond the 900-MHz range. I have too little experience in this region to give any *specific* advice, but general advice for the DJ-X10 follows.

In the NFM (narrow FM) bands in the 500- to 900-MHz range, I've tested the rubber duck and some of my amateur radio antennas designed for the 146/440-MHz bands. The rubber duck antenna as well as the amateur band 146/440-MHz antennas seem to work very well here. I have not done a great deal of listening up here, but I did try some experiments when someone noticed that the radio could "hear" lower frequencies while listening to a higher image frequency. I suspect that my amateur band J-pole antenna will work well up around here for the reasons explained below when I use it for the TV bands.

At home, I've tried to use my 2-meter/70-centimeter dualband home-made J-pole antenna for FM broadcast and found that, most of the time, it works very well for this band and for this radio. This antenna was designed to work as a receiving and transmitting antenna on the two amateur radio bands, 144 to 148 MHz and 420 to 450 MHz. So it's about 50 MHz high for the FM broadcast band (88 to 108 MHz) which should not really work well. With today's WBRXs, an antenna does not need to be really good, only *close* to be usable, and sometimes being close is not only good enough but too good. The reason this antenna works well with this radio is that, while the antenna was not designed for the FM broadcast bands, the DJ-X10 has a hot front end. In fact, even this antenna is too much (too good) even for the FM broadcast bands when there's ducting going on.

Experimenting On 2 Meters

On the 2-meter ham band, I've done a bit more experimenting. First, I noticed that the rubber duck that came with the X10 was okay for this band, but that a "real" amateur radio 2-meter rubber duck was even better. Then I tried my home brew J-pole antenna for 2 meters/70 centimeters. (You can see the design for this antenna and how to tune it up on my web-site at <http://www.qsl.net/ke3fl>).

Here's an interesting tidbit: This antenna designed for amateur use was at times too good for the X10. This also happened when I was in the car listening to a local repeater on the X10 using my amateur mobile 2-meter/70-centimeter mag-mount antenna. When I was near the repeater (about 10 miles away), this antenna was too good. The signal was simply overloading the front end of the radio. Even using the built-in attenuator didn't help much. Placing the rubber duck back on was the best antenna for the job at that time.

So in this instance, using a less effective antenna was a *better attenuator* than even the built-in attenuator of the radio. I was then able to hear a nice clear, understandable voice. So, the best antenna when I'm close to a repeater is the little rubber duck. Only when I'm farther away is using a good antenna for the band actually better.

For the audio sections of the TV bands, I've noticed that my 146/440 MHz J-Pole



AM broadcast listening using 80/40-meter dipole, full signal.



An FM broadcast test using capacitive coupling to AC wiring yields a better signal than the rubber duck.



FM broadcast second test using capacitive coupling to AC wiring.

antenna works well for all TV stations from Channels 2 through 60. (This is a large range of frequencies, from 59 to 806 MHz, and the antenna is vertically polarized as well. This is .375 to 5 meters or 5 times longer to 2.5 times shorter than the best TV antenna length.) I have also noticed that in the basement where I don't have access to the J-pole antenna, if I simply place the rubber duck close to the feed-line of a 70-foot loop antenna attached to the ceiling, it helps reception for this band as well. While it is definitely not as good as the J-pole antenna, it is enough of an improvement to make listening easy. This is known as "capacitive coupling" because at these higher frequencies, small value capacitors act as connections.

Looking At The FM Broadcast Band

Now let's look at 88 to 108 MHz. This is within the TV bands, so you would expect that the J-pole antenna and the

capacitive coupling method should work here, and they do.

In fact, one evening while I was in Hagerstown, Maryland, I was trying to listen to an FM station from the Washington area. While I was in my car, the car receiver was able to pick up this station just fine. Yet in the house with the DJ-X10, I was unable to get this station at all with the rubber duck antenna. I was thinking about this when I noticed a metal lamp pole next to my chair. I brought the antenna near the lamp pole and had an almost full-scale signal. On top of that, the antenna was aligned 90 degrees to the pole—perpendicular, not parallel. Sometimes, that's all it takes.

You can tell when inductive or capacitive coupling might help if you can pick up a station better while holding the radio (or bringing your hand close to the antenna or radio) than when the radio sits by itself. This means that your body is acting as part of the antenna system and that the radio needs a bit more than the standard rubber duck or telescoping antenna. You can try placing the rig and antenna

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306T21	Atomic Time Thermo-Calender < 306T21 \$29.95 This clock is able to display time in 12 hour or 24 hour format. It also shows the date, the day of the week, the temperature, and signal reception. Automatically adjusts for daylight saving. 1-800-985-TIME www.atomictime.com	RCL-19 Atomic Time Clock Radio ^ RCL-19 \$29.95 AM/FM radio with dual alarms, temperature, and date display. Includes an AC adapter and an optional external antenna to help reception.

Tell time by the U.S. Atomic Clock - The official U.S. time that governs ship movements, radio stations, space flights, and warplanes. With small radio receivers hidden inside our timepieces, they automatically synchronize to the U.S. Atomic Clock (which measures each second of time as 9,192,631,770 vibrations of a cesium 133 atom in a vacuum) and give time which is accurate to 1 second every million years. Our timepieces even account automatically for daylight saving time, leap years, and leap seconds. \$7.95 Shipping & Handling. (Rush available at additional cost) Call M-F 9-5 CST for our free catalog.

near a light switch or AC outlet. This capacitively or inductively couples the antenna to the house wiring, increasing the antenna system and improving reception.

The Shortwave Bands

The shortwave bands were a big surprise to me. The rubber duck antenna actually works for the frequencies, 3 to 30 MHz. The loop antenna works much better, but at times it is simply too much for the radio and I end up with too many stations on the "same" frequency. This radio is able to receive lower frequency stations by listening at the higher image frequency (there's not enough filtering, as Ken would say). I believe this may be the cause of much of the problem with this receiver when using a good antenna. It gives these image frequencies enough of an increase that they start to overload the receiver if they are strong and/or close enough.

Sometimes a good antenna even improves the desired frequency too much, causing overloading of the front end or over-modulating. In this case, sometimes the image frequencies can actually be heard more clearly. This is just a hypothesis since I have no hard data to back it up. But, I also noticed this on the AM broadcast band (580 to 1080 kHz).

Looking At The AM Broadcast Band

The rubber duck antenna with the radio is worthless for the AM broadcast band. I found that while an old ferrite antenna from a dead AM/FM pocket radio worked to some extent, a coupled antenna of some length of wire was actually better. In this case, I believe we should call it "inductive" coupling since, at these frequencies, it is the magnetic wave that does most of the "work" and magnetic waves couple inductively.

I looped some wire (two to three loops) around the rubber duck antenna to increase the inductive coupling and thus increase the signal strength. This inductively coupled the radio's antenna to about 30 feet of wire I had going up to the roof. An interesting observation was that when I attached this wire directly to the radio, it did not work well at all.

Another really good antenna for the AM band was my 80-/40-meter ham dipole. It worked wonderfully down into the AM broadcast band. Unfortunately, it was a bit inconvenient to have the DJ-X10 attached to the coax of this antenna unless

it was in the radio shack. And, for AM and SW, I have enough ham radios that receive very well when attached to that antenna anyway. But, why would this antenna work well? It is at most about 126 feet long (a half wavelength for the 80-meter ham band), which is nowhere near long enough for the AM broadcast band of 550 to 1200 kHz (250 to 545 meters) or about three to seven times shorter than the best length.

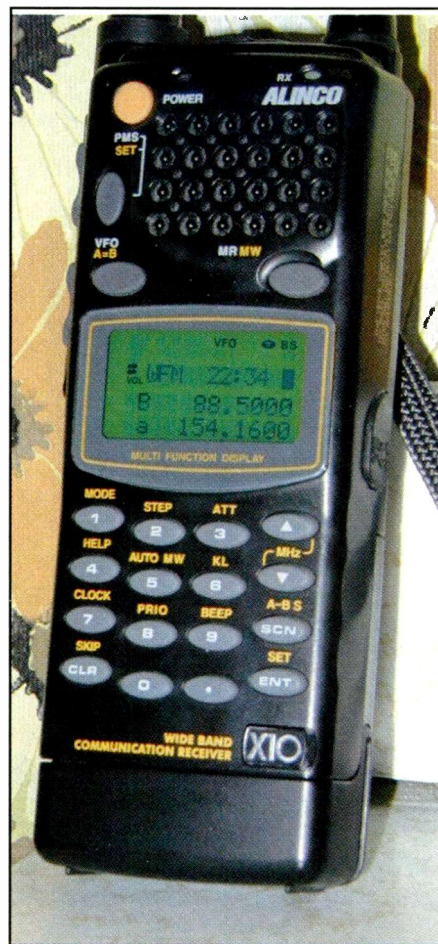
The 70-foot loop antenna I put on the ceiling of the basement was for the DX-440, so it could get better AM broadcast and SW band reception. This antenna works very well for the DX-440, but when I tried to attach it directly to the DJ-X10 for AM and SW reception I got a big surprise. I ended up receiving about three different signals along with the baseball game I wanted to listen to. The baseball game signal was the only one coming in on the DX-440, while on the DJ-X10 it was not even the strongest. This is almost exactly what Ken was talking about in his March "Overheard" piece.

The DJ-X10 doesn't filter close signals well, so signals from unwanted bands can get through. In this case, I'm really not sure just what I was hearing. I do know that I am able to hear signals from the 800- to 900-MHz range when I tune the DJ-X10 up around 1.4 GHz. So, perhaps it was the same kind of image problem.

In Summary

Perhaps you can guess the rule-of-thumb I've come up with: If the antenna is at least one third the best length for that frequency it will work for the frequency of interest; much smaller, it won't work well. This explains why when I used the 80 meter dipole for the AM band, it still worked well. That antenna is about 42 meters long, which is only about a third as long as the best *minimum* length for the AM band. Using longer antennas or wires will pick up more signal and, at times, this may be *too much* signal. It would also explain why I can use my ham antenna for 144 MHz for the 50-MHz region, the lowest TV station, Channel 2, again about 2.5 times shorter than it should be.

And here's the rule-of-thumb antenna for the 1.4-GHz band: At 1.4 GHz the wavelength is about .21 meter. A quarter-wave vertical would then be .0525 meter or 5.25 centimeters, about 2.1 inches. If we now reduce it to one-third, we get about 0.7 inches for that vertical antenna. Now, at about 850 MHz we have a wave-



Listening to an FM broadcast using capacitive coupling to AC wiring repositioned for best signal.

length of about .353 meter and the quarter-wave would be about 3.5 inches. The one-third rule then gives an antenna about 1.2 inches. I'd say they were still too close together to eliminate a strong 850-MHz signal from the radio with just the use of an antenna.

So, while it is best to use a shorter antenna for the DJ-X10, this still may not be enough of a rejection helper to get the whole job done, but it's a good, easy, and inexpensive place to start! Remember, sometimes the best antenna is *NOT* the best antenna. Just go for what allows you to hear what you want to hear.

Again, this was not intended as an all-inclusive list of helpful hints on antennas for these newer radios, but I hope it helps you discover what works best for what you want to listen to. I also hope to hear from you about what has worked for you. Please send your "best" antenna to me at ke3fl@yahoo.com. Remember to include what band or frequency this "best" antenna works well on. ■

pirate & alternative radio free radio broadcasting

by Edward Teach

Will Uncle Get Severe Tire Damage?

Hello again! We experienced a bit of a drop off in logs this month—I don't know why, but we'll give you what we've got.

Commander Radio, 6950.6 at 0142 sign on with Commander Bunny and coded number data from the Rodent Revolution for Al Fansome. "You have been listening to a special coded message from the Rodent Revolution. Any attempt to trace this message will result in severe tire damage." No WBNY ID but mentioned "Commander Radio," or something very similar, repeated three times at 0128 sign off. Said to send reports to FRN. (George Zeller, OH)

Ragnar Radio, 6925 at 0148 with rock and man announcer. Modulation went off and on a few times. Announcer noted that the station was breaking the law. No address given. (Zeller, OH)

Radio Caroline, 6927 heard at 2130 with rock, two e-mail addresses: Carolineshortwave@hotmail.com and piratecaroline@aol.com. Off the air for half a minute or so and then back with more music. (Anthony Agnelli, NY)

WMPR, 6955 at 0154 with new age type music. ID as WMPR 6-9-5-5 given by a man and a woman. (Joe Wood, TN) **6955.19** at 0140 with techno-pop and dance music. (William Hassig, IL)

WHYP, 6955 at 0303 with dedications to Mr. Fansome and Mr. Murphy. IDs at 0305, 0309. Heard a couple of weeks later at 0136 with parody ads, Uncle Schlekstein stories, several IDs, then Ravi Brownyard with ID and QSL info at 0158 followed by sign off announcement. Days later, a third log (on 6925) at 0033 with "Who Wants to be a Pirate Radio Operator" show with Radio Bob and V.J.

Nehru, with songs "Rubber Biscuits" and "Zeller Mash;" parody ad for Lucky Charms. Another date also on 6925 at 0126 with IDs at 0126 and 0130. Played "Wild Thing" and "Keep Your Hands to Yourself." JB said hello to Grasscutter Radio and gave kudos to pirate DXers. (Wood, TN) 0235 to past 0330 with the usual type of program. (Hassig, IL)

WMOE, 6925 at 0045 with up-tempo Irish music, several phonetic IDs, address as P.O. Box 1, Belfast, NY 14711. (Wood, TN) 0115 with soft rock music. Off with "nyuk, nyuk" and gave the Boz 1, Belfast address. On another day at 0140 with rock. (William Hassig, IL)

Radio Pigmeat International on 6925 at 0028 with several punk tunes, long version of "Rebel Yell" by Billy Idol, man at 0040 with sign off announcements "You've been listening to Radio Pigmeat International." (Wood, TN)

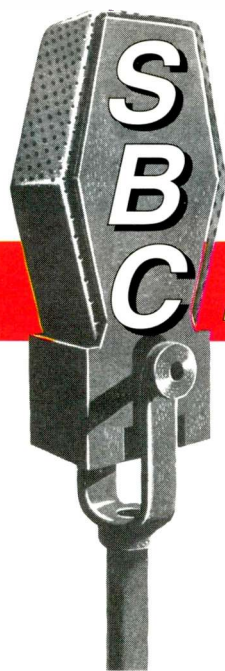
Shadow Radio, 6950 USB at 0130, only heard a very brief segment with a couple of songs and a piece from an old Fibber McGee and Molly show.

KRMI, 6925 at 0221 with various features, including a "new and improved version of the 'Bunny Song.'" The announcer sounded like Danny Glover. ID at 0225: "You are listening to KRMI." (Wood, TN) Tentative at 0201 with folk and folk-rock. Very poor signal. (Hassig, IL)

UNIDENTIFIED, 6950.18 at 0325. Very difficult copy while I was driving down the parkway during a rainstorm, but did manage to pick up a few phrases: "What have I always said?" "Exactly the right size," "Automatic? Reliable neighborhood," "Look in the yellow section," "Call your neighborhood dealer tomorrow," "already three o'clock in the morning, about time we get some shuteye." And at 0328 "Why did you run away from New York?" Off the air at 0343 with four musical chimes. (Briand Duddy, NY)

And that's all you wrote! If you want to read more logs, more of you have to contribute. It couldn't be easier: just send your logs to me via e-mail to Popularcom@aol.com. I'll look for them—and for you, too, next month! ■





Shannon's Broadcast Classics

a look back at radio & TV's golden years

Unthawing A Frozen Moment In Radio's Dynamic Ice Floe

There's supposed to be *significantly evocative symbolism* in this month's title. Actually though, "Unthawing a Frozen Moment in Radio's Dynamic Ice Floe" probably sounds very much like a wordy topic of some state university professor's dissertation, so I'd better just confess why we'll be focusing on a local broadcast snippet from an otherwise non-descript late fall afternoon in 1971.

It all began last winter when, from the cozy vantage point of a friend's waterfront home, I noticed sheets of ice flowing down the river. There were hundreds of frozen pieces in diverse shapes and lengths, each interesting and every one soon gone from view via the otherwise invisible, unrelenting riparian current. This sight would have been completely forgotten had I not, a day or so later (while looking for those previously promised QSL cards for the "Shannon" column), found a tattered file folder containing two old letters.

Perhaps I should throw my father into the mix here, as he was the catalyst for these documents. Dad had always suggested we "write an informational request" to a radio station whenever some school assignment called for me or my brother to practice our sentence structure, grammar, and writing skills. He'd help by dictating some now seemingly outdated polite business language like, "Would you be so kind as to send me one of your fine station coverage maps or other attractive promotional literature?"

Close Your Eyes, Open Radio-TV Experimenter, And Point

While certainly not observing scientific methodology, choosing a station to contact was always a fun part of the process. Dad would flip through *Radio-TV Experimenter* until hitting some random page of its *White's Radio Log*, and then tell the letter writer to close his or her eyes and point. Whatever set of call letters the fickle finger landed upon would determine which lucky broadcast outlet got our juvenile request.

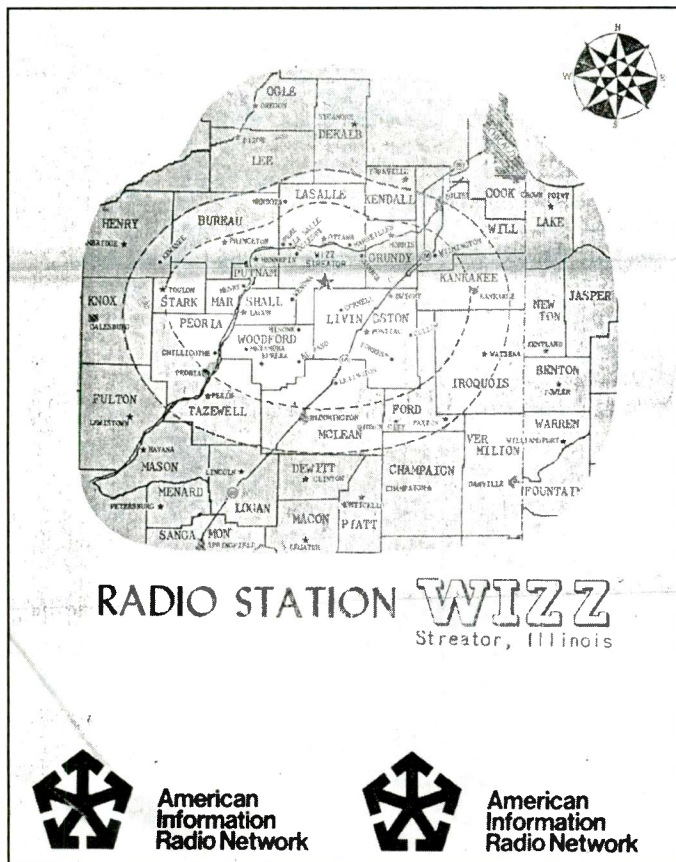
My brother magically motioned to a midwestern daytimer, while I somehow selected a historically tiny Maryland AM. My brother barely recalls the recipient of his long-ago assignment, but fondly remembers our folks being so impressed with the station's generous response to their son's simple hand-scratched note that they saved it in that folder where mine was also deposited, albeit rather matter-of-factly, a decade later.

When Local Stations Were "Traditionally" Staffed

Sometime on November 2, 1971, after the rest of his work was done, Henry J. Sorenson opened my brother's letter. Sorenson served as Farm Director and Sales Representative for WIZZ in Streator, Illinois. It's doubtful that any busy broadcaster would take the time today to thoughtfully craft a two-page response to some kid's query, but radio people in the early

 American Information Radio Network  American Information Radio Network  American Information Radio Network				
COMBINED LASALLE - LIVINGSTON COUNTY AUDIENCES--PULSE CIRCULATION 1968				
STATION	CITY	LIVINGSTON	LASALLE	COMBINATION
WCMY	OTTAWA	0	82	82
* WIZZ	STREATOR	52	58	110
WLPO	LASALLE	0	74	74
WLPO-FM	LASALLE	0	33	33
WOLI-FM	OTTAWA	0	41	41
WPOK	PONTIAC	33	0	33
* Denotes local station with largest audience.				
Audience surveys are conducted on the basis of samples of total audience and are subject to reliability based upon the size and weight of that sample. For that reason they should be considered estimates.				
 American Information Radio Network  American Information Radio Network  American Information Radio Network				

Though there were no personal computer word processors at WIZZ circa 1971, the station did have a "modern" photocopier machine. This homebrew handout was fashioned from ABC Network letterhead taped to a typewritten (and hand underlined for emphasis) ratings breakout, from which copies could be produced as needed. The PULSE refers to a once-prominent radio audience measurement firm.



Stations could save a few bucks in printing costs by crafting their own coverage map for copy machine duplication. Here's one that has all the needed broadcast-reach info, but it tilts a little to the east due to quick placement on the copier glass.

'70s lived in a media world where most stations were locally owned, operated, and programmed with pride.

That often meant that those who worked there took great pleasure in describing how their facility was truly unique. And because there was a tall list of FCC requirements, little in the way of long-form network offerings, and no satellite format delivery, even proverbial bucolic 250-watters required several disc jockeys, an engineer, and newscaster. Additionally, those holding down the sundry public service, farm, religious, sports, women "homemaker," music, and program directorships typically had opportunity to formulate policy and actually direct their areas of responsibility, as opposed to simply implementing cookie-cutter directives from a conglomerate's headquarters. Sorenson exhibited the era's robust broadcast professionalism when treating my brother's obviously poorly penned request as if it had come from a legitimate client.

"I'd Be Very Happy To Tell You About Our Stations"

Little did Sorenson know that, with the above introduction, he'd be preserving a slice of American radio history and giving us a wonderful window into the quintessential brand of hometown broadcasting that has all but drifted out of 21st Century sight. He noted that,

WIZZ signed on the air for the first time on September 26, 1953 [at 1250 kHz, using] 500 watts daytime, with a [two-tower] directional



Another in-house promotional production using literal "cut and paste" methods. WIZZ sales staff handed out these American Information Radio Network newscasters' pictures so that advertisers could connect faces with names, and then be impressed with their local Midwestern station's ABC team in New York. By the way, if the shots look fuzzy, that was a common malady from copying copies after some one inadvertently handed-out the master.

pattern. The broadcast day starts at 6:00 a.m. all year round, due to a directive from the FCC that lets us sign on at 6 even though we are a daytime operation. The year-round constant sign on time gives us a big advantage over other stations that have to wait for the sun to come up before they sign on. We program a varied form of music on WIZZ, with a close eye on the *Billboard* [magazine] Easy Listening chart. We try to keep the music as contemporary as we can with a few exceptions, due to the age groupings in the coverage area. The basic age is a bit older than the usual teen audience that a "rocker" would have.

Remember, this was 1971. The math indicates that many retired folks then in Streator graduated high school before the United States entered World War I. Frank Sinatra hadn't even come on the scene until they were "old" or "at least" in their late, 30s. As a result, some big hits for '71, like Rod Stewart's "Maggie Mae," or "American Pie" by Don McLean represented irritating "hippy music" to that sizeable senior chunk of listening audience.

Sorenson crystallized the WIZZ record rotation designed to reach the entire cradle-to-grave breadth of mass audience then possible in local radio: "Two current [though not too 'rocky']

hits, 1 oldie, 2 more currents, 1 polka, another 2 current hits, 1 country & western tune, 1 big band sound, 1 oldie, then 2 current songs, and so on." Modern programmers might consider this blend—especially with that accordion-laced polka selection swirled into some twangy C&W ode and maybe a soulfully mellow *Stylistics* single—to be a recipe for tune-out. But generous helpings of local news, weather, homey remote broadcasts, and pertinent public service announcements served as the sweet cinnamon crust that allowed nearly anything else to be acceptably baked into the diverse programming pie.

The WIZZ Schedule

Seconds after the 6 a.m. sign-on, WIZZ aired world/national news and sports through ABC's *American Information Network* (which also ran hourly). Technically, WIZZ's early announcer hit the transmitter's high voltage switch at about 5:59 in order to be able to scramble back to the studio control board to fire off a quick sign-on/station ID before bringing in the network feed. The "Jim Manley Morning Show" followed ABC news from 6:10 until 8:45. This local DJ program included hometown "WIZZ-Land" and Illinois news with news director Ralph Hart at 6:30, 7:06, 8:06, and five-minutes of local sports at 8:15. Manley made room for "Swap Shop One" from 8:45 to 9:00, "giving listeners a chance to buy, sell, or trade items they want to get rid of or need."

For those of you who've never heard the once ubiquitous "tradio" or "swap shop" offerings of local radio, I can attest to their great community service and entertainment value. A case in point especially regarding the latter is a call I heard aired on a little western AM in which some gruff old gentleman tried to delicately describe several "hard water-stained but still presentable" vintage toilets he wanted to "let go for five dollars apiece or best offer." In an effort to sound congenial, the young DJ/host asked how the fellow happened to have them, but the seller indicated he'd "rather not say because the lady he got them from (following a house renovation project) "would be embarrassed to have her name associated with a bunch of old potties she probably sat on over the years."

Adding to this off-the-cuff theater of the mind was a subsequent caller who rather arrogantly quoted some rule about

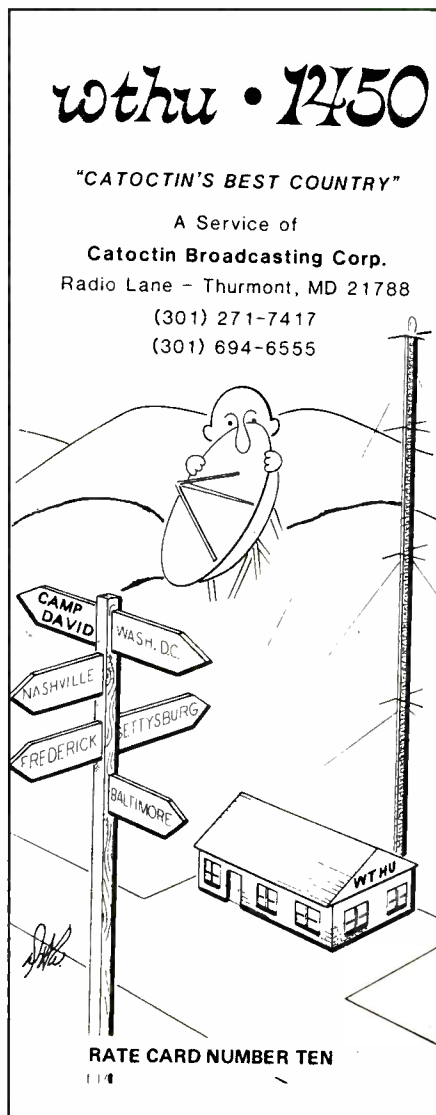
it being highly illegal to sell used commodes (because they required too many gallons of water to flush). The first guy phoned again, almost out of breath from rage this time, with a desire to make that "know-it-all lunatic—and I know who he is, but am too good of a churchgoer to say his name publicly—aware of the fact that these are historical toilets and therefore exempt from any law!" In a fit of decreasingly poor judgment, he then divulged the original owner's identity and approximate age to prove the pots were indeed antiques, and then the codger quite noisily hung up.

Meanwhile the shaken neophyte host stammered to regain the program's decorum by thanking the fellow, giving a quick time check, announcing that he hoped "there'd be no more talk of toilets, especially since it was approaching dinner-time," and then fumbled for a tape cartridge containing a commercial. Inappropriately, over taped voices effusing "yum, yum, yum, scrumpdillious," the ad immediately power-shifted the topic from crusty plumbing to various featured entrees at some family restaurant.

Of course, not all buy-sell programs on hometown radio were that entertaining, but most contained some pretty interesting stuff and paved the way for eBay. And, like today's on-line sell-your-excess junk services, most radio "swap shops" didn't allow callers to palm-off used firearms. Some "tradio" shows nixed the mention of vehicles, too, as that could cut in on the competition of one of local radio's best commercial prospects: car dealers.

"At 9:06 on WIZZ," Sorenson's letter generously continued, "it [was] 'Hotline,' featuring a back and forth phone discussion program, with guests from time to time and generally living up to its name of 'Hotline.'" Though I've never heard tapes of this particular radioshow, I bet it didn't differ much from hundreds of others of that period, in which station management instructed the host *not* to let things get too controversial.

Typically, callers were complimentary, and at least one phoned to offer a chili recipe or home repair tip. The liveliest one I recall catching was on a Vermont peanut whistle. We were on vacation, driving through the Green Mountain State, and my dad had me spinning the dial in search of local fare. "There's something," he said when I hit some enjoyably unprofessional and tinny telephone voice emanating from the speaker grills. "Uh-oh," my father laughed when the irate caller got



See that "Kilroy was here"-type character peering over the WTHU satellite dish? He and the road sign to several well-known locales signify that WTHU was a cute little hometown station that also happens to be well situated. Thurmont, the station's city of license, noted the brochure, had the enviable dilemma of being "most unique in that there [were] more jobs than the adult population of the community can fill." Incidentally, the dish denoted a pioneering association with the then-novel Satellite Music Network.

quickly cut-off for referring to "that damn mayor." The teenaged (seems to me he was an ad-hoc summer substitute) host then read the station rule about swearing and announced "a 30-day call back ban on the foul-mouthed caller." Too bad today's family TV sitcoms aren't as concerned about language as were the majority of mom and pop radio stations back then.



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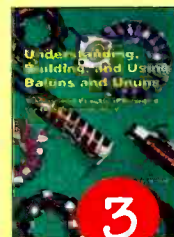


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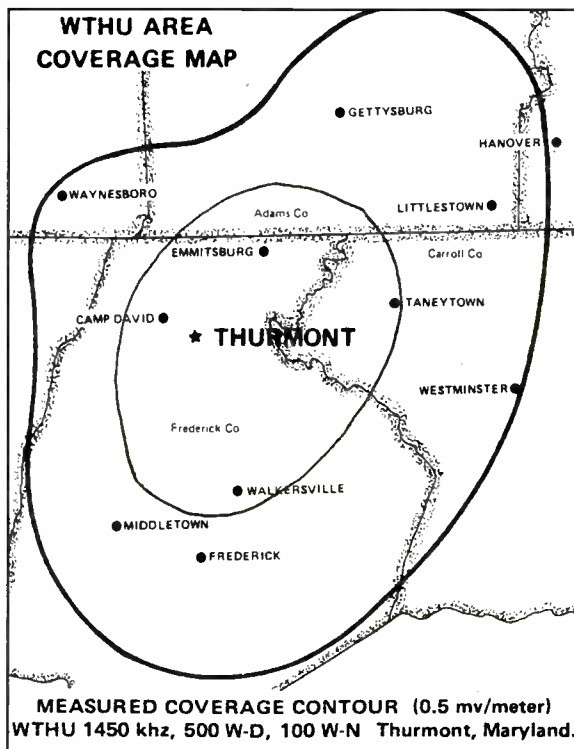
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The inner ring on this circa-1983 coverage map was penciled in by a now-former owner who wanted to show his broadcast property's 100-watt nighttime reach. It's based, however, on 0.5 mv/meter, a measurement routinely subject to varying levels of interference from co-channel and adjacent channel stations. Note those affordable advertising rates!

After the 10 o'clock ABC news and 10:06 "Livingston County News," the "Jim Manley Show—Part II" aired until noon. During lunchtime, WIZZ played ABC news, state and local info, "Paul Harvey News and Comment" (the premier network staple of any self-respecting small market outlet), as well as a five-minute farm market report, taking listeners into the "John Abdnour Show—Part I," airing from 12:35 to 1:00 p.m. The "Swap Shop Two" got a brief run after the 1 o'clock ABC news feed and made way for a 15-minute local talk show, "Problems and Solutions," at 1:15. This was one of those "positive and constructive topics only" kinds of thing. Those with a local government problem might be encouraged to call the mayor, but not to call him (or her) nasty names. Part II of Abdnour's DJ program resurfaced until sundown signoff (or 6:00 p.m., whichever came first).

High school age radio announcer hopefuls loved the warmer weather months when daytimers needed a reliable, minimum wage voice for filling the odd evening hour or two between 6 and summer sunset. This timeslot was ideal for teens who had a *real* summer job during the day. After all, getting the chance to be on the air was more fun than work!

All This And FM Too!

About a decade after WIZZ took to the air its ownership decided that FM would provide a way to reach local listeners at night. So, on September 15, 1964, they activated WIZZ-FM. The class "A" facility was assigned 97.7 MHz, and from an antenna on one of the 140-foot WIZZ sticks, sent 2.95-kW into rural "Land of Lincoln" airwaves. By 1971,

Sorenson pointed out, it was an automated operation,

...using a *Melody Master* cartridge system for instrumental background-type music with an *Ampex* tape machine for backup. Our FM station IDs come every 15-minutes with the use of an *ATC* (Automatic Tape Control, Corp.) tape cartridge machine. The only interruption in the basic [elevator music] programming is at 8:15 a.m. for a religious program—"Start the Day with Christ"—which is hosted by a local minister. At 8:30, "WIZZ-Land" and "State News" is aired for 10-minutes. Other than those two programs, though, the basic format for the FM is strictly background music.

The letter did confirm, however, that WIZZ-FM would stop the tunes "when-ever the local high school has a football or basketball game [to be broadcast]." This charmingly innocent and once rather typical FM program fare, albeit simple



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second-fiddle to WIZZ (and probably heard by far fewer folk than who faithfully dialed the AM), has also largely faded from the American radio dial.

Decent Ratings From—The USDA?

Sorenson wrapped up his communiqué to my sibling by stating that WIZZ's signal covers a "624,000 population zone [and that] the United States Department of Agriculture has reported that WIZZ has a measured listening audience of 175,000 per week." Apparently, a branch of the USDA tallied rural listening habits in an effort to become more efficient in distributing farm-related information. Any local broadcaster would be proud of the station's 1971 audience reach.

Sorenson closed the letter to my brother by inviting him to "write again for whatever other WIZZ details you need, if what you get isn't enough." Of course, kids don't usually do follow-ups, meaning the letter got used for that way-back-when class project and was forgotten about...until I found it.

The Last FulltimeAM 100-Watter

Admittedly, in the 1980s, when my turn came to pen a note to a business, fewer people were needed to run a small radio station. That's probably why my return envelope was a lot thinner than had been my brother's. The fickle finger of fate directed me to request info from one WTHU in Thurmont, Maryland. My dad was pleased because he saw it listed as only having 100 watts at night. In the days before some micro post-sunset levels, a 100-watt AM was truly unique.

Anyway, the WTHU owner who scribbled a note on a coverage map/rate card explained that the station was begun in 1967 by a Vic Leisner. Leisner founded the AM on 1450 with 100 watts day/night primarily because he wanted to hear Baltimore Orioles baseball game radio broadcasts in Thurmont (where the team's radio network had spotty coverage).

WTHU has the interesting distinction of being the last full-time AM 100-watt Class IV local radio station ever to be licensed with that miniscule output. Eventually, FCC rules for the crowded Class IV locals or "graveyard stations" allowed WTHU to jump day power to 500 watts. When the Commission okayed a Class IV night power level increase (to four times a station's then-licensed night wattage), WTHU went to 400 watts at sunset. At the time I received the brochure, the feisty little AM was running satellite-delivered country music (as one of the world's first Satellite Music Network affiliates). It has had several format changes over the years, and now is in the hands of the people who also own Thurmont's local newspaper.

Though only a piece of folded paper meant to have been consulted during the first Reagan administration and then tossed away, my old WTHU pamphlet is a tiny bite of our broadcast history. Like the more detailed WIZZ literature (and radio station ephemera perhaps collected by you), it offers us a snapshot of electronic media history otherwise lost in ever flowing river of time.

Coming Up

Next month, we'll investigate a trio of Santa Barbara, California, AMs—all transmitting from a slightly bent pole.

And so ends another broadcast history day on Pop' Comm... ■

Getting Serious About Terrorism!

Two days ago the Department of Homeland Security raised our threat level to Orange, or High, due to intercepted ELINT and/or HUMINT sources indicating that Al Qaeda is readying another attack on the United States and/or American interests either at home or abroad.

Many people complain "Not again! Nothing happened the last time we went Orange, why should we pay attention now?" This is the kind of thinking that the terrorists want us to assume. It's also the kind of thinking that can get people killed by lulling them into a false sense of security so they're not observant of their surroundings.

Terrorists are cowards. They depend upon deception, stealth, and subversion to accomplish their goals of killing innocent people and assaulting non-military targets in the name of their cause. They also depend upon the apathy, indifference, and boredom of their target(s) to aid in the completion of their mission.

As concerned Americans who enjoy the common bond of radio communications, we *need* to be more vigilant during times of elevated national security. Our eyes and ears are intelligence tools that can assist our government in thwarting the terrorist threat. Our ability to rapidly communicate what we see and hear to the proper authorities puts all of us in a unique position as valuable counter-terrorism assets in our country's war on terror.

Who, you ask, are the "proper authorities"? Your local, county, or state police, of course. They are the first line of defense against terrorism. Load their phone numbers (provided they don't have an active 911 system in place) into your cell phone speed dial. Time is one thing that is *not* on our side when it comes to terrorism. Be observant as you travel. If something doesn't seem or feel right, err on the side of caution; report it to the local authorities immediately. Obviously, use common sense and don't start "crying wolf."

War In The Shadows

While we're on the subject, I'd like to offer the following observation for those who think the war on terror is a static game, or a war of words and little else. We, as a nation, are engaged in a "shadow war." We measure success not by the incidents that happen but by the incidents that don't happen. The problem for most Americans is that they have become so indoctrinated by the news media that they cannot grasp this concept.

In reality, the American public will *never* know the full story of what is happening or has happened in the covert world of counter-terrorism. The American "sheep" tend to believe that if no news is forthcoming from CNN or the major networks about what the government is accomplishing against the terrorist threat, no progress is being made.

Let me assure you nothing could be further from the truth. Having worked with the Special Ops community for several years, I have the utmost respect for and confidence in their abilities to conduct a successful covert war against the terrorist



A photo shot from the front of the new Mobile Command Post. This Suburban was an unused fire/EMS vehicle that was sitting on the city's motor pool lot. Now it is a state-of-the-art communications center.

threats that confront our nation. In essence, our guys in the shadows are much better than their guys in the shadows by several orders of magnitude. Believe me when I tell you that you would not want to meet any of our Special Ops troops in a confrontation...ever!

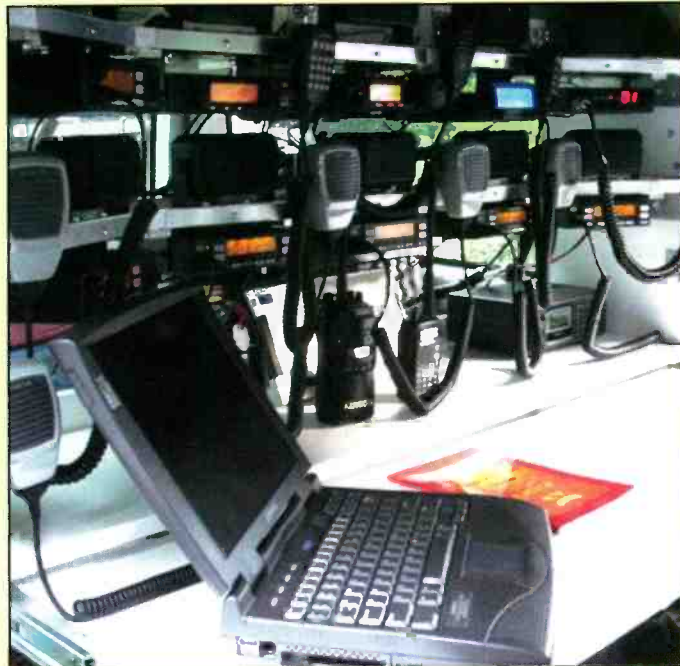
Our Special Ops people are taking the war on terror to the enemy. It's what they do that we *don't* hear about that is making the difference to the world. We should be damned thankful that we have this tremendous tool in our arsenal against terror. They deserve our unwavering support. God bless 'em. The next time you see an Army troop wearing a green beret, a Navy seaman with the "Budweiser" on his chest, or an Airman wearing jump wings and a crimson beret, walk up to them and say "Thanks." That's all, just "Thanks." They'll know that you know and that's all that really matters to them.

What's Happening At APCO— The Association Of Public Safety Communications Officials?

I recently received word that John Ramsey, APCO's Executive Director, has resigned effective May 30, 2003! John's resignation, coupled with the March resignation of the APCO President, Ms. Thera Bradshaw, leaves a power vacuum within the top echelon of the organization. With all the hot-button items currently on the table, including APCO Project 39 (cellular telephone interference to Public Safety Radio Systems) and the E-911 debacle, this seems like a really bad time for APCO to have a shift in leadership.



The "radio stack" in the front of the Mobile Command Post is composed of (top to bottom) Kenwood UHF and VHF Public Safety transceivers sitting on top of a Kenwood 2-meter transceiver. The siren/lightbar controls are above and to the left (on the dashboard). From this position the driver can access some of the capabilities of this communications vehicle while in motion.



This is an interior shot from the passenger's side of the main operating position. Although crowded, the radio operator can access all bands from 160 meters through 800 MHz from this single location.

A news release dated May 27, 2003, on the APCO International website (www.apcointl.org) revealed that the Executive Director, Mr. Ramsey, was resigning to spend more time with his wife, Kathleen, to "pursue other opportunities that will allow them to focus on a personal life-style change" (whatever that means).

APCO stands as the pillar of sanity, a bastion of common sense, in the fast-paced, ever-changing world of communications by steadfastly confronting the multitude of issues that threaten the timely and successful completion of public safety communications worldwide. My sincere hope is that with new leadership (Acting President Vincent Stile) at the helm, APCO does not lose focus and go adrift in dangerous waters.

In other APCO news, the organization has recently leased office space in the Washington, D.C. area and will open its new Office of Government Affairs in the near future. This means that APCO will have a very visible presence in the Capital, ideal for some high-pressure lobbying.

Homeland Security?

Do you ever get the feeling that you are being "stroked" by the government, namely the Department of Homeland Security (OHS)? Sometimes I do. The government has a long history of downplaying the things that they can't handle, for whatever reason, and subsequently keeping the general populace in the dark. The large scale emergency response/counter-terrorist exercises that took place in May are classic examples. To my knowledge not once were ARES/RACES or REACT people activated or involved in these exercises.

Don't tell me that the exercise planners (namely FEMA, the OHS, and the military) didn't have any knowledge of ham radio,

CB, and our associated emergency communications abilities. FEMA has been using hams for years and the military has a cadre of folks in something called MARS (Military Affiliate Radio System) that provide back up comms in times of emergencies. *HELLO? Mr. Ridge, are you listening?*

It's inconceivable to me that not once were volunteer emergency communicators asked to provide comm support for any of these simulated emergency exercises dealing with terrorist attacks. You better believe that they'll ask us when the fertilizer hits the deflection shields! Of course, they'll expect us to perform superbly, and we will, but it would be nice to be dialed into the training *now* so we might know what is expected of us as a group.

Now my most nagging question: What else has our government, more specifically the OHS, kept us in the dark about?

What Can You Do About Terrorism?

To answer this question, I started surfing the Web. I came up with a short list of books that should be on the must-read list of *all* Americans, irrespective if you are an emergency communicator, a first responder, world traveler, or just a regular citizen. This month, I'd like to share with you the one book that tops my list: *The Complete Terrorism Survival Guide*.

Juval Aviv, a retired Israeli Defense Force major, knows about terrorism and how terrorists think and work from first-hand experience. He ought to—for a number of years he was directly involved with counter-terrorism activities in Israel, including working with the Moussad. His new book, *The Complete Terrorism Survival Guide* is a cornucopia of knowledge and practical information for the average citizen and the world traveler.

Aviv's premise is that our OHS has done an extremely poor job of educating the general population (that's you and me, Bubba) about terrorists, their methods, their goals, and their psychology and ways to prepare against terrorist attacks. In addition, he maintains that our government has downplayed the terror threat in an attempt to pacify and placate the American people. His book brings home the point that merely sticking your head in the sand doesn't make the problem go away.

Inside the book are chapters on how to assess your personal terrorist threat, various methods to reduce that threat, and how to increase your own and your family's personal security. A "terror assessment checklist" is included which rates your threat level based upon where you live, your job, your work location, etc. By reviewing this checklist and adding the assessment numbers together you can get an overall terror risk rating. By reading the book, you can employ various methods of reducing this terror risk.

The Complete Terrorism Survival Guide covers virtually all aspects of security, including computer and Internet security. Aviv advises you on how to protect your on-line identity, your credit card information, and your computer hard drive, and he discusses other aspects of Internet security. Cyber-terrorism can be controlled and contained, but it will take a lot of effort on everyone's part. The cyber-world is one more place we all must maintain vigilance.

I must admit that I was somewhat naive and misinformed in my approach to the terror threat. After reading Aviv's book I am much more aware of the nature of the beast. I highly recommend this book to anyone who wants an in depth understanding of terrorists, their methods, and how to effectively combat the threat. Aviv's book is a great step in mitigating the situation caused by the well-meaning but ill-conceived efforts of the OHS. One can only hope that the OHS gets its collective act together before it's too late.

Wilkes-Barre Gets Serious About Homeland Security

Recently, my good friend, Bill Harding, KA3QPQ, who works for the City of Wilkes-Barre (Pennsylvania) Engineer's Office, asked my advice in setting up a mobile emergency command post for the city. Mayor Tom McGroarty contacted Bill with an idea: convert an



The operating position from the driver's side shows a slightly better angle on the gear. While this might look perplexing, once the operator has a short tutorial this is an easy station to operate. The laptop is used for digital modes as well as to program the radios while in the field. Note the two small handhelds: a VHF EMS radio, and an ICOM air-band transceiver for contacting airborne Life Flight/Life Lion medevac choppers.

unused Fire/EMS vehicle into a mobile command post. The plan involved "recycling" one of the mothballed GMC Suburban EMS vehicles to provide a mobile communications asset to ensure inter-agency interoperability during emergencies or heightened security. The mayor also insisted that this vehicle be available to the Luzerne County EMA, should they need a mobile communications van.

My involvement consisted of planning the radio suite to provide the necessary communications. Since Kenwood was on the city contract, we decided to stay with them, except for the HF radio system, which is a Yaesu FT-857.

The first priority was to obtain the vehicle and ensure that it was serviceable and road worthy. After all, it had been sitting for several years, unused and rusting, in the city motor pool lot. Once Bill had the necessary maintenance done on the old GMC, it was time to do some serious planning on what to put where.

The second seat was removed. This is a split seat, with one side of the bench seat being wide enough to sit two people and the other side seating only one. The larger of the two was kept, turned around backwards, and re-bolted to the floor. This seat was centered between the sides of the vehicle interior to provide an operator's position. Next, a three-tiered console was constructed from plywood to fit

on the elevated portion of the rear of the Suburban and to form an operating bench and equipment rack.

The console features a desktop built to retract to provide extra room for the operator to enter and exit the vehicle. When fully extended, this work area provides extra space for a laptop computer and a writing surface. An additional laptop computer can be employed to operate HF and VHF/UHF digital modes like packet, AMTOR, PACTOR, PSK31, RTTY, and APRS and to receive WEAFAX transmissions. The transceivers are affixed to the shelves in a "U" shape to provide the operator with easy access to all the equipment.

The radio gear consists of a mix of Kenwood VHF/UHF FM transceivers that cover low-band and high-band VHF and UHF public safety frequencies. The low band rigs are 32-channel, 50-watt Kenwood Model TK-6110s (two each). High band radios are 128-channel, 50-watt Kenwood TM-760G (four each) and the UHF rigs are 128-channel, 40-watt Kenwood TM-860G (two each). Amateur radio frequencies are covered using Kenwood TM-261A 2-meter transceivers (two each) and a Kenwood TM-V7A dual-band (2-meter/70-centimeter) transceiver. The latter can be operated as a remote base (commonly called a "mobile extender" in police parlance) to allow access to local 2-meter repeaters when



Yes...the lightbar works! The City of Wilkes-Barre's Mobile Command Post is ready to go to work. A total of 15 antennas adorn the Suburban, providing command and control communications for the "on-scene" commander of an incident. By using volunteer labor and a recycled unused vehicle, city hall has created a cost-effective winner.

using low-powered UHF handheld transceivers for SAR operations.

As mentioned before, the HF radio system is the new Vertex-Standard (Yaesu) FT-857 transceiver and covers 160 through 6 meters, plus 2 meters and 70 centimeters, using AM/FM/SSB/CW and data modes. Rounding out the radio suite is a RadioShack CB set (with compass and weather alert) and an ICOM VHF 200-channel aircraft transceiver. There are five Kenwood TK-272G 32-channel VHF FM handheld transceivers for on-site use by key personnel. Finally, there is a Motorola 800-MHz transceiver that was recently acquired from the Luzerne County EMA. All this radio redundancy is mandatory in view of the overall mission of this vehicle. Should one or two radios malfunction, there is sufficient back-up equipment to maintain communications continuity.

Antennas (15 total) for the various HF/VHF/UHF radios are mounted on the Suburban. All of the VHF/UHF whip antennas are mounted using three-quarter-inch NMO mounting hardware. The two low-band VHF whip antennas (manufactured by Comtelec) are mounted on either side of the hood with fender/cowl mounts. The 12 Larsen VHF/UHF whips are mounted on the roof. The HF antenna, a Tarheel Model 200 (www.tarheelantennas.com), is affixed to a custom mounting bracket that is welded to the frame of the Suburban. The lower end of the HF antenna is level with the top of the brake light, thereby reducing interaction

between the feed point and the body of the vehicle.

Power for the radio gear is available from a huge deep-cycle RV battery that is wired into the existing charging circuitry for the Suburban. The configuration uses an RV module, which allows for simultaneously charging both the normal vehicle and deep cycle batteries. There are two 750-watt DC-to-AC power inverters used to supply a total of 1500 watts of AC power for those accessories that require alternating current. Also on board are two, six-station HT chargers that will recharge HT batteries while deployed. This adds to the flexibility of the mobile

command post when working in remote areas that lack AC power. Finally, there is a 1500-watt, gasoline-driven generator that provides both 120 VAC and 13.8 VDC at the output.

All the public service radios are programmed with local frequencies as well as police, fire, EMS, and EMA frequencies from adjacent counties. This greatly enhances the functionality of the mobile command post by ensuring the communications interoperability with other agencies outside Luzerne County.

The mobile command post project is far from completed. Future plans call for the addition of a high-end GPS unit, a set of 35-amp, 13.8-VDC power supplies, and other accessories to augment and enhance the awesome communications capabilities of this unit.

I am pleasantly surprised that some forward thinking individuals at city hall have seen fit to invest the time and money to provide the City of Wilkes-Barre, with a population only around 45,000 people, with a state-of-the-art mobile communications asset. Recycling an unused city vehicle and using volunteer labor, coupled with prudent purchasing of off-the-shelf communications equipment, has kept costs down and resulted in a highly sophisticated, extremely well-equipped mobile command post/communications station that will ensure communications connectivity and inter-agency operability during times of emergency. The Luzerne County EMA staff also applauds Wilkes-Barre's efforts knowing that the emergency command post is available for county-wide deployment at the discretion of the Mayor's office. ■

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Scanvention 2003

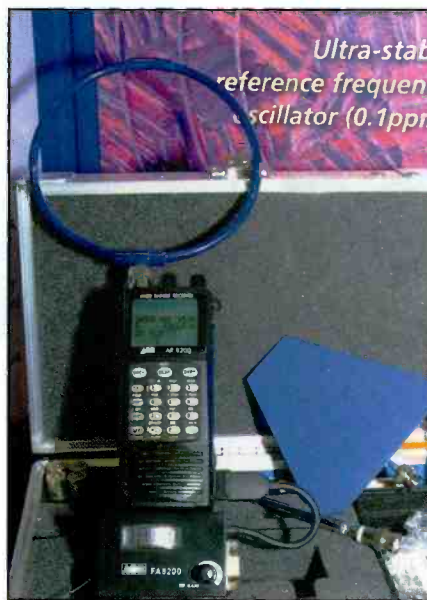
Another year, another Dayton Hamvention, and 2003 offered some interesting announcements for scanner enthusiasts, although perhaps not quite as many as in past years. Unfortunately, due to magazine lead times, this is the first issue in which we could tell you about the announcements, but now here's what was new and exciting.



Hamvention still ranks as the largest single ham event during the year, and perhaps the largest electronics event outside of the Consumer Electronics Show in Las Vegas. The parking lot of the Hara arena was filled with flea marketers and commercial dealers who couldn't get a spot inside, or who chose not to pay the higher rents inside. This year, it rained most of the day on Saturday, so perhaps that gamble didn't pay off. Inside the arena, it was business as usual. Just a bit more crowded as the rain drove would-be flea marketers inside for the day. Friday and Sunday were very nice days, so the flea market did have its chance too!



A lot of people spent quite a bit of time at the AOR booth this year. The first new product we look at is really not new, but newly shipping. Covering from 10 kHz to 3.3 GHz, the AR-One is, unfortunately, only available to the professional market at this time as it is not available in a blocked version for the U.S. market. It certainly looks to be a great receiver, and if you're in that market you can check it out. It's shipping as of now!



Of course, it helps if the transmitter isn't moving! That's the AR-8200 Mk III that the loop is held up by. Notice the box underneath to provide directional feedback readings. Hopefully, we'll be able to provide a full review very soon!



Jeff Reinhardt from AOR is demonstrating the new digital transmission modules to an eager audience. Intended for the ham market, this digital modulator plugs into the microphone and speaker jacks of an existing transceiver. When a digital unit is found at the other end, the units can switch into digital mode and the results are nothing less than stunning. It sounds almost like FM on HF! One of the problems with digital in the ham world is the lack of standards. AOR is promoting this standard (as are a half-dozen other companies) as an open way of encoding within existing technology and bandwidth. Stay tuned—I'm sure we'll be seeing and hearing more about this development!



AOR has upgraded their spectrum display unit. The 5600 features more color information and a crisper display than previous models. If you own an AOR receiver that the SDU is capable of controlling, this makes an excellent spectrum display system. Detailed specs on the 5600 (including a list of receivers that are supported) is not available as of this writing, but we'll update you as soon as possible!



And finally from AOR is this discone antenna for 2 GHz. If you've got one of those receivers that covers the higher frequencies, this may be a handy gizmo to have around!



Here's a closer look at the business end of the digital system from AOR. The only connection required is to wire your microphone into their jack if you'd prefer to use your mic instead of theirs.



Here's a booth that was never quiet. And where's Harold? Nowhere to be found, of course...



And here it is on top of an AR-5000 receiver. If the standard catches on, this may be a great way for us to listen in to all that digital ham traffic—if you're interested in rag chewing.



Another great spot to find things of interest to the listening hobbyist is Optoelectronics and this year was no exception. The most interesting development this year is the Xsweeper. You may have seen the Scout or Xplorer, which search for frequencies in the near field. The Xplorer can also let you hear the audio. The Xsweeper can do all this and show you a picture of the spectrum around it. With a range of 30 MHz to 3 GHz a lot of frequencies can be covered in a very short time. The Xsweeper can also scan through memories (frequencies that have already been found). Keep in mind that it operates in the near field, so the range is limited to what's nearby. It's not a replacement for your scanner, but rather an excellent diagnostic tool! We'll have a full review on this excellent product soon! More information is at www.optoelectronics.com.

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Located at Optoelectronic's booth, Datafile, makers of the popular Probe software that works with the Optoscan 456 and 535 boards for the RadioShack PRO-2005/2006 series and the PRO-2035/2042 scanners, has introduced a version of the software that supports the ICOM PCR-1000 for scanning from 25 to 1300 MHz. The ICOM PCR-1000 is an excellent receiver in its own right. It's a true ICOM communications receiver with good performance from shortwave through scanner frequencies. It is a "black box"-type receiver that requires a computer to control the receiver. ICOM's own software, while adequate, isn't really very well suited to scanning. With this in mind, Datafile developed Probe 1K specifically as a scanning engine for this great receiver. More information can be found at www.probe1k.com, or watch here for a more complete review soon.

Frequency Of The Month

Our frequency this month is **155.655**. Have a listen and let me know what you hear—or don't hear. Send your entry via e-mail to radioken@earthlink.net or via snail mail to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126. Don't forget to write the frequency in the subject line or on the envelope so it gets routed to the proper drawing! Also don't hesitate to send your questions to the same address. ■



Fred Osterman from Universal Radio talks to yet another satisfied customer. This is another booth that wasn't very quiet. Fred's excellent and comprehensive catalog is a must-have for any listener. Visit www.universal-radio.com for more information or to request a catalog.

The Adventures of Scanner Dweeb by M.A. Colette

These new radios
are so small....



The best accessory
that could come
with them....



Flea size....

would be a
magnifying glass....

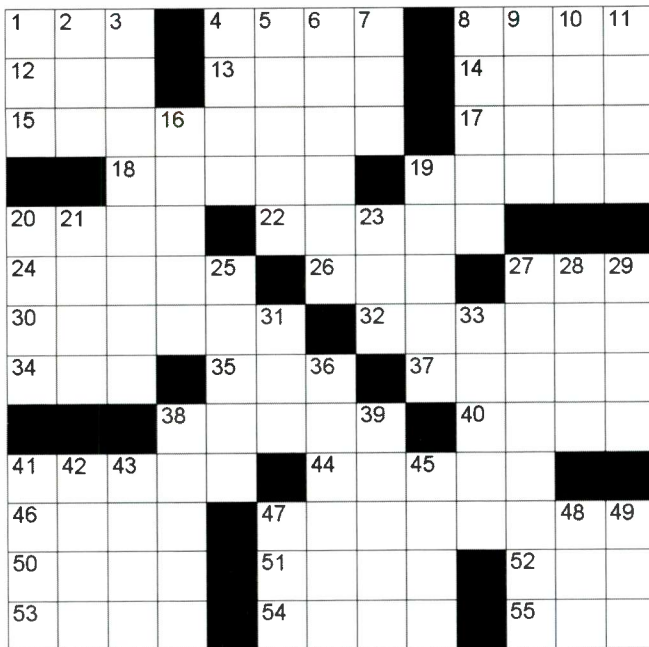


the Pop'Comm puzzle corner

by Eric Force <eric@dobe.com>

test your radio knowledge

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



ACROSS

- | | |
|--------------------------------------|-------------------------------------|
| 1 Hi-speed Internet connection | 18 Sign of West Longitude |
| 4 Unwritten | 19 Audio noise reduction system |
| 8 CW abvr, Testing or Contest | 20 Drink greedily |
| 12 About 102-124 Degrees | 22 "One Eyed ____" (Gaming) |
| 13 Friends forward, strike backwards | 24 Station reception code (RevSp) |
| 14 Western pact | 26 Prevents FM receiver drift |
| 15 Keyboard key (2 wds) (RevSp) | 27 Airport, San Antonio, TX |
| 17 Borders Eastern Iraq | 30 Fourth highest peak in the world |
| | 32 Abuse |
| | 34 Nostalgic Radio (abvr) |

- | | |
|--------------------------------------|---------------------------------------|
| 35 Amateur Radio Association (abvr) | 16 A Toe, finger, number this |
| 37 Thermoplastic yarn | 19 Type of battery (RevSp) |
| 38 dah dit dit dah dit | 20 Major student pilot event |
| 40 Undesired oxidation | 21 AM 1210, Philadelphia, PA |
| 41 TC Country Prefix TRA-TRZ (RevSp) | 23 CW abbr, Confirm; I confirm |
| 44 Containing iodine | 25 Dielectric material (RevSp) |
| 46 ____ D. Young (RCA founder) | 27 Branch of Physics (RevSp) |
| 47 Type of capacitor | 28 Surface weather observation system |
| 50 Repudiate | 29 Field soldier's "home" |
| 51 Digital circuit logic gate | 31 Voice of Greece |
| 52 Statute | 33 ITC Country Prefix for 6CA-6CZ |
| 53 Taro root | 36 Callsign, Asiana Airlines |
| 54 Tethered aerostat radar system | 38 Consumer electronics firm |
| 55 AM 1010, Calgary | 39 High public esteem |

DOWN

- | | |
|---|--|
| 1 Airport, Denver CO (International) | 42 Was indebted to |
| 2 About 192-214 Degrees | 43 Curve |
| 3 Constellation : The lesser lion (2 wds) | 45 Digital Trunk Radio System (abvr) |
| 4 Circuit with infinite resistance | 47 CW abvr, Text |
| 5 ALFA Callsign, Shaheen Airport Services (RevSp) | 48 Email emoticon, "Be Seeing You" (RevSp) |
| 6 N 65 W 147 here | 49 Motor (abvr) |
| 7 Windows(®) NT to Linux converter | |
| 8 The "J" in JETDS (Mil) (RevSp) | |
| 9 British nobleman | |
| 10 Thrust with a knife | |
| 11 British Prime Minister's first name | |



THIS MONTH IN RADIO HISTORY "Fill-In"

On September 9, 1926...

(Hint: Remove the letters: J, K, Q, U, V, X, Z)

ZTXHVEUUNQAKTJI ZOXNVAULQQB
RKOJAZXDVCUAQSKTJI ZNXGVJCJ
OKMQPUAVNXYKZNVBKCXKWZAJSQ
CJRKEQAUTXEZDKKBQYUUTXHJEZ
RVAUDKI JOXJCUOZRUPKQXRJAUT
QIVOJNKUOXFKJAUMZEQRJIKCVA

Solution: THE NATIONAL BROADCASTING COMPANY, NBC, WAS CREATED BY THE RADIO CORPORATION OF AMERICA.

Pop'Comm Trivia...

I come in many shapes and sizes. Sometimes round, sometimes square, sometimes rectangular and often somewhere in between. In one form or another, I've been around since almost the dawn of Radio itself. Books have been written about me, web sites devoted to me. My favorite time of the year is Winter. I like to turn and twist and I can "see" in two directions at the same time.

What am I?

Answer: A Loop Antenna
More Info at: <http://www.frontiernet.net/~jadedale/Loop.htm>

NEW! "Where's That Station" PC Program - Check It Out! - <http://www.dobe.com/wts/>

Freeplay Summit—A Solar Digital Radio That Can Be Improved

I'm a fervent believer in free radio, including the electricity that powers it. That's why I've spent a lot of time researching solar/windup multiband radios the past few years. To date, I've tried everything from the Info-Mate 837 (\$79.99 at www.sun-mate.com, which unfortunately has a plastic tuning scale warps that in direct sunlight, up to Grundig's impressive FR200 with SW fine-tuning dial and flashlight included (\$39.99 at usashortwavestore.com). But my heart has always remained with Freeplay (formerly BayGen), the makers of the original spring-driven windup radio.

If you've ever tried a Freeplay, you'll understand why. For one thing, their receivers are solid and durable, with windup handles that won't break off after a few weeks' use. Also, Freeplay radios provide audio good enough to please my wife's critical ears. This, in turn, has led to my being able to plant Freeplays in strategic sunlit windows around the house, without the usual spousal objections. In itself, this is enough to generate loyalty in any radiophile!

Anyway, when I learned of the Freeplay Summit radio, I was like a child anticipating Christmas. The reason: unlike all the other Freeplay radios, the Summit is digital.

That's right: digital. We're talking an AM/FM/LW/SW receiver with digital tuning, digital LCD display, and 30 presets. Even before our new house was finished, I had already decided which kitchen window ledge it would sit on. I could even see the Summit in my mind's eye, flowing forth with the BBC on 5975 kHz as I washed the dishes. (After all, good audio alone isn't the only key to marital peace.)

Thanks to Freeplay, last August I received what might very well be the first Summit to arrive in North America. Here's what happened once fantasy met reality and I got to know this set personally.

The Basics

As I mentioned earlier, the Freeplay Summit (£79.99 at www.simplyradio.com; no North American sites were available at publication) is an AM/FM/LW/SW single conversion digital receiver. Specifically, AM covers 530 to 1710 kHz, FM the usual 88 to 108 MHz, and LW 46 to 281 kHz; SW is continuous from 5950 to 15600 kHz. Tuning is accomplished using an up/down button "slewing" system. These buttons also activate the Summit's scan function, which is half as fast as slewing.

Worth noting: on SW, the Summit uses an XX.XXx MHz tuning scale. This means that if you slew-tune in 5-kHz steps to Voice of Vietnam at 6175 kHz, the Summit's display will show 6.175.

Beyond its 30 presets (10 AM, 10 FM, five LW and five SW), the Freeplay Summit comes with a 12/24-hour clock, plus standard clock radio features including alarm and snooze.

To improve reception, the Summit has a telescopic whip antenna. For shortwave, Freeplay also throws in a 23-foot



The Freeplay Summit is a digital readout AM/FM/SW/LW receiver.

windup antenna with clip-on connector. (AM and LW is received with a built-in ferrite bar antenna.) Also included are an "international short wave guide" and a cloth carrying case.

You can power the Summit directly using its 4.2-volt output solar panel, or you can hand-crank its generator to charge the radio's 3.6-volt NiMH batteries. According to Freeplay, 30 seconds' cranking delivers 30 minutes of playtime, based on the company's test period of 8,000 windups. Fully charged (which can be done with sunlight or using the Freeplay's 6-VAC adaptor), the Summit delivers 20 hours of audio before running down. Even when this happens, the radio retains its clock and preset settings. Finally, you can plug the Summit into an AC current, using its AC adaptor (also included, complete with international plug adapters).

As for audio, the Freeplay Summit's 8-ohm, 66-mm speaker delivers a pleasant sound. You can also plug in headsets for private listening in mono.

Performance

As a piece of equipment, the Freeplay Summit is attractive and solidly built. Its chrome-plated buttons, although small, respond as if they'll last. Meanwhile, the radio as a package is reasonably intuitive to use.

As for performance, the FM band works well. (Being in North America, I couldn't test the LW band.) However, both the AM and SW bands suffer from poor selectivity, and an overly wide bandwidth filter. For instance, on AM, WBZ 1030 in Boston slops over onto 1040 kHz (the Summit tunes AM in 10-kHz

"In particular, the Freeplay Plus' SW Fine Tuning knob makes it easy to optimize a given SW station."

steps, although you can also set it to 9-kHz), while WCBS 880 New York bleeds over onto 890. Meanwhile, local stations, such as Ottawa's CFRA 580, can slop as far as 600 kHz. Conclusion: forget AM DXing on this set.

On SW, the problem's even worse. For example, Radio Havana on 6000 kHz (0300 UTC) slops as far up as 6015 on the Summit; Voice of Vietnam on 6175 (also 0300 UTC) makes it up as far as 6215! (I picked these stations up in a second floor room, using both the set's whip and windup antennas. The house itself is relatively unobstructed by other buildings or power lines.) Moreover, the Summit's too-wide filter (I don't know what its width is, but I can tell a too-wide filter when I hear it) lets adjacent stations bleed in when you're listening to SW. In fairness, the main station clearly dominates the audio. However, the vague ghost-like whispers that fade in and out, plus the accompanying static and hiss, can make the audio hard to take. I should know; my wife complained vociferously about the Summit's "whiny" sound on SW.

In contrast, C. Crane Company's analog Freeplay Plus (\$129.95 at www.ccrane.com—Crane designed this AM.FM/ SW1/SW2 radio/LED flashlight in cooperation with Freeplay) offers better selectivity on both AM and SW, plus a wider SW bandspread (3000 to 18,100 kHz).

In particular, the Freeplay Plus' SW Fine Tuning knob makes it easy to optimize a given SW station. The only downside, however, is that the Freeplay Plus' two SW bands are so close together on the dial (about one-third inch between MHz marks) that it's difficult to pick out stations at random. In contrast, the Summit's digital display lets you know what you're listening to, while the presets get you there fast, especially if you use them to mark various bands, rather than stations.

Then there's sensitivity, which the Summit could use a bit more of. Granted, the fact that Freeplay supplies the windup antenna really helps. However, for a kitchen windowsill location, a wire draped across the ceiling light is somewhat out of the question. Hence, I have to rely on the Summit's built-in whip for SW

reception, which doesn't have enough gain for the job.

What's the problem? Well, I suspect that the Summit's telescopic antenna given, which is designed to fit within the radio's 3.5-inch-tall case, is just too short. (I intend to replace it with a longer whip, just to find out.) Whatever the reason, this means that the Summit won't do what I wanted it to do, which is to provide reliable ground floor BBC 5975 reception, day in and day out. For me, this is a very big disappointment, unless I can move the kitchen up to the second floor.

One other point worth mentioning is the Summit's 5950- to 15600-kHz short-wave bandspread. Simply put, it's not big enough: What about the 120-, 90-, 75-, 60-, 16-, 15-, 13-, and 11-meter bands? Now I've heard that a North American Summit version will rectify this problem by replacing LW with a second SW band. However, this remains to be seen; I'm not sure how far the NA Summit will extend its SW reach.

The Verdict

This is the point in a typical review where the author dulls the critical barbs he's just unleashed. Well, I am no exception to that rule. Somewhat.

What I mean is that I can't overlook the Freeplay Summit's selectivity problems. The radio's too-wide bandwidth filter really degrades its SW audio, as far as I'm concerned. (In contrast, the Freeplay Plus' SW audio is extremely listenable; as good or better than my trusty Panasonic RF-2200.)

However, I may be able to forgive the Summit's sensitivity problems, if I can manage to replace its whip antenna successfully. As for the drop-off at 15,600 kHz I rarely listen higher than that anyway, especially at night, when I'm surfing through the 49- and 31-meter bands.

Meanwhile, even with its shortfalls, I can see the benefits of the Summit as a travelling clock radio. Given its size and features, it's a lot of radio for a suitcase portable. Also, the Summit's FM audio is quite pleasant, and I use FM quite a lot.

This said, when it comes to providing a quality multiband solar/windup digital radio, Freeplay's got some work to do. Replace the bandwidth filter with something narrower and do something about the whip, and the Freeplay Summit will be in a class of its own. Until then, however, I'll stick with my RF200, or the Freeplay Plus. ■

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Predicting Hot Tropo Days

Police and fire dispatchers serving rural areas outside of Houston, Texas, *knew* they were going to have a tough shift ahead. “The sun is just barely up, and the temperature is 90 degrees, and the air smells like stale smoke,” said one of the dispatchers for three VHF high-band law enforcement services. “Tampa and Key West, Florida will be stronger than our local units,” adds another dispatcher, referring to the UHF 460-MHz law net frequencies.

Sure enough, their predictions were right on target: distant VHF and UHF signals coincidentally using the same CTCSS tones were overriding their local squelch and sometimes drowning out their own mobile units just miles away. The condition is called tropospheric ducting.

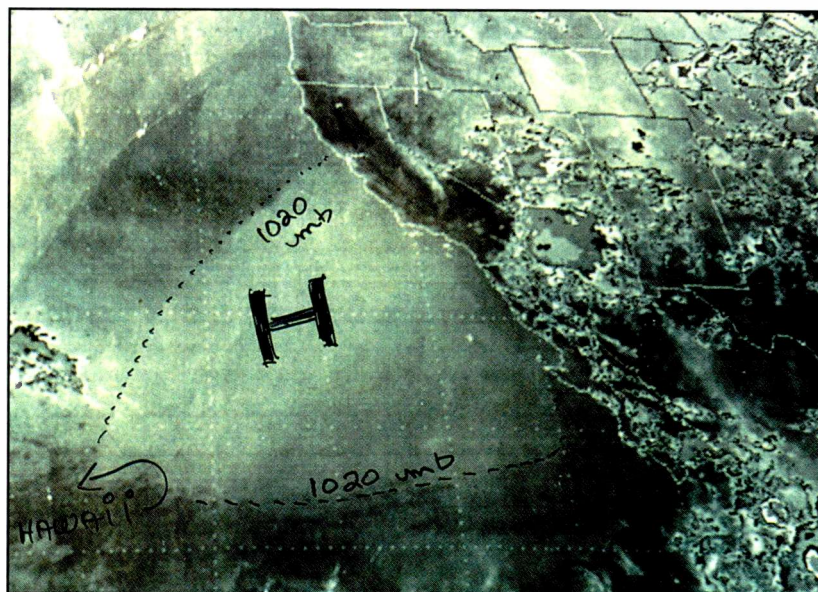
Tropospheric Ducting

This weather-related radio phenomena occurs every July through September in almost every part of the country. Ham radio operators on VHF and UHF anticipate these conditions with the excitement of working well beyond line-of-sight, yet public safety dispatchers hope the condition goes away and things get back to normal as soon as possible. But unlike ionospheric VHF skip, tropospheric ducting of far away VHF and UHF stations may last for days.

Ducting of VHF, UHF, and microwaves occurs in our lower atmosphere, called the “weather region.” The long-range propagation of normally short-range VHF/UHF signals has nothing to do with the ionosphere, but *everything* to do with local weather conditions. When a high-pressure system settles in over a widespread region, tropospheric ducting may span short-range signals over hundreds and sometimes more than 1,000 miles distant.

The trigger to a VHF/UHF and microwave tropospheric duct is layers of unmixed air that may stratify over a large region, usually in the presence of a high-pressure system. High-pressure cells are most common July through October and are continuously fed by warm, moist air flowing up from the equator. The concentration of this equatorial air stalls-out just north of 30 degrees latitude, and it begins to rotate clockwise, consistent with high-pressure cell rotation. As more air gets pulled into this region of high pressure, the concentration of air becomes heavier than the air below, and it slowly begins to spiral clockwise down toward the earth’s surface.

This sinking air is called subsidence, and it may drop thousands of feet until it “bottoms out” at about 1,000 feet above the earth. As more air sinks on top of the stratified layer, dropping air from the high-pressure area, the air gets compressed. When you compress air, it gets warm, and the warm stratified



A weather FAX showing the tropo to Hawaii within the 1020 millibar high.

air may begin to build over a widespread region. With little surface wind to stir up these radically different air masses—moist air along the surface of the earth, capped by a stratified layer of warm air which has been compressed to drive out much of its moisture content, and then cool air above—a thin, long tropospheric duct begins to form.

Normal atmosphere, called the weather region, exhibits a decrease in air pressure with altitude in an almost logarithmic manner. The higher we go, the less air pressure. Air temperature decreases with altitude, dropping 20 degrees Fahrenheit for every mile of increasing height, up to 40,000 feet. Water vapor content in air also decreases with altitude, resulting in atmospheric density decreasing with height above the surface of the earth. This type of weather talk relates to radio range. We usually calculate VHF and UHF radio waves traveling 22 percent further than the visual horizon.

During periods of widespread subsidence, a band of brown air known as the inversion layer can be found at about 1,000 feet above the earth. This layer usually traps rising pollutants and might be seen hanging on the horizon for literally miles in all directions.

If the inversion layer remains undisturbed by surrounding winds of a high-pressure cell, the sinking air may continue to stratify further into a warm, dry layer that may override a region by hundreds and sometimes thousands of miles. If the air within the tropospheric duct inversion layer sharply increases by 10 degrees Fahrenheit, the refractive index will be great enough to develop an atmospheric wave guide capable of trapping VHF,

UHF, and microwave signals over hundreds and thousands of miles. And characteristic of a "perfect" wave guide at a specific wave length, signals at certain frequencies within the wave guide may exhibit almost no attenuation well out to 1,000 miles.

What To Expect, And When

Some high-pressure systems form every year in late summer in predictable regions. These include the stationary California/Hawaii high, and the stationary Bermuda/Azores high. The faithful California/Hawaii high almost always leads to ham radio excitement for tropo ducting contacts over a 2,500-mile path on 2 meters, 222 MHz, 440 MHz, 1296 MHz, and up as high as 5 GHz. Hams are still trying to span the California/Hawaii high on X-band, 10,000 MHz. On the east coast, the Bermuda/Azores high may regularly open tropospheric ducting long-range contacts between hams in New Hampshire talking with mobile stations 10 miles out of Key West. There is a strong possibility that tropospheric ducting of VHF and UHF ham signals might take place between the eastern seaboard and Europe. This year promises to be a fantastic one for tropo ducting where the first ever east coast to Europe contact could become an official record.

Tropospheric ducting between stations in the middle part of the country also peaks around August and September.

Here's where to expect tropo ducting:

- Chicago/Texas path
- Texas/Florida path
- Texas/northeast path
- Northeast to southern states path
- Chicago to east coast path
- Midwest to northeast path

What It Means To You

Amateur radio operators, seeking to establish long-range voice and Morse code communications over short-range bands, actively track tropospheric duct movements. The key to most successful long-range contacts is a high-pressure system that may remain stationary for several days over a region, with a noticeable increase in local air temperatures.

"When I can see mirages beginning to form on the highway, I know that tropospheric ducting conditions on VHF and UHF bands are all around," said William Alber, WA6CAX, a ham operator who



Here's a midwest TV station seen in Florida, 1,800 miles away!

regularly flies his airplane into the band of brown air to take air temperature readings within, above, and below the inversion layer.

"The mirage you see on the road is a refraction of the blue sky image from above, and just the opposite occurs during tropospheric ducting when the 'mirage' refracts VHF and UHF radio waves over long distances, and then back down to earth," adds Alber.

Public safety communication officers, like Ben Hathaway, N6FM, in the Santa Cruz, California, area may constantly monitor the movement of the high-pressure system to predict abnormal VHF/UHF radio net conditions. "It's not uncommon to hear enhanced UHF 460-MHz radio signals coming in from sever-

al hundred miles away on an all together different radio net than your own local public safety net," said Hathaway, an experienced ham radio operator and an expert on when interference might creep into his local VHF/UHF radio net.

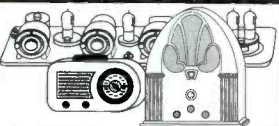
Public safety communication officers throughout the Midwest may dread those summer and early fall months when the weather gets hot, wind conditions next to zero, and the telltale band of brown air is seen hanging on the horizon. This will likely lead to tropospheric ducting on VHF and UHF public safety frequencies.

"Many dispatchers may not override their CTCSS squelch system, and might not realize what is causing interference to their local units," commented Tom Andersen, a radio dispatcher outside of



In a rare World Trade Center roof shot, a tropo duct is well defined over the New York skyline. The Statue of Liberty is near the center of the photo.

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Tuning In (from page 4)

with a ham in Russia on 20 meters using my radio's push-to-talk feature.

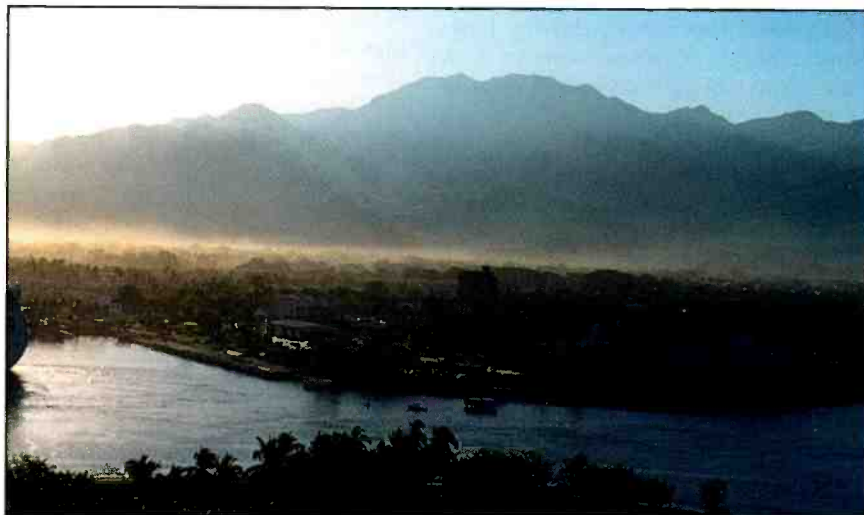
As I sat here going back in time to when things just seemed to make a whole lot more sense, I decided to look at what Fanon Courier was up to today. Right there at their website, at www.fanon.com, is their fine-looking PRO-COM M 54 VHF walkie-talkie. Check out the photo. Then I decided to check out Pryme Radio's website, at www.pryme.com, and found their SPM-300 Medium Duty Lapel Microphone with three references to "PTT." You'll find *countless* references to "PTT" and "push-to-talk" on everything from public safety, marine, and aviation to amateur and CB manufacturer and dealer websites and product literature.

Do you see anything in the phrase PTT or push-to-talk that warrants *ANY* kind of trademark protection for Nextel? Seems to me it's more of a *generic* phrase, therefore, cannot in *reality and everyday practice* (not what's in the legal mind on Madison Avenue) be Nextel's own. Certainly Direct Connect™ is pretty catchy and is Nextel's baby.

I just hope some waterfowl association that thinks like Nextel doesn't trademark "rubber duck" because a whole lot of us radio folks will have to put on our hip boots. Only in America! ■



Coastal tropo haze seen hanging on the horizon.



Early morning inversion layer seen hovering only 300 feet above the ground.

Tulsa, Oklahoma. "Last summer many of our mobile units were breaking up on transmissions, and you could clearly hear the sound of two signals coming in at once. It wasn't until I walked over to the console and disabled tone squelch decode that I discovered mobile units blasting in from Texas on our 460.075 MHz 'private' frequency."

Many municipalities who have frequency allocations on 460.025 to 460.7 MHz all agree that same-frequency mobile unit interference is a major headache to their local municipality during the summer and fall. Many cities may have switched from 154 MHz to 460 MHz, thinking that same-channel interference would drop off if they went to a

public safety band three times higher. During periods of intense tropospheric ducting, UHF frequencies may be propagated up to 800 miles away with less than 1 dB of signal strength attenuation; yet down on VHF, up to 6 dB attenuation has been noted.

Many scanner enthusiasts use the 162-MHz weather channels as a good indicator of when tropospheric ducting is beginning to form in their area. The key to predicting good tropo duct conditions is to monitor and record those VHF weather channels that you pick up locally and weather channels that are absolutely vacant of any local signal. Then, when hot weather conditions set in over a wide-spread area, monitor those no-reception

“Many scanner enthusiasts use the 162-MHz weather channels as a good indicator of when tropospheric ducting is beginning to form in their area.”

weather channels and you'll be surprised that a weather station coming in 800 miles away may have almost the same signal intensity as one coming in just 30 miles away!

Monitoring 460.025 MHz is another good idea during tropospheric ducting. This is one of the most common public safety UHF channels in the country, and if you don't have any activity on this frequency in your local area during the winter, just wait for some long-range reception this summer.

Tropospheric ducting is also seen quite easily on any television set connected to a fringe area antenna. You will need a small rotator to swing the antenna in different directions to determine where the weak TV signal might be coming in. Channels 2 through 6 will usually show the signs on mild tropo ducting first; but once the duct settles in, Channels 7 through 13 may dazzle you in full color coming in from 500 miles away. And try your luck at the UHF channels for some added excitement!

Tropospheric ducting signal strengths may remain unchanged for hours. Unlike sporadic-E on low band or VHF, tropo signals won't instantly go from strong, to weak, to strong in just a few seconds. During long-range tropo reception, the signal will usually build for over an hour, remain relatively strong for an hour or so, then dip in signal strength for a few hours, only to return again on a random basis. The time of day does not seem to be a major factor in the reception of a tropo ducted signal, but mid-morning and early evening seem to be times when night-to-day and day-to-night temperature variations may most affect the stratified inversion layer.

Sometimes conditions may increase dramatically, yet others times they remain unchanged or the signal slowly disappears into the noise. But don't turn off your radio as soon as the signal disappears—it may well come back a few hours later, as long as the high pressure conditions remain stationary over a widespread area.

Give It A Try!

Every morning scan your local newspaper weather map, keep track of high pressure systems, and watch the evening TV news broadcast. Aviation weather reports, unfortunately uncommon on the Weather Channel, are another good source, but you might need to get up before dawn to catch these illusive Weather Channel summaries of what's happening around the country. (I wish they did them on the hour!)

Enjoy tropospheric ducting right now—you have about 30 days to go before fall and winter low-pressure systems move in and blow out these stable summertime highs.

For more information, be sure to check out the following websites:

www.iprimus.ca/hepburnw/tropo_wam.html

www.psnw.com/~n7stu

www.vhfdx.com/hscw.html

www.wswss.org

www.swotvhf.org

September Survey Questions

I do most of my radio listening and talking:

Daytime at home or on the road	1
At work	2
At home, early evenings right after work	3
At home, most of the evening	4
Only on the road, typically when traveling on business	5
Only on the road, traveling for pleasure	6
At home, during the day right after work	7
Mostly weekends, during the day	8
Mostly weekend evenings	9

I'm a ham and my family complains about radio interference to their home entertainment systems or phone.

Yes	10
No	11

I'm a CBer and my family complains about radio interference to their home entertainment systems or phone.

Yes	12
No	13

I've tried to remedy the interference problem by doing the following: (mark all that apply)

Using a high or low-pass filter	14
Using ferrite chokes	15
Reducing my operating power	16
Changing my operating hours	17
Grounding my equipment	18
Moving my antenna	19
Buying different home entertainment equipment	20
Only operating mobile	21
Changing operating frequencies	22
I haven't done anything	23
Contacted the ARRL	24

Get Ready For Superb Autumn DX Openings!

Autumn is right around the corner, bringing a radical improvement in radio propagation conditions. At the end of September, the sun will be directly over the equator. On the autumnal equinox, everywhere in the world, the hours of daylight are equal to the hours of darkness, resulting in an ionosphere of similar characteristics over large areas of the world. That, in turn, makes it the best time of the year for long DX openings between the temperate regions of the northern and southern hemispheres on all shortwave bands.

You can expect a vast improvement on the higher frequencies (22 meters up through 11 meters) with more frequent short-path openings from mid-September through mid-October between North America and South America, the South Pacific, South Asia, and southern Africa. The strongest openings will occur for a few hours after sunrise and during the sunset hours. Many international shortwave broadcast stations will soon change from their summer schedule to a winter schedule, taking advantage of this change in propagation.

Long-path openings also improve during the equinoctial periods. A variety of paths are opening up on 31 and 22 meters.

Expect a path from southern Asia around sunset, daily morning openings from southern Asia and the Middle East, expanding to Africa. Also look for signals from the Indian Ocean region long-path over the North Pole. Afternoons will fill with South Pacific long-path, and then extend to Russia and Europe. Look for possible long-path openings on 31, 41, 49, 60, and 75 meters for an hour or so before sunrise and just before sunset.

The winter DX season is slowly approaching, making for exciting DX conditions. While the weather is still warm and fair, tighten up the hardware on your antenna system, check coax cables, and fine tune your radio station. Get ready to reap the DX.

Current Solar Cycle 23 Progress

Since the second peak (November 2001) in this double-peaked cycle (the first peak was in April 2000), the smoothed numbers are showing a consistent and somewhat rapid decline in solar activity. The Royal Observatory of Belgium, the world's official keeper of sunspot records, reports an observed monthly mean sunspot number of 55 for May 2003, down five points

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 transpolar paths may open up. Maximum K-index is 9, and the A-index can exceed well over 100 during very severe storm conditions, with no maximum.

Classification of A-indices is as follows:

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

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

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

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

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

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

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

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

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

Optimum Working Frequencies (MHz) - For September 2003 - Flux = 103, SSN = 49 - Created by NW7US

UTC TO/FROM US WEST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	24	23	22	19	18	16	15	14	13	12	12	11	11	15	18	20	22	23	24	25	25	25	25	25
NORTHERN SOUTH AMERICA	31	31	30	27	25	23	21	19	18	17	16	15	15	16	21	23	25	27	28	29	30	31	31	31
CENTRAL SOUTH AMERICA	31	28	26	23	21	20	19	17	16	16	15	15	15	19	24	27	28	30	30	31	32	32	32	31
SOUTHERN SOUTH AMERICA	32	30	27	25	23	21	20	18	17	16	15	15	16	15	19	23	27	29	31	32	33	34	34	33
WESTERN EUROPE	11	10	10	10	9	9	11	10	10	10	9	9	15	17	19	20	20	20	20	19	19	18	16	14
EASTERN EUROPE	10	10	9	11	14	14	11	10	10	10	9	9	13	16	18	18	18	18	17	17	16	14	12	10
EASTERN NORTH AMERICA	26	25	23	19	17	16	15	14	13	13	12	12	12	19	23	25	26	27	28	28	28	28	28	27
CENTRAL NORTH AMERICA	15	14	13	12	10	9	9	8	8	7	7	7	6	8	11	13	14	15	15	15	16	16	15	15
WESTERN NORTH AMERICA	8	8	7	7	6	5	5	4	4	4	4	3	3	3	5	6	7	7	8	8	8	8	8	8
SOUTHERN NORTH AMERICA	25	24	23	21	19	17	16	15	14	13	12	12	11	12	17	20	22	24	25	25	26	26	26	26
NORTHERN AFRICA	12	11	11	10	10	10	10	10	10	9	9	9	15	18	19	20	21	21	21	20	18	15	14	13
CENTRAL AFRICA	16	15	14	13	13	11	11	10	10	10	9	9	15	17	19	20	20	21	21	21	22	20	19	17
SOUTH AFRICA	20	19	18	16	14	14	13	12	12	12	11	11	17	21	23	24	25	26	27	27	27	26	24	22
MIDDLE EAST	10	10	10	9	15	12	11	10	10	10	9	9	14	17	18	19	20	19	17	13	12	12	11	11
JAPAN	22	22	21	21	20	19	16	12	11	11	10	10	10	9	9	10	10	10	10	12	17	19	20	21
CENTRAL ASIA	22	22	21	21	20	19	16	12	11	11	10	10	10	9	9	12	16	15	14	13	13	14	19	22
INDIA	16	16	16	16	16	16	14	11	10	10	9	9	9	10	9	9	9	9	9	11	13	14	15	15
THAILAND	19	22	21	20	20	18	16	12	11	11	10	10	10	9	9	14	17	17	16	15	14	13	13	16
AUSTRALIA	28	30	31	32	31	29	26	24	22	20	19	17	17	16	15	14	18	17	16	15	17	21	24	26
CHINA	20	21	21	20	19	18	16	12	11	10	10	10	10	9	9	11	10	10	10	9	9	14	17	19
SOUTH PACIFIC	33	34	33	33	31	30	27	25	23	21	19	18	17	16	15	15	15	15	17	22	26	29	31	32
UTC TO/FROM US MIDWEST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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NORTHERN SOUTH AMERICA	29	28	27	24	22	20	19	17	16	15	15	14	14	17	20	22	24	25	26	27	28	29	29	29
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EASTERN NORTH AMERICA	19	17	16	14	13	12	11	10	10	9	9	9	12	15	17	18	19	20	20	20	21	20	20	19
CENTRAL NORTH AMERICA	9	8	8	7	6	5	5	5	4	4	4	4	4	6	7	8	9	9	9	9	9	9	9	9
WESTERN NORTH AMERICA	15	14	14	12	10	10	9	8	8	7	7	7	7	8	11	13	14	15	15	16	16	16	16	15
SOUTHERN NORTH AMERICA	18	17	16	14	13	12	11	10	10	9	9	8	8	11	13	15	16	17	18	18	18	18	18	18
NORTHERN AFRICA	16	15	12	12	11	11	10	10	10	9	9	16	18	20	21	22	22	22	22	22	22	20	18	17
CENTRAL AFRICA	17	16	12	11	11	10	10	10	9	9	16	18	20	21	22	22	22	22	22	22	22	21	20	18
SOUTH AFRICA	21	19	18	17	16	15	16	17	16	15	15	17	24	27	30	31	32	33	32	31	29	27	24	22
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SOUTH PACIFIC	34	33	32	31	29	27	24	22	21	19	18	17	16	15	16	16	15	14	19	24	28	30	32	33
UTC TO/FROM US EAST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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CENTRAL SOUTH AMERICA	30	27	24	22	21	19	18	17	16	15	15	16	20	23	25	27	28	29	30	31	31	31	31	31
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WESTERN NORTH AMERICA	26	25	23	19	18	16	15	14	14	13	12	12	12	19	23	25	26	27	28	28	28	28	28	27
SOUTHERN NORTH AMERICA	21	20	19	17	16	15	14	13	12	11	11	10	12	15	18	19	21	21	22	23	23	23	23	22
NORTHERN AFRICA	17	16	15	14	13	13	12	13	12	12	19	23	25	26	27	28	28	28	27	26	24	22	20	18
CENTRAL AFRICA	17	16	15	14	14	13	13	13	12	12	19	22	25	26	27	28	28	28	27	26	25	22	20	19
SOUTH AFRICA	21	19	18	17	16	15	16	17	16	15	17													

from April. The 12-month running smoothed sunspot number centered on November 2002 is 151, down eight points from October. The sunspot minimum for May 2003 was 17 on May 10. The sunspot maximum of 99 occurred on May 1.

A 10.7-centimeter observed monthly mean solar flux of 116 is reported by the Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, for May 2003, down from 127 for April and from March's 164. The 12-month smoothed 10.7-centimeter flux centered on November 2002 is 154, down six points from October.

The observed monthly mean planetary A Index (Ap) for May is 24, up four points from an Ap of 20 for April. The 12-month smoothed Ap index centered on November 2002 is 16.

A smoothed sunspot level of 49 and a 10.7-centimeter solar flux of about 103 are predicted for September 2003. Geomagnetic activity will continue to be mostly active to occasionally stormy. Expect a number of days with coronal mass ejection activity and occasional solar flares. The geomagnetic Ap will rise a bit this month and through October, before slowly decreasing through the winter season. Cycle 23 is expected to remain in the high solar range for the remainder of 2003.

HF Propagation

With the 10.7-centimeter flux levels ranging from the 40s to over 110 during September, propagation on 11 through 22 meters will vary greatly. Some days, conditions will be much as they were during the summer. Other days (and more often), conditions will be more like those experienced during the winter.

The higher bands (11 through 15 meters) are starting to open up and by the end of September will be open daily. Paths from Europe and the South Pacific as well as from Asia are becoming more reliable and will occur on days of High Normal and better conditions. Few stations are using 11, 13, or 15 meters.

Sixteen meters, used by a larger group of broadcasters, will be the most reliable higher band, especially when the solar flux levels rise above 120. This band will usually supply day-path propagation even over the polar paths. A considerable improvement is expected, with the band opening shortly after sunrise and remaining open until after sundown. However, 16 meters will not stay open late into the night as it typically does during the spring. Openings should be possible from all areas of the world, with conditions best from Europe and the northeast before noon, and from the rest of the world during the afternoon hours. Openings from the South Pacific, Australia, New Zealand, and the Far East should be possible well into the early evening, particularly when propagation conditions are High Normal or better.

Conditions may be marginal during the month, but these higher bands are certainly coming alive. There will be less polar propagation as we move toward winter, though, making some parts of the world difficult to hear over these paths. To catch the openings over high latitudes, get on these bands shortly after sunrise, or watch for polar signals as they close for the evening.

The 19- and 22-meter bands compete with 16 for the best daytime DX band this month. Look for 19 and 22 to open for DX at sunrise and remain open from all directions for a few hours. It should be possible to hear many areas of the world throughout the daylight hours, with a peak in the afternoon. Nighttime conditions will favor openings from the south and tropical areas, but some openings will also be possible from other areas, especially during High Normal or better days. Look for polar gray-line propagation from Asia. Long-path is common on 19 from southern Asia, the Middle East, and northeastern Africa as well

as the Indian Ocean region via the North Polar path.

The 25- and 31-meter bands are all-season bands. Expect an incredible amount of activity on these two hot bands. Many broadcasters choose these, targeting their audiences during prime times (morning and early evenings). The conditions prevalent on 19 and 22 are more pronounced and last much longer on these bands. Look for exotic stations a few hours before sunrise through early morning, then again in the early evening before sunset, until around midnight.

Expect an improvement in nighttime DX conditions on 41, 49, 60, 75, 90, and 120 meters during September and October. This is due to the ever increasing hours of darkness and a seasonal decrease in the static level. Forty-one meters should be best for worldwide DX from sunset to sunrise. Forty-nine and 60 meters are used by a lot of the larger, stronger broadcasting stations, so you can always depend on hearing signals from early evening (from before sunset) to a few hours after sunrise. For exotic regional signals, check 75 through 120 meters during the hours of darkness, especially for an hour or so before local sunrise.

Mediumwave Propagation

With an increase in geomagnetic activity, with associated aurora, mediumwave DX over the northern latitudes is severely attenuated. This can be a blessing for those trying to DX tropical AM broadcast stations and mid-latitude medium- and low-power stations, since the interference from strong over-the-pole stations is reduced. Signals below 120 meters will improve, with longer hours of darkness and the decline of noise-producing weather. Seasonal static, which makes it difficult to hear the weak DX signals, is decreasing little by little as we move away from the autumnal equinox. Stretch out those beverage antenna runs and start looking for signals along nighttime paths.

VHF Conditions

The strong sporadic-E (*Es*) season we experienced earlier in the year is pretty much over now. There will be a few openings late this year, but this is not the month typically associated with *Es*. Troposcatter is a real possibility, however. Look for signals on paths crossing through stalled high-pressure zones in the mid-west, or along cool, wet air masses.

Meteor shower activity will be slim. Toward the end of September transequatorial propagation will begin to occur between southern North America and northern South America. Openings will generally occur in the late afternoon to early evening. F_2 activity may occur during the day on the VHF TV bands, though the 10.7-centimeter flux levels are not going to support reliable propagation at these higher frequencies. Don't expect any east-west paths to be open. Tropospheric conditions are generally very good for many of the VHF bands during September with the appearance of different weather fronts. This will be the primary mode for working up to 300 miles. Continue to expect a high number of coronal mass ejections, possibly triggering aurora during September and October. Look for days when the Kp index is above 5.

Your Input Wanted

If there is something that you would like me to cover in an up-coming issue, please write me an e-mail or drop a letter to me. Is the information I'm presenting helpful? I look forward to hearing from you. Happy hunting those signals! ■

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).

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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. MFJ-1024 \$139⁹⁵ 6x3x5 inches. Remote has 54 inch whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, \$14.95.

Indoor Active Antenna

Rival outside long wires with this *tuned* indoor active antenna. "World Radio TV Handbook" says MFJ-1020B is a "fine value... fair price... best offering to date... performs very well indeed."

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

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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 1/8 x 1 1/4 x 4 in.



-- all over the world -- Australia, Russia, Japan, etc.

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 --

MFJ-462B

\$179⁹⁵

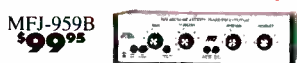
Eliminate power line noise!



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



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.

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



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



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

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.

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 2 1/2 x 5 1/4 inches.

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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.

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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!

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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	9580	Radio Yugoslavia		0200	11710	RAE, Argentina	
0000	11570	IBC Tamil, via Russia	Tamil	0200	9230	Voice of Mojahed, Iraqi Clandestine	AA
0000	11920	RTV Marocaine, Morocco	AA	0230	9605	Vatican Radio	
0000	11725	Radio Cairo, Egypt		0230	12040	Radio Ukraine Int'l	Ukrainian
0000	9440	Radio Prague, Czechoslovakia		0230	11885	Voice of Turkey	TT
0000	9925	Voice of Croatia, via Germany	Croatian	0230	9495	Radio Sweden	
0000	6145	NHK - Radio Japan, via Canada		0230	7200	VOA Relay, Greece	
0000	3310	Radio Mosoj Chaski, Bolivia	SS	0230	11900	Radio Bulgaria	
0000	6025	Radio Amanacer, Dominican Republic	SS	0230	7325	Radio Austria Int'l	
0030	15395	Radio Thailand		0230	6957	Voz del Campesino, Peru	SS
0030	15475	Sri Lanka Broadcasting Corp.		0230	7270	Radio Tirana, Albania	
0030	9655	VOIRI, Iran	SS	0230	4885	Radio Clube do Para, Brazil	PP
0030	4876	La Cruz del Sur, Bolivia	SS	0230	11915	Radio Gaucha, Brazil	PP
0030	6215	Radio Beluarte, Argentina	SS	0300	6065	Christian Voice, Zambia	
0030	4845	Radio K'ekchi, Guatemala	SS, others	0300	17675	Radio New Zealand Int'l	
0100	6175	Voice of Vietnam, via Canada		0300	4819	La Voz Evangelica, Honduras	SS
0100	9440	Radio Slovakia Int'l		0300	6135	British Forces Broadcasting Service, UK	
0100	4890	Radio Macedonia, Peru	SS	0300	6210	Radio Fana, Ethiopia	Amharic
0100	11800	RAI Int'l, Italy		0300	6140	Radio Melodia, Colombia	SS
0100	9435	Universal Life, via Germany		0300	4820	Radio Botswana	vern.
0100	5930	Radio Slovakia Int'l		0300	12005	RTV Tunisienne, Tunisia	A
0100	9737	Radio Nacional, Paraguay	SS	0300	5010	HRMI/R. Misiones Int'l, Honduras	SS
0100	4925	Rdf. Taubate, Brazil	PP	0300	3320	Radio Sondergrense, South Africa	Afrikaans
0100	5035	Radio Aparecida, Brazil	PP	0300	3240	Trans World Radio, Swaziland	vern.
0100	4930	Radio Costena, Honduras	SS	0300	5915	Zambia National Broadcasting Co.	
0130	7375	Radio Ukraine Int'l		0400	3290	Voice of Guyana	
0130	15160	Radio Exterior de Espana	SS	0400	15505	Radio Kuwait	AA
0130	6458.5	Armed Forces Network, Puerto Rico	USB	0400	6185	Radio Educacion, Mexico	SS
0130	6155	RTV Eireann, Ireland, via England		0430	3255	BBC, via South Africa	
0130	4780	Radio Cultural Coatan, Guatemala	SS	0430	5985	Radio Congo	
0130	9725	University Network, Costa Rica		0430	12060	Radio Voice of Hope, via Madagascar	unid
0130	9820	Radio Havana Cuba		0500	7190	RTV Tunisienne, Tunisia	AA
0130	15170	Radio Canada Int'l		0500	7290	VOA Relay, Sao tome	
0130	7205	Radio Sawa, USA, via Sao Tome	AA	0500	7255	Voice of Nigeria	
0200	9560	Radio Korea Int'l, via Canada		0500	6235	Trans World Radio, via Albania	
0200	11940	Radio Romania Int'l		0500	4950	Radio Nacional, Angola	PP
0200	7185	RTV Marocaine, Morocco	AA	0600	5046	Radio Togo	FF
0200	5678	Radio Ilucan, Peru	SS	0600	5030	Radio Burkina, Burkina Faso	FF
0200	11750	Voice of Russia, via Moldova		0700	4845	Radio Maruitanie, Mauritania	AA
0200	6973	Galei Zahel, Israel	HH	0800	7260	Radio Vanuatu	
0200	11585	Kol Israel	HH	0900	4985	Radio Brazil Central, Brazil	PP
0200	9835	Radio Budapest, Hungary					

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0900	6080	Radio San Gabriel, Bolivia	SS	1900	11990	Radio Kuwait	AA
0930	6160	CKZN, Newfoundland		1900	13855	Armed Forces Network, Iceland	USB
1000	7260	Radio Thailand	VV	1930	21540	RDP Int'l, Portugal	PP
1000	9740	BBC Relay, Singapore		1930	11675	Voice of Russia	
1000	4790	Radio Atlantida, Peru	SS	1930	21590	Radio Netherlands via Bonaire	
1000	4975	Radio del Pacifico, Peru	SS	1930	15205	Radio Jamahiriya, Libya, via France	AA
1000	4890	NBC, Papua New Guinea		1930	17705	Voice of Greece, via USA	Greek
1000	4919	Radio Quito, Ecuador	SS	1930	15200	Radio Canada Int'l, via Austria	AA
1000	5020	Solomon Is. Broadcasting Corp.		1930	15175	Adventist World Radio, via Austria	
1000	6350	Armed Forces Network, Hawaii	USB	2000	11625	Vatican Radio	
1000	5958	Caracol Viliviciencio, Colombia	SS	2000	15395	UAE Radio	AA
1000	9695	Radio Rio Mar, Brazil	PP	2000	15295	Adventist World Radio via South Africa	
1000	9805	Radio Marti, USA	SS	2000	11605	Kol Israel	
1030	9520	Voice of Indonesia	CC	2000	11785	Voice of Indonesia	
1030	9930	KWHR, Hawaii	CC	2000	11995	Radio France Int'l, relay, Gabon	
1030	9645	Faro del Caribe, Costa Rica	SS	2000	11900	Music Jammer, China	
1030	12045	CNR/CPBS, China	CC	2000	11835	China Radio Int'l	
1030	1650	KFBS, Saipan, N. Marianas		2000	13625	Radio Free Asia, via No. Marianas	CC
1100	4754	RRI Sulawesi, Indonesia	II	2000	11715	RTV Algeriene, Algeria	AA
1100	3205	Radio Sanduan, Papua New Guinea	Pidgin	2030	15220	Swiss Radio int'l via Germany	GG
1130	3925	Radio Tampa, Japan	JJ	2030	11820	Broadcasting Svc of Kingdom of Saudi Arabia	AA
1130	9650	Radio Korea Int'l, via Canada		2030	15140	AWR - Voice of Hope, via England	
1130	13685	Voice International, Australia		2030	11775	Caribbean Beacon, Anguilla	
1200	9770	Sri Lanka Broadcasting Corp.		2100	11975	VOA relay, Sao Tome	
1200	9570	China Radio Int'l, via Cuba	CC	2100	15120	Voice of Nigeria	
1200	11650	Radio Australia		2100	11620	All India Radio	
1200	6150	Mediacorp, Singapore		2100	11697	Deutsche Welle, Germany	AA
1200	7295	RTV Malaysia		2100	15185	Radio Africa, Equatorial Guinea	
1200	13590	KHBN, Palau	CC	2100	13750	Radio Havana Cuba	SS
1230	11500	Voice of Russia via Tajikistan	Hindi?	2100	13610	Radio Damascus, Syria	
1230	11915	Radio Taipei Int'l	Viet.	2100	13580	Radio Sweden	SS
1230	11710	Voice of Korea, North Korea		2130	11905	Radio Tashkent, Uzbekistan	
1300	21605	UAE Radio		2130	17765	Deutsche Welle relay, Rwanda	
1300	11785	Voice of America Relay, Thailand	EE/CC	2130	6085	Bayerischer Rundfunk, Germany	GG
1300	17800	Deutsche Welle Relay, Rwanda	unid	2130	11935	CNR/CPBS, China	CC
1330	9690	All India Radio		2200	12000	Voice of Turkey	
1430	13705	Radio Rossii, Russia	RR	2200	11675	RDP Int'l, Portugal	PP
1430	9425	All India Radio		2200	9925	Norwegian Radio	NN
1500	17790	Voice of Turkey		2200	5995	RTV Malienne, Mali	vern.
1500	21600	Broadcasting Svc of Kingdom of Saudi Arabia	FF	2200	11710	VOIRI, Iran	AA
1500	15330	KTWR, Guam		2200	9580	Africa Number One, Gabon	FF
1500	18940	Radio Afghanistan, via Norway	Pashto/Dari	2200	11600	Radio Prague, Czechoslovakia	FF
1500	12015	Voice of Mongolia		2230	11885	Radio Budapest, Hungary	HH
1500	11690	Radio Jordan		2230	9925	Radio Denmark, via Norway	DD
1530	17545	Kol Israel	FF	2230	7210	RDF du Benin	FF
1600	9455	Radio Free Asia, via N. Marianas	CC	2230	15565	Radio Vlaanderen Int'l, Belgium, via Netherlands	
1600	17605	Radio France Int'l		2300	9570	Radio Romania Int'l	
1600	11570	Radio Pakistan		2300	9875	Radio Vilnius, Lithuania	
1730	17670	YLE - Radio Finland	Finnish	2300	1760	Voz Cristiana, Chile	SS
1730	9510	BBC Relay, Oman		2300	9400	Radio Bulgaria	
1730	21600	NKK - Radio Japan	JJ	2300	9675	Radio Cancao Nova, Brazil	PP
1800	15515	Swiss Radio Int'l	FF	2300	9625	CBC Northern Service, Canada	
1800	15240	VOA relay, Morocco		2300	6010	Radio Inconfidencia, Brazil	PP
1800	15705	Norwegian Radio	NN	2330	9885	Swiss Radio Int'l	
1800	15265	Channel Africa, South Africa		2330	17820	VOA Relay, Philippines	
1800	21500	Voz Cristiana, Chile	SS	2330	17835	Radio Imperial, El Salvador	SS
1800	15580	VOA Relay, Botswana		1030	9520	Radio Veritas Asia, Philippines	CC
1830	21520	RAI Int'l, Italy	II				
1830	17720	Radio Pilipinas, Philippines	Tagalog/EE				

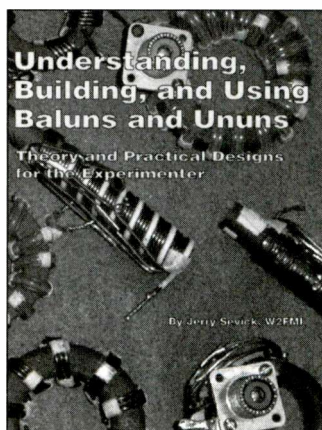
power up: radios & high-tech gear

by Harold Ort, N2RLL

review of new, interesting, and useful communications products

CQ Publishes Revised "Baluns And Ununs" Book

If you're interested in how antennas work but don't know an Unun from an onion, *Understanding, Building, and Using Baluns and Ununs* should be a part of your ham radio library. And if you do understand the role of transmission line transformers in antenna systems, this book is an important reference to which you will refer often. *Understanding, Building, and Using Baluns and Ununs*, by Jerry Sevick, W2FMI, is the successor to his earlier work, *Building and Using Baluns and Ununs*. The new edition includes new tutorial material, designs, and explanations of how and why they work.



Like its predecessor, this book provides a unique opportunity to learn about the application of Baluns and Ununs for dipoles, Yagis, log periodics, Beverages, antenna tuners, and countless others. (For the *non-experimenter* who may be reading this, a *Balun* is a transmission line transformer that connects between a *balanced* antenna, such as a dipole, and an *unbalanced* feedline, such as coaxial cable. An *Unun* goes between an *unbalanced* feedline and an *unbalanced* antenna).

Jerry Sevick, W2FMI, is renowned for his work on transmission line transformers, antennas, and matching networks. His work on Baluns and Ununs has been adopted as a standard by the IEEE, and his 1978 *QST* article on short ground-radial systems serves as the world standard for earth conductivity measurements. He is also the author of *Transmission Line Transformers* (Noble), a series on Baluns in *Communications Quarterly*, and a series on Ununs in *CQ*.

Understanding, Building, and Using Baluns and Ununs retails for \$19.95 and is available from many amateur radio dealers and directly from CQ. Orders may be placed by phone at (800) 853-9797 (M-F, 9 a.m.–5 p.m. Eastern) or online anytime at www.cq-amateur-radio.com.

CQ Communications is the publisher of *Popular Communications*, *CQ Amateur Radio*, and *CQ VHF* magazines, as well as amateur radio-related books, videos, and CDs. It is headquartered in Hicksville, New York.

Lightwave's New "Modern" Flashlight

Lightwave of Alpharetta, Georgia, manufacturers of portable lights, announces the Tec Series—what they call "the first truly modern flashlights." The Tec3000 uses seven bright LEDs; the Tec2000 uses four.

The new Lightwave flashlights are a completely new design and the LEDs produce a light more natural to the eye than conventional yellow light of a regular flashlight. LED technology is also shockproof and reliable, lasting thousands of hours, where conventional bulbs need to be replaced approximately every 20 hours.



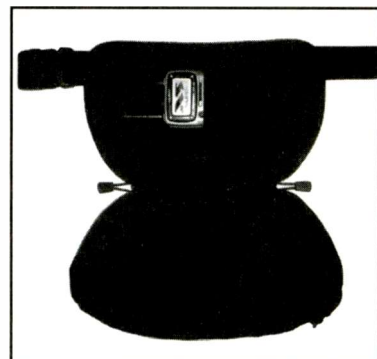
The new Lightwave flashlight uses bright LEDs for superior durability and visibility.

The Tec3000 operates on three "C" cells (not included) and includes a three-year limited warranty. The MSRP of the Tec3000 is \$54.95; for the Tec2000, it's \$34.95. Additional information about Lightwave products, including where to buy them is on the company website at www.lightwave-usa.com, or you can contact Rob Gussenhoven, Lightwave's Brand Manager, at 858-270-6016. Be sure to tell them you read about it in *Pop'Comm*.

New Cutting Edge Enterprises PowerPort QuickZip Radio Pouch

Did you ever get mustard or ketchup on your radio? Many radio enthusiasts always bring their scanner or HT along on a hike or family outing, only to end up getting something on the radio that can cause major damage! You can use a regular fanny pack to protect your gear, but typically the radio and water bottle end up in the same pack, competing for space—certainly not the ideal situation. But there is help from Cutting Edge Enterprise: their new PowerPort QuickZip Radio Pouch that gives your radio its own padded 11 x 6.5-inch compartment, in the section closest to the body, with a holster to hold it in place.

You get quick and easy access to your radio with the special QuickZip feature. Just grab the tab at the right or left hand side of the pouch and pull diagonally to expose the radio. There's no more fumbling for zipper tabs! There's also a nice, deep secondary compartment for accessories, such as spare batteries, high-gain antennas, and miscellaneous communications gear. Then there are still two *more* pockets! One is sandwich-sized, the last,



Cutting Edge Enterprise's new PowerPort QuickZip Radio Pouch is perfect for your portable radio—and includes extra pockets for your wallet and even a sandwich!

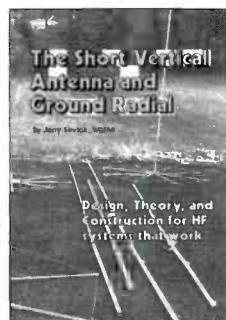
front zippered pocket is great for sunglasses or your wallet.

The QuickZip Radio Pouch is constructed of tough waterproof nylon, and is padded for comfort. Your radio is fully accessible, yet sheltered from the hazards that it suffers on your belt or in the bottom of your pack. It's also available in glove-quality leather. Prices start at \$36.95. For more information contact Cutting Edge Enterprises at 130 Anacapa Circle, San Luis Obispo, CA 93405: Phone 800-206-0115; Web: www.powerportstore.com. Be sure to tell them you read about it in *Popular Communications*.

CQ Introduces Short Book On Short Vertical Antennas

In a world of greater and greater restrictions on amateur radio antennas, short vertical antennas are again in the spotlight. A new guidebook, *The Short Vertical Antenna and Ground Radial*, by Jerry Sevick, W2FMI, provides both theory and practical designs for short vertical antenna systems—it even includes a six-foot-high “beach umbrella vertical” for 40 meters!

Sevick's new book originated as a series of four appendices in his 1994 CQ book, *Building and Using Baluns and Ununs*. “In the process of updating and expanding that book for its second edition (retitled *Understanding, Building, and Using Baluns and Ununs*),” explained CQ President and Publisher Dick Ross, K2MGA, “we



realized that these appendices actually formed the basis of a separate book.”

Chapters cover antennas themselves, ground radial systems, including what has become the world standard formula for measuring ground conductivity, and loading coils, a necessary component of most any shortened antenna.

The Short Vertical Antenna and Ground Radial retails for \$10 and is available from many amateur radio dealers and directly from CQ. Orders may be placed by phone at (800) 853-9797 (M-F, 9 a.m.–5 p.m. Eastern) or online anytime at www.cq-amateur-radio.com.

CQ Communications is the publisher of *Popular Communications*, *CQ Amateur Radio*, and *CQ VHF* magazines, as well as amateur radio-related books, videos, and CDs. It is headquartered in Hicksville, New York.

Portable Antenna Stand From MFJ

Strong steel construction makes this antenna a winner and it stands six feet tall! The new MFJ-1918 black, portable antenna stand will hold up to 66 pounds. The base covers an area of 693 square inches. It extends to six feet with a one-inch diameter mast and easily collapses. The stand's legs fold in, making it easy to slide into small diameter places like a backpack, transport, camper gutter, or travel case. It's great for mounting loop antennas, VHF/UHF vertical antennas, or any other type of portable antenna.

For more information on the new MFJ-1918 Portable Antenna Stand, which sells for \$39.95, contact MFJ Enterprises, Inc. at 662-323-5869; Web: www.mfjenterprises.com.

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discoveries connecting as a radio amateur

Dealing With Interference

Unlike during the Golden Age of Radio, modern hams are surrounded by RF devices and electronic gadgets that all seem to be waiting to pounce when it comes to radio interference. And all that stuff doesn't even *begin* to include the somewhat humorous fact that, as hams, we even interfere with ourselves!

Thankfully, most interference issues can be solved or minimized. Running low power is an excellent first step. If interference is really ruining your day, check out a recent edition of *The ARRL RFI Book*. This phone-book size reference is a comprehensive resource for fixing every imaginable interference problem in your home or mobile shack. Check your local library or pay the few bucks required to get your own copy. You'll use it during your entire ham radio career.

Responsibility

When interference rears its ugly head, who's to blame, anyway? And who is responsible for cleaning up the mess? The answers are varied. Before we examine specific solutions, let's look a few interesting RFI facts.

Hams must operate their transmitters in accordance with all appropriate FCC regulations. Make sure your station equipment is properly installed, has a good RF ground, uses a good low-pass filter at the station output, etc. Hams are not required to help their neighbors with RFI complaints that do not involve their transmissions (although they may elect to do so).

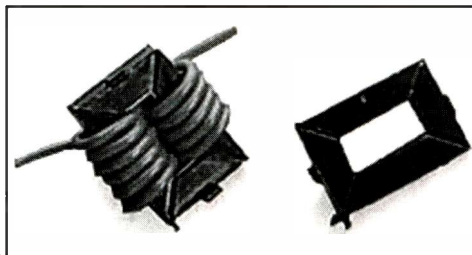
The FCC considers telephones, VCRs, alarm systems, CD players, audio amplifiers, etc. that receive RFI to be *improperly functioning* as radio receivers. These design inadequacies are manufacturer issues (despite what your neighbors may say!).

The RFI susceptibility of consumer electronic devices is limited only by the manufacturers' voluntary compliance with committee-developed standards. The voluntary standards do not address operating the equipment in close proximity to powerful transmitters. Transmitter operators are not responsible for RFI in such situations.

In general, equipment owners are responsible for proper operation of their equipment. As an example, if your neighbors experience RFI from your properly licensed, engineered, and operated ham station, they are responsible for any corrective measures.

These snap-together ferrite cores, available at RadioShack and elsewhere, can form the backbone of your common-mode interference-fighting arsenal.

The plastic retainer can be removed, allowing you to wrap coax, cables, and wires as necessary around the ferrite cores. This photo is from the RadioShack website.



FCC regulations require that ham transmitters not emit *spurious signals* that interfere with other *radio services*. This is the ham operator's sole *regulatory requirement*, and it doesn't apply to interference to non-radio consumer devices.

From a purely regulatory perspective, we're on pretty solid ground. If our stations are properly engineered, interference is mostly *their* problem, not *ours*. But in the real world we'll probably have to (or want to) be more accommodating.

First Things First

The first step in resolving RFI problems is to be sure that your transmitter *is* the cause. After all, some other transmitter or RF noise source may be the problem. No matter what the specific interference, perform a few tests to see what bands, modes, and power levels are involved.

Most RFI problems aren't mode sensitive, but they're usually power related. That's why low-power operation is the only universal RFI Band-Aid. Most RFI problems are also frequency related. This can help you find solutions, and it gives you an opportunity to work other bands while that solution is in progress.

To start your RFI-elimination project, use good engineering practices at all times: run low power, put up the best possible antenna system (outdoor is better than indoor, higher is better than lower, etc.), provide a high-quality RF station ground (using a counterpoise tuner or "artificial ground" if it helps), and use a decent low-pass filter at your transmitter output. Such a filter won't eliminate all types of RFI, but it will attenuate higher-frequency harmonics and spurious signals that might produce RFI.

The Basics

Remembering that this column is a mere introduction to RFI issues, there are several basic RFI categories:

- Spurious emissions (harmonics, mixing products, noise) and other unwanted signals generated by your transmitter. Reducing transmitter power and using a low-pass filter can sometimes eliminate this type of interference.
- Intermodulation and external rectification. Poor-quality electrical connections (usually outdoors); corroded joints in downspouts, antenna towers, or metal-sided buildings; bad solder joints, telephone systems and junction boxes and a whole host of similar items can radiate RF energy and harmonics when excited by your station's RF. These problems can be frustrating and difficult to track down.
- Fundamental overload. This is the most common culprit. Your transmitted RF (from your clean, perfectly engineered station) simply overpowers the affected device. What's more, your signal might be "getting into" the affected system in a variety of ways: antenna lead-ins, speaker wires, AC line cords, ground wires, whatever.

RFI A La Mode

Your RFI cures will typically be aimed at one of two main cul-

pripts: differential-mode RFI or common-mode RFI. Basically, differential-mode RFI involves a transmission line such as the coax that runs from a TV antenna to a TV receiver. If the TV antenna receives its desired TV signals and your undesired ham signal, it will pass both signals on to the TV receiver through the coax (and the ham RF will interfere with the set). If you install a high-pass filter at the TV receiver's antenna terminals—a typical differential-mode RFI cure—the filter will attenuate the lower-frequency ham RF while passing the desired TV RF.

Differential-mode cures can be simple. Unfortunately, most RFI is a common-mode problem, where the interfering signal is arriving via both conductors (the coax center conductor and the shield braid) or all conductors (antenna leads, ground leads, speaker wires, AC line cords, DC power cables, etc.). Determining specific interference modes may be necessary, as differential-mode cures won't work for common-mode problems, and vice versa.

Common Cures

When RF from your station is adversely impacting some other device, the first step in solving the problem is to determine exactly how the RF is "being received." Just because a TV set has an antenna, don't assume that the unwanted signals are getting in through the front door. Power cords, speaker wires, audio/video input and output cables, and ground leads can also receive RF. Disconnecting the various "potential RFI antennas" is a good way to start the tracking process.

Curing RFI In Common Electronics

TVs and VCRs

First, disconnect the coax or twinlead from the set's antenna terminals (or the antenna input on the VCR) and try a few test transmissions from your shack. If the RFI stops you know that the problem is in the antenna side of the system and not in the power leads, speaker wires, or interconnecting cables. If the problem is being caused by harmonics of your transmitted signal or simple front-end-overload (differential-mode RFI), installing a high-pass filter (available at your local RadioShack store) at the set's antenna input (and/or a low-pass filter at your transmitter output) may be all that's necessary.

If the interfering signal is still a problem when a high-pass filter is in-line, or

if the interference is present when the antenna is disconnected, unwanted RF is entering the system through the outside of the antenna lead-in, the power cable or some other interconnecting cable. This is usually common-mode RFI. If the set has A/V cables or speaker wires running to a stereo amplifier or other home theater components, disconnect these lines to see if the RFI situation changes. If it does, plugging them back in one at a time will often pinpoint the source of the problem.

RadioShack, your local ham radio store and various mail-order catalogs sell ferrite cores in several shapes and sizes to help you in your plight. Cleaning up my own RFI problems required quite a few cores! Treating signal cables, coaxial antenna leads, speaker wires, and power cords for common-mode RFI requires similar measures, so don't be shy about applying them to the AC line cord, too.

To make a common-mode RFI choke, wrap a few turns of the cable, cord, or wire through an appropriately sized ferrite core as close to the chassis/connector end as practical, securing the windings with electrical tape if necessary. This will often reduce or eliminate the RFI and will let you know whether you're on the right track. Curing severe common-mode RFI may require chokes on several cables or interconnects (AC power, antenna, A/V inputs, etc.).

Stereos and PC Sound Systems

To determine whether the radio portion of the system is experiencing problems from harmonics or front-end overload, disconnect the antenna. If the interference disappears, install a high-pass filter at the antenna terminal (50-ohm for coax, 300-ohm for twinlead).

If the RFI is still present, leave the high-pass filter in place and begin the search for common-mode culprits as above. Disconnect cables and speaker wires and reconnect one at a time to pinpoint the trouble spot(s) and apply/wind common-mode chokes as necessary. Speaker wires are often cut to convenient lengths that happen to correspond with quarter-wave ham antenna dimensions. Lengthening or shortening the speaker leads can sometimes help eliminate or reduce RFI.

For speaker-related problems, RF signals often enter the system via the speaker leads, which conduct RF energy to diodes or transistors in the audio amplifier circuits. The solid-state devices rectify the RF and mix the distorted signal into the amplified audio chain. Adding com-

mon-mode chokes often keeps the RF from reaching the amplifier circuits.

Telephones and Related Devices

The most common way to clear up RFI that's being "received" via telephone lines is to install in-line filters or common-mode chokes at the service entry, at each telephone, and sometimes in the handset lines! These filters are available from mail-order vendors, retailers, and the phone company (sometimes).

If components inside the telephone are receiving your RF directly, try reducing power and/or moving your antenna further from the telephone. Or, get a different phone.

Good Luck!

RFI is ham radio's "disease of civilization" and it will likely require treatment for the duration. Getting a leg up now will help ensure years of hassle-free operating. Good luck. Get busy. And get some ferrite cores!

Your suggestions, letters, QSL cards, and photos are always welcome. Write to me at *Popular Communications*, "Ham Discoveries," 25 Newbridge Rd, Hicksville, NY 11801. See you on the bands—and hopefully not your neighbor's TV! ■

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IBOC Digital Radio Update

In-Band On-Channel (IBOC) digital radio is moving closer to reality, albeit a little more slowly than expected. The FCC application process was streamlined for rapid approval of radio stations to begin digital broadcasting, and many stations have already gained approval (see *Pop'Comm*, July 2003). While FM IBOC digital broadcasting is poised to go on the air, a couple of key issues on the AM side have broadcasters holding their breath. The limited bandwidth of AM and nighttime skywave propagation is proving to be a challenge.

The limited bandwidth of AM results in a lower data rate than FM. That means there's less overall space in which to contain digital information on AM. This has led to some objectionable artifacts being detected in the AM IBOC digital audio. As a result, the National Radio Standards Committee (NRSC) has suspended IBOC standard setting efforts. The following statement was issued by iBiquity:

Due to some specific concerns about the current state of the AM audio quality, the NRSC has temporarily suspended standard setting efforts for IBOC digital broadcasting. At this time, we concur with their decision to temporarily delay these efforts until the issue is resolved. The NRSC has not expressed any concerns about the core system architecture or implementation of IBOC. There are no issues with coverage, reception, or functionality. This issue is in the audio coder and has to do specifically with AM audio quality. The resolution will be a software upgrade, and no other changes to the system will be necessary. As such, we have an on-going improvement plan and anticipate resolution of the AM audio quality issue as soon as possible. iBiquity and its partners continue to support radio's transition to digital broadcasting and look forward to capitalizing on the potential for HD Radio.

Regarding the status of nighttime AM IBOC testing, David Salemi, Vice President, Marketing, at iBiquity Digital reports, "We are near completion of the AM nighttime testing. We have just completed our subjective evaluation testing and the complete report should be sent to the NAB (National Association of Broadcasters) shortly." AM IBOC has at least initially been limited to daytime only operation due to interference concerns involving nighttime skywave propagation. Nighttime operation of AM IBOC has been under test at 700 WLW Cincinnati and 710 WOR New York.

During the NAB Show in Las Vegas, there was some speculation that digital programming would be separate from analog, abandoning digital/analog blending in the hybrid IBOC mode of operation. Hybrid IBOC was designed to provide an analog fallback when digital lock is lost by simulcasting analog programming in digital. At the show, however, 840 KXNT demonstrated IBOC with separate analog and digital programming. Salemi says the digital/analog blending feature will be implemented as planned. "For purposes of demonstrating high quality AM digital music programming at the NAB show, we needed to transmit separate programming on the digital sidebands," explained Salemi. "There are no AM music stations in Las Vegas. The broadcast of separate programming was unique to this situation and does not reflect the designed commercial

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operation of the HD Radio System (IBOC). The system will work as designed with a simulcast of the digital and analog programming, with a blend feature for the transition between analog and digital." The hybrid IBOC mode is considered temporary, until analog is phased out and replaced entirely by IBOC digital.

QSL Information

1020 KINF Roswell, New Mexico, partial-data letter, embroidered emblem, business card, t-shirt, and returned postage received in 10 days, signed Tracye Nelson, Promo Mgr. Address: P.O. Box 670, Roswell, NM 88202. (Griffith, CO)

1150 KNRC Englewood, Colorado, partial-data letter in 5 days verifying testing on April 28 and sign-on May 5, signed Dave Herrald, Director, Deployment and Operations. (Griffith, CO)

1490 KYNR Toppenish, Washington, a really nice letter on beautiful Indian letterhead and envelope with a picture of a wolf, a nice bumper sticker with the Yakima Nation Seal on it, business card, coverage map, program schedule, and station profile in 70 days, signed Tonya Spencer-Office Asst. Address: PO Box 151, Toppenish, WA 98948. (Martin, OR)

1550 KKAD Vancouver, Washington, a new QSL card, mentioning power now 50/12 kW U2, received in 62 days, signed Dave Bischoff-CE. Address: 888 SW 5th Avenue, Ste 790, Portland, OR 97204. (Martin, OR)

Broadcast Loggings

Welcome again to over-the-road truck driver and AM radio listener Ray Paradis who writes,

I was very pleased to see you follow up your article on the best AM stations to tune to for all 50 states (*Pop'Comm*, May 2003) with one for Canada (June 2003). These are two articles that will be copied and

placed close by my radio. I have been saving to memory on my Ten-Tec RX-320 the major AM stations I hear each evening at my location. It has been an enjoyable process and I love the little window on the screen that gives me the station call sign and location when tuned. Although my principle interest is short-wave listening I read and enjoy your column each month and want to thank you for your efforts. Would loggings from my mobile and simple shack be of use? My home time is short and I use what little time I have to spare for shortwave. However, being in the truck for hours each day and listening to AM I could send loggings from my trips. What do you think?

By all means, Ray, we're looking forward to your reports!

And welcome to Charley Ames, N7GLR, who writes,

I live in far northern Maine right along the border with New Brunswick, Canada, relatively close to the Sackville, New Brunswick, Radio Canada International transmitter which relays other international SW stations, and I do my share of BCB/MW monitoring. You can find my online AM reception list at www.terrestrialworld.com/mylog.html. I use both a GE Super Radio and a Sony ICF-7700 with a RadioShack AM Loop antenna. I prefer the Sony because it has memory presets and is small enough to use while lying in bed at night. I can regularly receive Newfoundland and Prince Edward Island AM stations. So far, what is impossible is catching stations on the West Coast. My most recent station was KSEL in Portales, New Mexico, in the prelight early morning. This far north, the aurora occasionally disrupts reception, even when it's not visible to the naked eye. Where my wife and I live we listen to CBC Radio One as much as we listen to American Public Radio. For listeners who are not too familiar with CBC Radio One, they rebroadcast various short-wave stations—i.e. BBC, Radio Australia, Radio Norway, etc.—from late night through early morning. So those unfamiliar with it might think they've managed to catch DX. I have an assortment of antennas for use with my amateur radio hobby, but most don't really work too well for BCB reception. I haven't made it across the Atlantic yet, but I'm working on it.

Thanks, Charley. Some of the following logs by Mark Connelly are worthy transatlantic targets for DXers in the northeast.

Last but not least, Patrick Griffith, N0NNK, reports,

KADZ 1550 was taken dark on June 1. This was one of the two Radio Disney stations in Denver. It had been parallel to KDDZ 1690 since 1998. The sign-off date was two days short of five years. I talked to a rep at the station today and verified that they were forced to surrender one of the two licenses by the

FCC. The person I spoke with indicated that something else might be appearing on the 1550 frequency in a month or so but wouldn't confirm who or what.

The AM expanded band was created so that radio stations could move from overcrowded frequencies to improve coverage and reduce congestion. With only a couple of exceptions, a radio station was required to surrender the old frequency five years after going on the air at its new X-band frequency.

Now this month's selected logs, all times are UTC.

530 R. Vision Cristiana, South Caicos, Turks & Caicos, at 0558; a Spanish gospel tune followed by a few announcements, then top-of-the-hour jingle, "Radio Vision Cristiana, marcando la hora" time check, "Uno de la madrugada en punto en Nueva York," followed by triple legal IDs for WWRV New York 1330 AM, WVIP 1310 AM Mount Kisco and 530 South Caicos, Turks and Caicos, British West Indies. Good signal at tune-in. (Chiochui, QC)

640 R. Guadeloupe, Pointe-a-Pitre, Guadeloupe, at 0436 a woman in French, very weak under WNNZ. (Chiochui, QC) This station can be easy to pick out of the din because it's the only French-language broadcaster on the frequency in the east, thus a good DX target.

783 R. Mauritanie, Nouakchott, Mauritania, at 2323 parallel 4845 kHz with stern-sounding Arabic man and possible religious talk; louder than adjacent CFDR/WTME-780. (Connelly, MA) This is one of the most consistently well-received transatlantic signals, even during high levels of solar activity.

1160 VSB3 Hamilton, Bermuda, at 0100 Lilybolero interval music, time pips, then BBC news; over WSKW. (Connelly, MA)

1179 SER Synchros, Canary Islands/Spain, at 2316 Spanish newstalk; over slop from aggregate nullified WJF/WHAM, then at 0048 teletalk and jazz interlude, and at 0134 now local-like; annihilating Cuba/WHAM-1180. (Connelly, MA)

1180 CMBA R. Rebelde, Villa Maria, Cuba, at 0142 a man in Spanish with mention of Rebelde, on a fair signal with intense fading, quite strong and poor peaks over/under weak remains of nullified WHAM, sometimes interference from powerlines. (Chiochui, QC)

1240 WWCO Waterbury, Connecticut, at 0400 a good, dominant signal, with CNN news and top of the hour ID. Severe absorption conditions because of geomagnetic storm, so I'm doing some rare graveyarding. (Hochfelder, NJ)

1240 WHMQ Greenfield, Massachusetts, at 0430 fair to good at peaks with

weather report and ID as WHNP, which is parallel. Severe absorption conditions. (Hochfelder, NJ)

1240 WVOS Liberty, New York, at 0500 fair with call ID, just popped up. Severe absorption conditions. (Hochfelder, NJ)

1550 KZRK Canyon, Texas, at 0405, "You're listening to Amarillo's new home for sports talk, from the studios of Fox Sports Radio, KZRK Canyon-Amarillo, 1550 AM." (Griffith, CO)

1584 RadiOle, Ceuta, at 2327 a man in Spanish, then a musical interlude; way over SER Spain. This was one of the first transatlantic signals fading in: imagine if it ran big power! (Connelly, MA)

1680 KTFH Seattle, Washington, at 0500, ID as "AM 1680, KTFH Seattle" into a rhythmic song. Songs sounded like Spanish but announcements seemed to be in English. Very weak but above the background until about 0520. Same top of the hour ID caught on tape at 0600. (Griffith, CO) *A new Pacific coast DX target!—BC*

Thanks to Charley Ames, N7GLR, Bogdan Chiochui, Mark Connelly, WA1ION, Patrick Griffith, N0NNK, David Hochfelder, Patrick Martin, and Ray Paradis. 73 and Good DX! ■

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the wireless connection

a look behind the dials

by Peter J. Bertini, radioconnection@juno.com

Your Test Bench: Variable High-Voltage DC Supplies

Like most hobbyists, I have a “wish list.” There are items I covet more than others, and there are those things I can live without, but would buy if the price were right. So it was when I found a Hickok variable DC power supply being offered on a well-known Internet auction site.

The unit’s specs were strikingly similar to the Heathkit IP-27 bench supply: 0 to 400 VDC at 100 mA continuous, 0 to -100 volts at 1 mA for the C bias supply, and a 12-VAC center-tapped output with a generous four-amp rating.

Oddly, the Hickok wasn’t commanding much attention, perhaps due to the seller’s misspelling “Hikock” in the auction title! Heath IP-27 supplies usually sell for well over \$100; yet four days later I held the winning bid for a mere \$31. Can you say “bargain”? **Photo A** shows the PS-501A.



Photo A. Front panel view of the Hickok variable DC supply.

The Hickok PS-501A

The PS-501A is an odd duck. I couldn’t find out much about it, and the “Hickok Teaching Systems, Inc.” silk-screened on the front panel led me to believe the unit was produced for the educational field: colleges, technical schools, etc. Perhaps the limited market is the reason so few are evident today.

An Internet newsgroup plea for help garnered a well-worn and much recopied manual for the Stark PS-501A power supply, Stark being the Canadian manufacturing facility for Hickok. Indeed, the gentleman who provided the manual owned the same unit, but his bore the Stark brand name. The tubes in my unit were branded with either Stark or Hickok labels, so the connection appears correct. The manual copy was very poor and faded and appeared to be a third or fourth generation hand-me-down made from of the original manual. I took the liberty to redraw the schematic as shown in **Figure 1**. I’m pretty sure it’s correct, but I can’t promise complete accuracy due to the poor

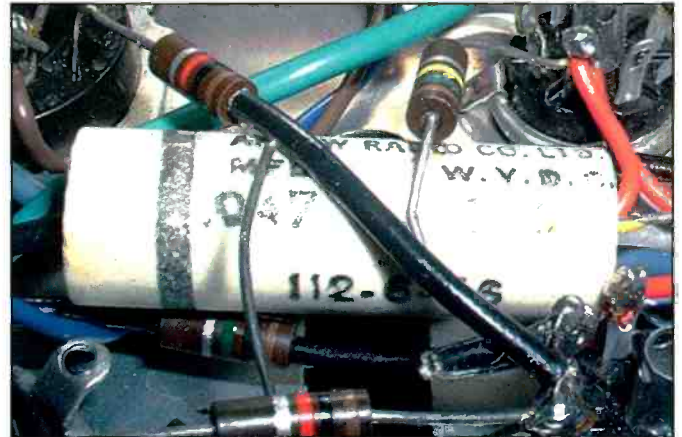


Photo B. This is the ceramic-cased wax-paper capacitor responsible for the unit’s shifting output voltages.

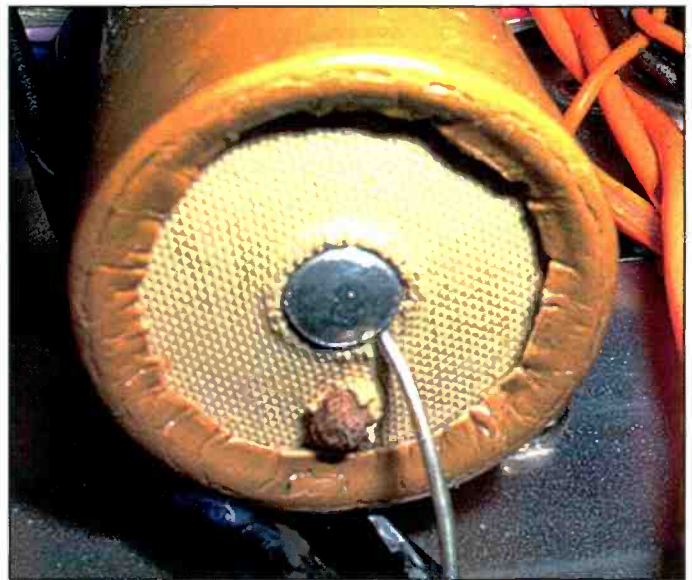


Photo C. The seal on this radial electrolytic capacitor has failed. Note some of the electrolytic paste has oozed and dried. Once the seal is ruptured, the capacitor will eventually dry out and fail. Of more immediate concern: the rupture was probably caused by overheating due to excessive leakage currents. This cap can short and cause damage!

quality of the print I was given. I suspect other supplies, by other manufacturers, will bear a striking resemblance to the Hickok circuit.

Restoration

After first checking for tubes that may have been dislodged in shipment and for evidence of electrical failure (burned parts,

leaky caps, etc.), I powered up the supply. It worked for about half an hour, and then the B+ voltage slowly faded from 380 volts down to less than 100, and it kept creeping lower as time past!

I quickly traced the problem to a failing paper capacitor (C3 on the drawing), a .047-mFd, 600-VDC ceramic encapsulated paper capacitor. Looking at **Photo B**, you'd think these were high-quality caps. and they were probably were when the unit was made 40 years ago! C3 serves to reduce electrical noise produced when the voltage setting potentiometer (R9) is being adjusted. This limits voltage spikes on the equipment powered by the supply. Leakage currents through C3 affect the bias on the 6BH6 amplifier, slowly biasing the 6L6 pass-regulator tubes towards cut-off as the leakage worsened.

In all, there are three of these ceramic-cased paper caps in the unit, and I replaced them with nearest value modern Mylar capacitors. The unit also uses several radial-lead electrolytic capacitors for filtering. This was a pleasant surprise; by comparison the more commonly seen Heath IP-27 uses numerous twist-lock mount filter capacitors. Alas, these are now expensive, hard to find, and difficult to remove and replace. I noted that some of the electrolytic caps showed some signs of leakage at the vent seals; once damaged, these seals will allow the capacitor electrolytic paste to dry out and eventually the capacitor will fail. See **Photo C**. Regardless, it's a good practice to change 40-year-old filters, no matter how well they appear to work.

I used NTE axial lead replacement filter capacitors, subbed to the nearest modern value, to replace the original power supply electrolytic capacitors. For example, where a 70-mFd cap is called for, I used a 100-mFd part, and for the 20-mFd filter capacitors, 22-mFd capacitors. **Photos D** and **E** show before and after views of the underside of the chassis.

The bias pot was damaged. It could be rotated continuously, indicating that someone had forced the control beyond the stops, so I removed and replaced it. The total cost for the restoration was around \$40. I suspect other vintage supplies will require

the same work, so price that into the cost of any unit you buy. Heavily discount any supply with damaged or missing meters.

Selenium Rectifiers

The screen voltage for the 6L6 regulators is supplied by a separate winding on the power transformer and is rectified by a pair of selenium rectifier packs wired in series. Since selenium rectifiers deteriorate with age whether used or not, developing reverse leakage and high internal resistance, I opted to replace them with a single 1N4007 diode. See **Photo F**. An unused terminal lug provided the needed mounting for the device.

The Front Panel

Sadly, this fine unit was roughly handled after its retirement. The panel looked like it may have had a factory applied satin overcoat to protect the lettering and panel. My unit bears several scratches, and the overcoat is starting to flake in some areas. When time allows, I'll temporarily remove the meters, switches, and controls, and over-spray the panel with several light coats of Krylon clear satin acrylic to restore (hopefully) the front panel to its original factory finish.

Why You Need A Variable Supply

As I said, a variable DC supply is something you may want on your bench, *if* the price is right. Hamfests are a likely source for this sort of equipment. What can you use one for? One good use would be servicing a radio with a burnt-out power transformer. The radio could be restored and powered up and tested before an expensive replacement transformer is ordered. The PS-501, or a similar Eico or Heath product, could easily provide the filament and B+ needs for a majority of vintage radios.

Or perhaps other expensive components are damaged, making a full restoration impractical from a financial perspective. For example, you might also discover an open field coil in the speaker; that may push the cost of repairs beyond your budget.

If you like building or experimenting, a variable DC supply will power most homebrew receiver and low-power tube transmitter projects. You can quickly rig up a circuit and test it under various voltage conditions while watching the current requirements. The costliest section of a tube project is the power supply; it's nice to be able to test and try a project before committing more money and time to something that may not work as you had hoped!

These supplies are also very popular with audiophiles, many of whom believe it's impossible to equal a perceived desirable tube sound quality using solid-state equipment. These folks often do a lot of experimenting with various tube preamps and hi-fi tube audio amplifiers designs in search of their Holy Grails, so many of the variable DC supplies offered for sale end up on audio enthusiast workbenches. You'll find that

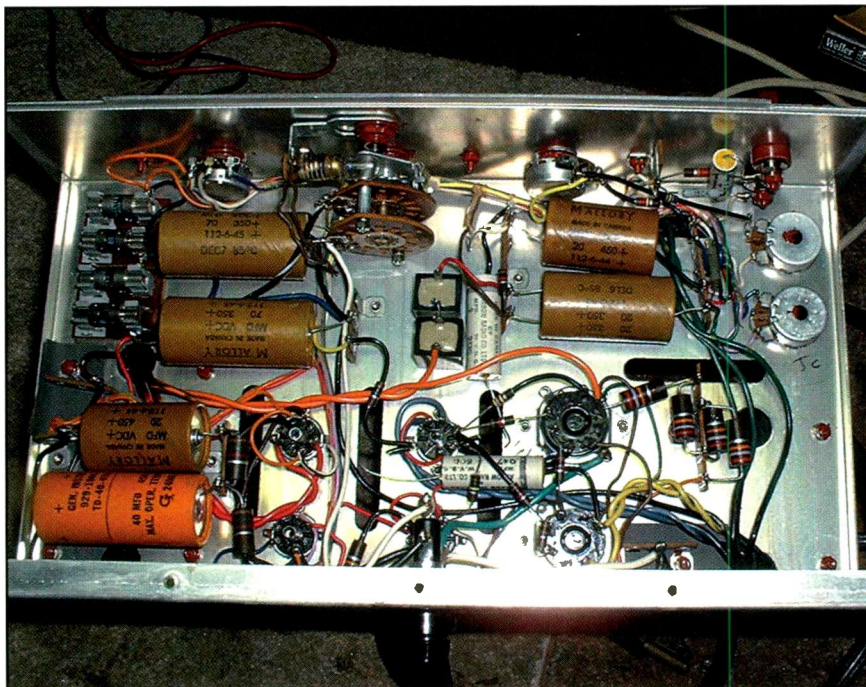


Photo D. The original factory wiring.

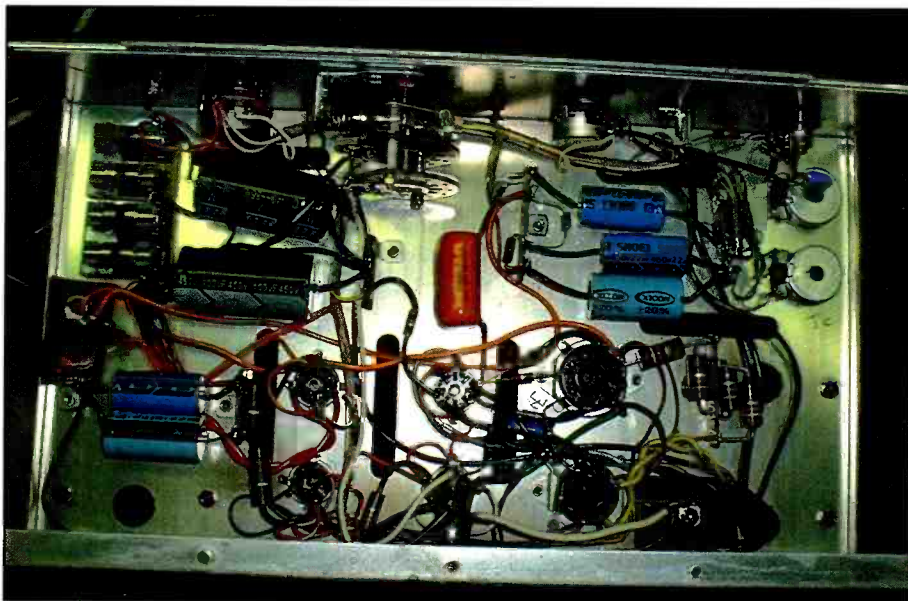


Photo E. Keep it neat! Following the original factory layout keeps the under-chassis neat and uncluttered.

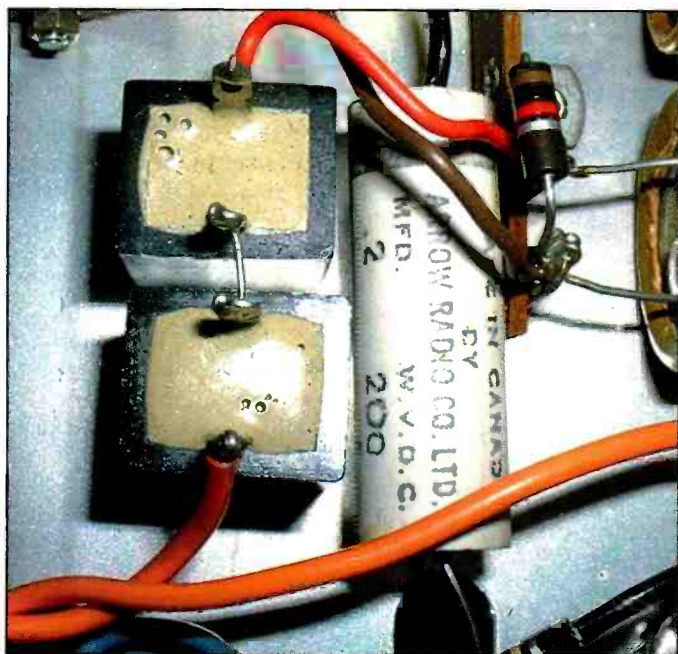


Photo F. Those odd-looking rectangular devices are two series selenium rectifiers. They will fail, whether the unit is used or not. Another ceramic cased capacitor is also visible in this photo. It should also be replaced.

many of the finer lab-grade Hickok tube testers also end up in the workshops of audiophiles, who also compete with radio restorers for many early triodes which were used in older radios. The 45 is a good example.

My first use for the PS-501 was to test July's Magic Eye tuning projects—the variable C supply let me verify eye tube action at various AGC voltages before I even attached it to the radio. Also, I could vary the DC plate voltage and see how the tube display brightness was affected. You can bet having a variable DC supply on the “Wireless Connection” workbench will be a big asset in developing future tube projects for the column!

Whether a variable DC supply can be justified on your bench depends on your needs and whether you do a lot of small projects using tube circuitry. If you've found some innovative or useful applications for DC supplies on your bench, drop us a line and we'll share your thoughts with our readers.

Readers' Mailbag

Here's a sampling of recent reader letters from the “Wireless Connection Mailbag.” We've answered most of these queries by reply e-mail. Remember that letters sent to my attention via the Hicksville, New York, home office have to re-forwarded to my home address, so expect delays. Now to our letters.

Gus Stellwag of Orangeburg, New York, writes,

I just read the story about the S-72 in the January “Wireless Connection” column. I, too, used an S-72 in Korea. I brought mine with me when I was sent to Pusan in July 1954. However, my S-72 did not have a happy ending as did John Brautlacht's set. In April 1955, we had a disastrous fire, which burned our BOQ to the ground. Sadly, nothing but a charred chassis was left of the S-72.

Sorry to hear about your Hallicrafters, Gus. I'd bet John's article and photos brought back memories for you.

Tom Cornforth has some questions,

I saw your column in Pop'Comm magazine. Could you tell me where I could find a dial glass and a dial scale for a Zenith 5S228? The hole in the cabinet is about 5 3/4 inches, so the glass is around 6 1/2 inches. I am a Zenith fan as in my childhood we had a Zenith floor model. I hung on to it for many years, but when we moved I had to get rid of it. The radio I need parts for was shipped to me very well packed on the outside, but the chassis was loose and you know what happened: the glass and face were broken. Do you know anyone who has Dynaco parts? About 12 years ago there was a place in Ohio that sold the parts.

I can't help with the Dynaco parts. How about it, readers? Your Zenith 5S228 uses a Zenith 26-143 dial scale, which is being expertly reproduced by Rock-Sea Enterprises. Curved dial glass can be ordered from a clock repair shop, or from restoration supplier Bill Turner. (Contact info for all sources mentioned is given at the end of the column.) My “childhood memory” Zenith console met an untimely demise at the hands of an inquisitive eight-year-old. Dang, I never could get Humpty Dumpty back together again!

And from reader Marty,

Hello! I really enjoy the Wireless Connection column in Pop'Comm! Keep up the good work. I have really learned a lot about restoring from your articles. I need to get a copy of the manual for a Simpson 383A Capacitance Meter. I hope you or one of the readers can help!

Your manual is carried by Surplus Sales of Nebraska. Next, Mike Grimes, K5MLG, asks,

Do you have a recommendation for a software program to do schematics? I am not looking for something sophisticated like a CAD program but something simple to use. Of course it must have tube-type art. I would like to use something also suitable for publication.

Hello Mike. I've used WinDraft by Ivex for several years. I

did most of the artwork and schematics for the former *Communications Quarterly* magazine using WinDraft, and all the schematics and artwork for this column are produced using the same software. There is a learning curve, but once mastered it is a very nice program and easy to use. The program is designed for use with the companion WinDraft program to generate PC boards. You can generate parts libraries (which I don't do), or just do new artwork for components or tubes if the existing libraries don't have what you need. You can download a useable demo at www.ivex.com; the program is also available at your local NTE, Inc., distributor.

A final note from reader John Montpas,

I really enjoyed your article on "Tuning Eye Magic" in the July 2003 issue of Pop'Comm. As I am addicted to the use of eye tubes of all kinds, your article was the best I have seen in years. If you don't mind, I'll pass along a few tips that I have found that work well for me in some of my projects.

Finding a bezel is a problem; however, I've found many vintage pieces of test equipment are a good source for eye tubes, bezels, and the needed mounting brackets for mounting the tubes. Most have bought at auction for little or nothing as most people are no longer interested in that sort of equipment. When found in the \$1 to \$5 range, the cost is reasonable, and you get all the parts you need for your tuning eye projects!

You mentioned using felt pads on the bottom of the eye accessory...works great, but also try hobby craft magnetic tape. It's found at most hobby stores or in the craft section at Wal-Mart. It comes in rolls of various sizes, just cut off what you need and peel and stick. Then your accessory eye will stick to the top, side, or to any metal on your receiver. I use RadioShack project boxes for my accessories...How about an article on S-meters for receivers?

John, I am planning to do S-meter projects this year, but unfortunately two deaths in the family and some major home renovations have severely limited my

magazine project development time. Hopefully, I'll get to the bench by the end of summer (it's mid-June as I pen this column) and have some more projects for your enjoyment. A Bud project box and meter movements have been on the bench awaiting my attention! I want to do a very thorough job on the S-meter presentation, so everything will have to be done to my satisfaction before publication.

Gremlins!

Sharp-eyed readers probably noted a few gaffs that sneaked by our editing efforts in the August column! First, Photos A and B showing the front and tilted views of the RCA Magic Brain Dealer Demonstrator were reversed. The next paragraph also references Photos A and B, supposedly showing full and no signal conditions for the annular ring 6T5 eye tube. Alas, those photos were never taken, and the reference should have been deleted from our text! Sorry for any confusion.

In Conclusion

I've received many e-mails expressing interest in my proposed Beitmans on CD offering, so the project appears to be worthwhile. I'll be mailing a few test CDs in the next few days to beta testers. Hopefully the trials will go well (the CD data requires a special viewer program included on the CD), and I'll be able to provide ordering information in the October issue. These are "Plain Jane" offerings, no fancy labels, etc. Say tuned for more info.

Until then, 73 from "The Wireless Connection" workshop! ■

Contact Information

Radio dial scales resource: Rock-Sea Enterprises, PMB 241, 323-110 East Matilija Street, Ojai, CA 93023; E-mail: dials@juno.com; Web: <http://members.aol.com/RockSeaEnt/>.

Radio dial glass cover resource: Bill Turner, 1117 Pike Street, Saint Charles, MO 63301; Phone: (636) 949-2210; E-mail: Dialcover@webtv.net.

Source for Simpson and other manuals. Surplus Sales of Nebraska, 1502 Jones Street, Omaha NE 68102; Phone: (402) 346-4750; Fax: (402) 346-2939; E-mail: grinnell@surplussales.com; Web: <http://www.surplussales.com>.

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A Look At Our Prototypical FRS Station And Special Recognition For Dedicated GMRS Licensees

Last month we began our description of how to assemble your very own “higher-power” FRS monitoring and operating station. Our prototype FRS home-base station is actually a GMRS *small base station* operating on the GMRS interstitial or “splinter” channels, as we had previously noted.

These same channels are actually those used by Family Radio Service handhelds, on Channels 1 through 7, and you will need an easy-to-get GMRS license, of course. Let's start from the top. I assembled the prototype station described here for about \$200. At this relatively low cost there is little reason why REACT monitors and other communications volunteers desiring to monitor and respond to FRS Channel 1 shouldn't have a functional and powerful GMRS small base station with which to do so. **Photo A** shows the antenna setup. Our antenna sits atop two 10-foot sections of common TV antenna mounting poles, available at RadioShack, mounted at ground level. This puts our antenna mount exactly 20 feet above ground. Had this been a freestanding antenna assembly, the distance to the tip of the approximately three-foot-long antenna would have to have been limited to a total of 20 feet. (*Caution: Twenty feet of antenna pole(s) cannot safely support anything as a freestanding assembly, however.*)

Our antenna pole assembly is securely mounted to a house, though, so this antenna could legally extend 20 feet above the roofline, to the antenna tip. But let's say, for example, that the negotiated deed restrictions on our “test” home limit the tip of the antenna from extending more than 10 feet above the roofline. Our antenna now must stop just short of that height. Considering that we have made our antenna at least 20 feet above ground level, we have it placed within an optimum height for our purposes here. Though difficult to see in this photo, a ground wire extends down the pole from the antenna, and then goes to an eight-foot grounding rod.

In **Photo B**, we see our RG-8 feedline (along with a parallel coaxial feedline for HF) terminating into a gas-discharge-type static discharge “block.” (You should be able to get one of these at the same place you got your antenna.) A ground wire runs from the ground terminal on the static discharge unit to an eight-foot ground rod, just like the ground wire at the antenna. According to the National Electrical Code, ground wires must be at least #8 (8-gauge) aluminum or #10 copper, and need not be insulated (ANSI/NFPA 70-1996 NEC §810-21(b), (h)). Check with your local code enforcement authority for updates and to see if more stringent codes apply in your locality.

We could alternatively have connected our grounds to the grounded interior metal water piping system if this “sample” house had been so built (NEC 70-1996 §§810.21(f)(1)(2), 250-80(a), et al.). But in this instance, let's say that the fresh water pipes are all PVC, so this method isn't possible. In our example, the antenna ground went to a grounding rod shared only with the metal structure of the house to which the antenna mast

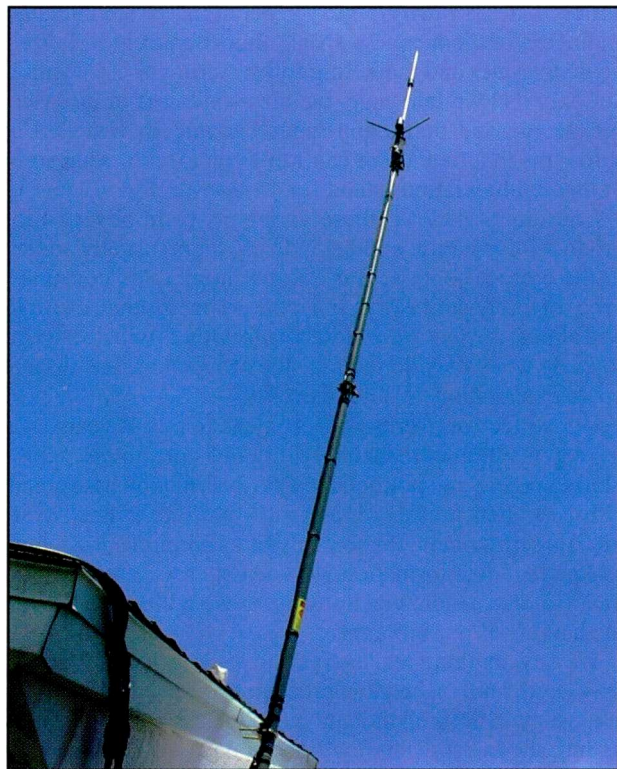


Photo A. Our “small base station” antenna setup. (All photos courtesy N3HOE.)

is secured. The ground for our static discharge unit was routed to the eight-foot grounding rod used for electrical power grounding at the house. (See NEC 70-1996 §810.21(i), (j).)

If I sound like I am going just a bit overboard regarding electrical grounding and lightning safety, I can assure you I am not. This very same house had been recently used in another prototype project when a DC-ground design fiberglass HF antenna took a direct lightning hit. Much of the antenna, whose tip reached only 27 feet above ground, was instantly vaporized. Fortunately no radio communications equipment was connected to the antenna at the time of the strike, so nothing was destroyed or damaged. There was significant *collateral* damage to other electrical systems in the house, even though the struck antenna was grounded code-to-the-letter. My final piece of advice on lightning safety as regards radio equipment: Disconnect all antennas when an electrical storm or any lightning phenomenon is anywhere near your area. 'Nuff said.

The RF cable coming off of the static discharge “block” enters the house at a convenient point and continues on to our base station desk. **Photo C** shows our bubble-pack GMRS unit, the Audiovox GMRS-1535. You can see that it is snugly fit into a

Wireless Telephone Mumbo Jumbo

If you've held off on shopping for a cell phone and for a CMRS provider to connect with, then we have more consumer information for you—definitions of wireless *jargon*. The key to understanding any given technology is a knowledge of that technology's language. Once you get a fair grip on the terminology involved, you've got understanding the technology halfway licked.

In the case of next-generation wireless technology (ever notice that it's *always* "next-generation"?), technicians and engineers in the business speak almost entirely in *acronyms*. So do the sales and marketing folks. Acronym-ese seems to be not only its own language, but also some sort of disease. You see, techie and marketing-types become so wrapped up in acronyms that they often can't tell you *exactly* what so many of these abbreviations stand for.

Consumers pick up these acronyms from advertising and product information and begin using them, usually somewhat in the correct context. But ask any number of consumers to even remotely define or explain the acronyms they use and you will almost always draw a total blank. Others will do as so many folks do when they don't know the answer to a question: make up an explanation. What the heck!

Our collective overuse of acronyms in recent years is creating a generation of technically illiterate consumers, sales people, managers, and politicians. This dysfunction has spread like a disease, hence I label it as such—a *disease*. The "dysfunction" is self-evident. As so many of us continue down this dismal path of disinformation, we had better wise up and come to understand consumer technology, or we will soon have to reap the harvest of our ignorance.

We buy anything and everything *high-tech* that is set before us—good, bad, rushed to market untested, as well as those that are just plain not well thought out. Clueless policy-makers lock us into the latest technology of the day, without a thought or care about the consequences of what too often turns out to have been a bad idea.

Case in point (in a nutshell): In the early 1990s Washington policy wonks failed to set a new standard for digital cellular technology, all in the happy name of economic *competition*. Result: Americans were stuck with having to choose between three divergent and incompatible digital speech modes in their wireless phones. But wait. There's more.

In 2000 and the years immediately preceding, world policy makers at the International Telecommunications Union (ITU), including our own happy-go-lucky FCC wonks, failed to set a single standard digital mode for the next-generation of wireless phones. Instead, they approved a group of standards, called it a single "standard," and will be leaving consumers around the globe with about a half-dozen (depending upon how you slice-it-and-dice-it) different and mostly incompatible "3-G" digital modes or variations thereof.

Hold your horses. There's still more.

Late last year the FCC, in its infinite fuddy-duddyness, decided to let the wireless telephone industry in the United States phase-out the original AMPS (wideband FM "analog" speech mode) cellular phones after just five more years. This in favor of any and all varieties of digital speech wireless telephone modes, standard or not. A gleeful Tom Wheeler at the Cellular Telephone and Internet Association was exuding sweetness all over himself for yet again having had his way in Washington. And a childishly enthusiastic FCC Chairman, Michael Powell, giddily enthused about his decision to illegitimize a perfectly functional national communications network, proving once again the time-honored government corollary to a well-understood axiom: "If it ain't broke, fix it until it is broke."

The problem? With virtually a rap of the gavel, and with Old Tombo pulling the strings as usual, the FCC authorized the dismantling of *the only universal wireless roaming standard* in the United States, and indeed in the entire Western Hemisphere. After 2007, consumers will be hard pressed to find a single digital wireless phone that will work everywhere that today's AMPS cell phones do. Way to go, Mikey. Nice show.

But, I digress. Let us get back to the terminology you will need to know when shopping for wireless phone service and products. Again, the key lies (perhaps in more ways than one) in the acronyms. You won't find these in too many dictionaries or anywhere else outside of proprietary technical manuals, so take notes and learn well:

AMPS (Advanced Mobile Phone Service): The original North American cellular mode in the 800-MHz range; wideband FM (25 kHz "analog") speech, FSK (digital) signaling, licensed under FCC Part 22 as the "Cellular Radiotelephone Service."

CDMA (Code Division Multiple Access): Direct-sequence

\$5 dashboard cell phone holder I found at one of the chain variety superstores. Although I could have mounted the holder with the included adhesive pad, I instead took advantage of two tiny screw holes provided for a more secure mount.

I've brought the antenna lead into our base station area and connected it to the GMRS handheld in its bracket. Most bubble-pack GMRS radios have removable antennas that reveal an SMA connector when unscrewed. Make sure your chosen GMRS handheld radio does in fact have a removable antenna. The 22-channel GMRS/FRS combination units' antennas

will *not* be removable. Be sure to check.

You can also see how the wall-wart power-supply charger plugs into the top of our bracket-mounted GMRS radio. The bubble-pack GMRS radio, like most I've seen, supports simultaneous charging and powering of the radio. Be sure to use rechargeable batteries of the correct type. This one works extremely well with Nickel Metal-Hydrate (NiMH) cells.

When switching from monitoring to operating FRS Channels 1 through 7, quickly pull out the power supply plug and insert our headset plug as shown in **Photo D**. This way, you can operate in a

hands-free manner, readily able to take notes or log assistance calls on FRS Channel 1. Unfortunately, many GMRS bubble-pack radios will not accommodate simultaneous use of a plug-in charger and a headset. Ideally, you may want to opt for a unit with an available desktop charger in which the bottom of the radio fits. This should leave the headset jacks unencumbered and usable with a headset. Of course you can choose to operate by lifting the radio out of its bracket for "normal" handheld use, provided that you've allowed sufficient slack in both the antenna and power leads.

(as opposed to frequency-hopping) spread spectrum multiplexed mode; wideband. One of the two original U.S. digital coded speech wireless telephony modes.

CDPD (Cellular Digital Packet Data): The original packet radio mode for cellular phone computer modems. A somewhat redundant name; I mean, show me packet data that *isn't* digital.

CMRS (Commercial Mobile Radio Service): FCC terminology for any and all commercial land mobile wireless services offering connection to the Public Switched Telephone Network (PSTN). Defined and regulated under FCC Part 20 and under any of Parts 22, 24, 80, and 90.

GPRS (General Packet Radio Service): The second-and-a-half-generation packet radio mode for text messaging and computer modems. It's rapidly replacing the first-generation CDPD. Hey, I'm not the one who numbers these wireless phone "generations."

GSM (Groupe Speciale Mobile): French name for the European digital coded speech cellular standard "Special Mobile Group." Operates in the 900-MHz and 1.8-GHz ranges in Europe and in the 800-MHz and 1.9- to 2-GHz ranges in the United States. Actually uses TDMA-type multiplexing and may replace TDMA in North America someday. It's often incorrectly referred to, even by those who developed this mode, as "Global System for Mobile." In your dreams, guys.

IDEN: The Motorola proprietary digital coded speech mode used by Nextel and a very few other SMR carriers. It uses a variation of TDMA-type multiplexing, but with a totally different modulation scheme. It's usually spelled with a lowercase "i," but I have graciously corrected Motorola's bad grammar free of charge. *IDEN* stands partially for *Digital Enhanced Network*. But I can't recall offhand what that "I" stands for. No matter. Don't know and really don't care. I'm sure it's a good product.

NAMPS (Narrowband Advanced Mobile Phone Service): The only second-generation FM ("analog") speech cellular mode. Narrowband (10 kHz) to match the channel-per-kHz capacity of TDMA. It has advanced digital signaling features. So then, why do we have TDMA?

PAS (Priority Access Service): An optional service offered by very few wireless phone carriers (only one, at press time) to permit first access to an air interface speech channel during a crisis when wireless phone channels may be over-congested. It's available to only a relatively few top brass government

officials. Ironically, PAS may block out mobile phone use by emergency first responders and citizens attempting to place emergency calls to 911. If your wireless phone is important to you during emergencies, avoid doing business with carriers who offer this "service."

PCS (Personal Communications Service): Wideband PCS consists of the lower-powered wireless phone services operating in the 1.9- to 2-GHz range; licensed under FCC Part 24.

SMR (Special Mobile Radio): FCC terminology for commercial trunked radio, usually in the 800- to 900-MHz range. It's typically offered with telephone autopatch in addition to its regular push-to-talk operation. May be FM ("analog") speech or any FCC-approved digital coded speech modes; digital speech mode systems are often incorrectly referred to as ESMR or "Enhanced Special Mobile Radio"; and ESMR services are often incorrectly referred to as one of the *cellular* telephone services. Sorry, marketing folks. Neither the words "enhanced" nor "cellular" appear on your Part 90 FCC licenses.

TDMA (Time Division Multiple Access): Time-multiplexed mode; transmissions in bursts of shared time. The other of the two original U.S. digital coded speech wireless telephony modes.

3-G (Third-Generation): Wireless telephone and multimedia messaging *family* of digital coded speech, text, and video modes. Often incorrectly referred to as a *single* mode or standard. Should have been, but isn't.

WCDMA (Wide Code Division Multiple Access): A 3-G mode, wider than already-wideband CDMA. A silly name since all CDMA is wide, anyway. Okay, whatever.

This list is obviously far from inclusive, but it is the most basic list useful to the consumer. I would like suggest that you ask any wireless sales people you speak with to at least be able to comment on each of these technological aspects before you sign any contract or hand over any money. I would also like to advise that if your salesperson is not at least vaguely familiar with each one of these terms, you walk away and take your business somewhere else.

I would like to...but I really wouldn't suggest or advise any such things. The reason is that if you were to actually hold salespeople accountable to this modest standard of knowledge, you probably wouldn't be able to buy a mobile phone at all. Oh well.

To wrap up this project, we need to carefully note two very important considerations. The first is our ERP 5-watt limitation. Assuming the use of a standard 2-watt GMRS bubble-pack, and having limited ourselves to no more than a 3-dB gain antenna, there is no danger of exceeding the ERP limit no matter how efficient our feedline losses may be.

Forexample, if the antenna in your base station setup is listed by its manufacturer as having 3 dB gain at UHF frequencies, then it will nearly *effectively* double the power radiated in the desired direction. Your 2 watts of output power will

effectively become 4 watts! However, there will be line losses. A typical 50-foot run of RG-8 coaxial feedline at GMRS frequencies will exhibit somewhere around a 1- to 2.2-dB loss, significantly offsetting your antenna gain.

(I must interject a word of caution to beginners here: The decibel (dB) scale is logarithmic; that is to say that it is not *linear*. For example, while 3 dB equals about a two-times gain, 9 dB does not equal a six-times gain. Rather, it equals closer to an eight-times gain. However, you can add and subtract dB gains and losses within a system, by ordinary arithmetic.)

In fact, if you plan your antenna system so that your antenna gain matches your feedline losses, you can, at a later date, upgrade to a commercial-grade GMRS radio with transmitter output power on these interstitial frequencies set right at 5 watts. This happens to be a common default programmable low-power setting on commercial-grade transceivers.

Getting Licensed

Last, but most important, be absolutely certain to get your FCC GMRS license. As we have noted before, don't even *think*

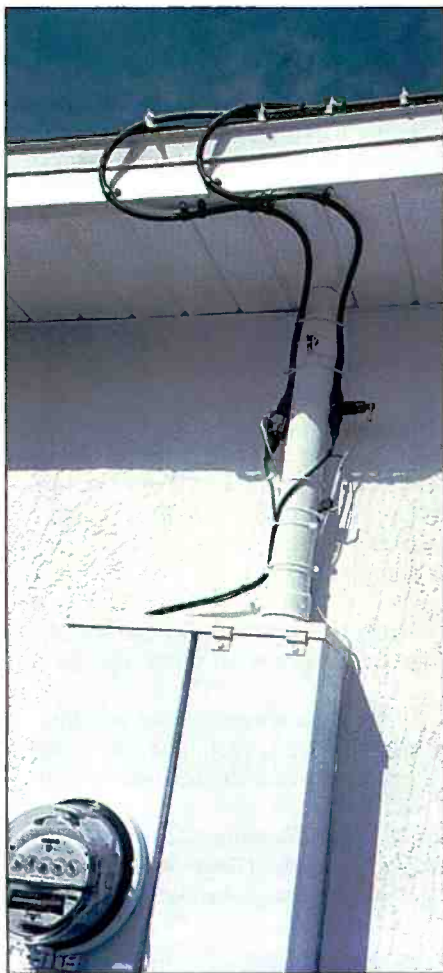


Photo B. The small base station antenna feed-line (with parallel HF feedline) terminating into a static discharge "block."



Photo C. Our GMRS bubble-pack handheld, mounted and connected to antenna and power supply leads for base station use.

two miles. Frankly, I don't know where our outer limits are, exactly. Your "On-The-Go" staffer hasn't yet had the time to travel that far away!

I assembled the prototype station described here for about \$200. At this relatively low cost, there is little reason why REACT monitors and other communica-

tions volunteers desiring to monitor and respond to FRS Channel 1 shouldn't have a functional and powerful GMRS small base station with which to do so.

Special Recognition For Dedicated GMRS Licensees

And it's about time. It has been my observation that there is nearly as great a proportion of radio-oriented emergency responders and monitors who are GMRS radio operators as there are who are amateur radio operators. When hams go out in the field or on the road to work a public service event or to respond to an actual emergency, they have a great variety of identifying documents available to them. Some of these come from specific service organizations, of course, such as ARES and the Amateur Radio Emergency Service.

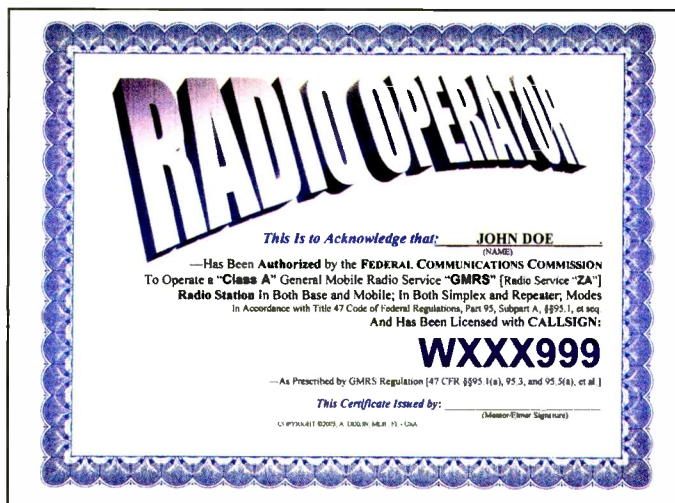
Licensed hams have long had wallet cards provided by the FCC, and, in more recent years the Commission has started issuing amateurs certificates suitable for framing. But, GMRS licensees aren't issued any sort of wallet ID card, and the GMRS license document is rather utilitarian. It's so mediocre looking that many of you would sooner spare the expense of a frame. In fact, the FCC GMRS licenses currently issued don't even say "GMRS" on them, except for a tiny footnote noting that GMRS rules had been changed in recent years. Yep, that's right—the licenses simply say "Radio Service: ZA." And

of transmitting on any channel on any GMRS radio or combination GMRS/FRS radio without a valid GMRS (Radio Service ZA) license. There are two forms to fill out, either on-line or on paper. And you can pay the fee (\$75 at press time) on-line by means of a debit or credit card number. Do the entire process on-line and you can get your new FCC callsign in as little as 10 hours! Check out "Handy Links And Telephone Numbers" for more information on licensing.

Our GMRS prototype small base station has a "view" of our surrounding flat terrain from its approximately 20-foot above ground vantage point. Now visualize anywhere from 3 to 5 watts transmit power communicating to 1/2-watt FRS units on the ground. You easily have a radius of two miles of clear communications with handheld units—even indoors. Your fringe range to FRS handhelds outdoors has extended at least an additional



Photo D. With headset in place, we are ready to monitor and operate FRS Channel 1!



The GMRS Radio Operator acknowledgement certificate. (Photo courtesy of N3HOE)

that leaves a lot of folks who may be less than totally familiar with GMRS clueless!

Ever tried to volunteer your services as a licensed radio operator, ad-hoc at a disaster response staging area? With no badge or wallet ID card you just stood there fumbling through your wallet trying to unfold that tired, crumpled old photocopy of your GMRS license. And I'll bet those officials to whom you were trying to report were *real* unimpressed, right? Uh-huh.

Well, your "On-The-Go Radio" columnist now has something available that might help ease this situation. I am offering GMRS licensees a special acknowledgement and recognition package. You can now obtain a handsome certificate, most definitely suitable for framing, recognizing your status as GMRS licensee. This certificate proudly *acknowledges* you as an FCC-authorized Radio Operator, shows your name and callsign, and cites the FCC regulatory authority for your class of license and service—GMRS!

This special acknowledgement package also includes a laminated wallet card, with much of the same pertinent information shown on the certificate. You also get a matching laminated card-style acknowledgement badge with lapel/pocket clip. And, as a bonus, the package also includes a half-dozen matching business-style calling cards. You can get a set of these items for yourself by e-mailing me at the "On-The-Go" column at wpuc720@juno.com, or by writing to the *Pop'Comm* office address shown in the front pages of this magazine, in care of me at "On-The-Go Radio".

I am offering this special package as a service to serious and dedicated GMRS radio operators. It is available only to properly licensed GMRS operators and I, therefore, make a reasonable attempt to verify all orders through the FCC database.

As you might imagine, there is some expense involved in producing this exciting package. Primarily to recover costs, I am charging a flat price of \$5 for each package ordered. There is no additional cost for shipping or sales tax. (Due to tax reasons, this offer is not available to Florida residents.) Payment may be made online through the PayPal system, or by check or money order. Most paid e-mail orders will be shipped within 24 hours of being received. Specific payment information will be made available upon receipt of e-mail orders and inquiries. When ordering by postal mail, send no funds. I will bill you directly.

Product availability, description, terms, and pricing are subject to change without notice. Neither I nor CQ Communications will be liable for such changes or for delays beyond my immediate control.

That said, I do agree that you must be entirely satisfied with your order, or your full price will be refunded without question, upon request within 30 days. I really do think that you will be delighted with your special GMRS package, though!

Coming Up

In following months' "On-The-Go" columns, we will from time-to-time visit the commercial wireless telephone technology and regulatory realm to give you an edge-up on news you need to know, whether you are a hobbyist or a consumer.

For now, this lingering summer heat has got me so hot under the collar that I'm going to grab a cold lemonade and look for a shade tree to sit under while I read the rest of this month's *Pop'Comm*. Maybe it will be a little cooler next month, when we can get back on the road with more news from the GMRS and CB radio worlds. See you then!

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computer-assisted radio monitoring

by Joe Cooper, joe@provcomm.net

A Look At Charles Hinkle's Station

If you remember a little while back, I had asked you to send me your experiences putting together a computer-assisted radio station. Well here's the first of what I hope will be several reader contributions.

Charles W. Hinkle, W8CFO, of Pioneer, Ohio, has been kind enough to write down some of his experiences for us (see "My

Experiences With Radios And Computers"). He's also included some photos. I hope that Charles' contribution serves as an inspiration to you and encourages you to send in some stories about your computer-assisted monitoring station. I'd also be more than happy to publish some pictures of you at the controls, or an example of something interesting that you've put together.

My Experiences With Radios And Computers

by Charles W. Hinkle, W8CFO



Japan Radio's NRD 535D is the primary radio used by Charles Hinkle for his computer-assisted station. He also uses Ten-Tec's RX-320 and a Uniden BC895XLT for VHF/UHF Scanning. (Photo courtesy Universal Radio)

I began shortwave listening as a teenager in the late '40s. The principle sources of schedules and utility frequency lists were the radio magazines of that era and the shortwave section of *White's Radio Log*.

Basically, you had to keep the publication or a handwritten list at your operating position to aid in tuning and identifying stations. Also the frequency calibrations of most vacuum tube receivers of that era were not very accurate and frequency was determined either by frequency marker generators or station announcements.

The VOA, BBC, and the "Iron Curtain" countries were the principle SW broadcast stations I listened to. I also listened to ship-to-shore, transatlantic radiotelephone conversations and ham radio operators. I also remember hearing network radio news reports on the radiotelephone circuits from Europe.

I obtained my ham license in the mid '50s and for the next few years I concentrated more on ham radio, my job, and family obligations. In September of 1982, however, I ran across the first edition of *Popular Communications* on a newsstand, and my interest in shortwave listening was revived. I soon purchased an ICOM R70 receiver to replace my vacuum tube general coverage receiver.

At this time I began to listen to enroute and off route air-to-ground communications and the various SW broadcast services. I particularly remember listening to Kol Israel when Israel sustained the first SCUD attack in the Gulf War.



Here we see Charles' very well organized computer-assisted monitoring station. On the left are his three main radios on the top shelf of the desk. From left to right are the Japan Radio NRD 535D, Uniden BC895XLT and the Ten-Tec RX-320. The computer control is accomplished by the laptop on the desk and the tower style computer in the computer hutch to the right (note the radio control programs that are displayed on both computer's video screens).

Although I had more current information, I still had to maintain schedule and frequency lists the same way as before.

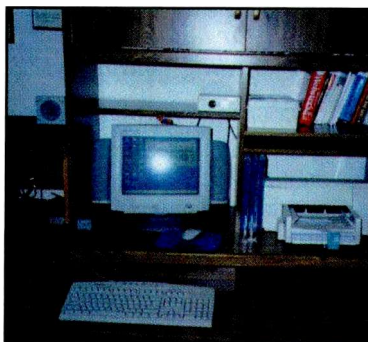
My First Computer

I purchased my first computer in 1988. One of the reasons I got a computer was to use it as a tool for my ham radio and shortwave listening hobbies. My first radio application was packet radio on the 2-meter ham band. I also used the computer to access BBSs, where I was able to download shortwave broadcast schedules and utility frequency lists.

About this time I started using the *World Radio & TV Handbook* for frequencies and schedules. I also began using a spreadsheet program so I could sort my lists by time, frequency, or station. This was a big improvement as I was able to have ready access to current information and have easy-to-read printed lists.

Also I became interested in seeing if my ICOM R70 receiver could be computer controlled. The supplied documentation for this receiver gave hints that it could be, but I never found any information or programs that allowed this to be done.

In 1993 after I retired, I decided to upgrade my equipment and bought an NRD 535D receiver. Its ability to be computer controlled



This is a close up of the main computer area. It's a bit hard to see, but a software interface (most likely for the Ten-Tec RX 340) is displayed on the screen. Note that the radios don't have to be near the computer. This is important if you want to keep RF noise from the computer's CPU and the video monitor out of the radio's circuits. (Photo by Charles W. Hinkle)

was not my main reason to purchase this receiver, but it was a factor. I kept the R70 at my operating position as a second receiver.

Initially, I used Tom Whiteside's program, NRD, which I downloaded from a BBS. There were few databases available for this receiver control program, but databases files could be easily created with a spreadsheet program.

I obtained a used Windows 3.1 machine in 1995. With this computer I was able to access the Internet for the first time. I found several sites that contained shortwave broadcast schedules, but used the ADDX site, at <http://www.addx.de/>, most often. I used this setup to control my NRD until I obtained a used laptop computer in the late '90s.

I placed this new computer on the equipment desk and dedicated it to control the NRD 535D. When I updated to a laptop with Windows 98, I tried out a couple of windows-based programs but settled on Mark Fine's Smart NRD Control 32 (<http://www.fineware-sw1.com/snc.html>).

This program, along with Mark's database, supports the type of monitoring I do and its supplied database is comprehensive and can be tailored to meet local needs. Mark also maintains an updated list of station schedules and program information.

My Current Setup

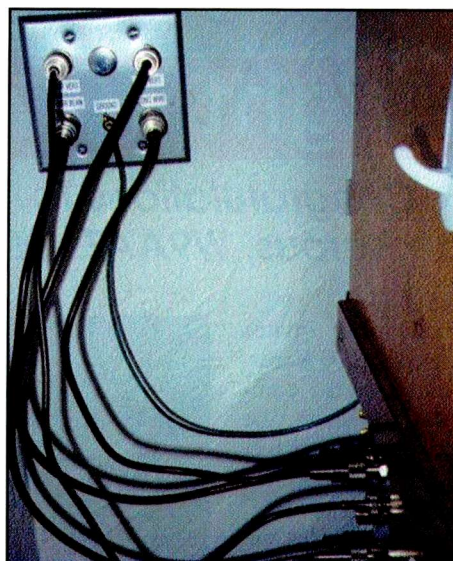
I heard excellent reports concerning the Ten-Tec RX-320 receiver, so I purchased one for use as my second receiver and retired my R 70 to my workbench in the garage. I tried the various programs for the RX-320 and decided on Clifton Turner's control and database software and Bernd Friedewald's ILG database (<http://www.ilgradio.com>). I like Turner's software particularly because of its audio recording feature, which I use to record programs for later listening.

I have also experimented with a PDA (Personal Data Assistant) to control this receiver. This is a small handheld computer and there are great possibilities for mobile monitoring with this combination.

There are many software programs on the Internet available for utility listening with the RX-320. I have used several websites to keep my utility frequency lists updated and I download the Fineware databases when they become available.

I also obtained a Uniden BC895XLT to listen to local ham repeaters on the VHF and UHF bands. The wide frequency coverage and the computer-controlled option for this receiver was the reason I chose it. I added two additional RS232 ports to my desktop computer, allowing me to control both the RX-320 and a BC895XLT scanner.

I have never been very interested in listening to the public service bands, but occasionally I do listen on the VHF aviation bands. I am too far from any airport that has a control tower or ATOC ground stations that can be received directly, so I am limited to



Proper antenna cabling makes or breaks a computer-assisted monitoring station.

Note that it is clean, well labeled, and grounded. There are no weak points for RF hash from the computer to leak into. In future columns, I'll look at what creates RF computer hash and how to keep it out of the radio to avoid noise, phantom signals, and a host of other

problems. This picture shows what you should be aiming for. (Photo by Charles W. Hinkle)

reception from planes only. I use my 2-meter vertical as an antenna for this.

A Few Words About My Shack

My QTH is just south of the Ohio/Michigan state line and just over 13 miles east of the Ohio/Indiana border. My listening area consists of four counties in northwest Ohio including my home county of Williams, two counties in northeast Indiana, and three counties in southeast Michigan. These counties are primarily rural and very few trunked systems are in use. I routinely download from the FCC's site frequency lists (<http://www.fcc.gov>) for my listening area.

My computer and equipment desks are located along an outside wall in my family room on the ground level of my home. This allows convenient interconnections between my desktop computer and the RX-320 and BC895XLT receivers on the equipment desk. I have not had any significant interference problems using this setup.

I use a Hustler 5-BTV vertical and a 70-foot wire end-fed with a magnetic longwire balun for antennas. The coax from these and my VHF antennas terminate on a two-position blank metal duplex outlet box cover drilled for five bulkhead coax UHF connectors in the wall near my equipment desk.

My station ground is also connected through this panel. Although the use of the MLB is controversial, I have been happy with its performance.

For my HF receivers I use a homebrew 3 x 2 switch matrix with three two-port splitters and two three-position rotary switches. The inputs of the matrix terminate on an aluminum panel at the rear of my operating desk, and the outputs are connected to the NRD 535D and RX320 receivers. I use short patch cords to interconnect the two panels, which allows me to connect either receiver to the same or different antennas at the same time and gives me flexibility for antenna usage.

At present, I still listen to HF enroute and off route aircraft traffic and some shortwave broadcast stations. I mainly listen to old time radio, DX/SWL, and comedy programs. Some of the programs I listen to on a weekly basis are the "Golden Age of Radio," "Madly Off In All Directions," and "World of Radio."

v.i.p.

spotlight how you got started in radio

Congratulations To Clarence Kerous, W9AAZ, 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 (no Polaroids, please) should be included.

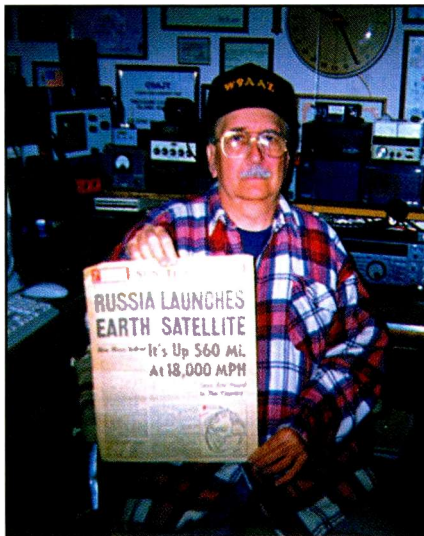
Each month, we'll select one entry and publish it here. Submit your entry only once; we'll keep it on file. All submissions become the property of *Popular Communications*, and none will be acknowledged or returned. Entries will be selected taking into consideration the story they relate, and if it is 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, letting us know if you're sending photos. Please print your return address on the envelope if using the postal mail system. Not doing so will delay your submission being processed. If you're e-mailing photos, please send them in a separate e-mail with your name in the "subject" line.

Our September Winner: Clarence J. Kerous

Clarence Kerous of Middleburg, Florida, says,

I first became interested in SWLing in the mid-'50s. My first receiver was a trio of World War II surplus BC-455s, rack mounted with a homebrew power supply. I logged countless shortwave and ham stations with this setup. I then moved up to a Hallicrafters SX-71 that I bought used from Newark Electronics in Chicago. I remember reading an article in a radio magazine on how to tune in SSB signals by using the BFO. I then began logging hams using the new SSB mode.



Here's Pop'Comm reader Clarence J. Kerous, W9AAZ (also All Band Radio Monitor ID KDX8N and Monitor Station Registry KMI8FO), holding the front page of the Chicago Sun Times from October 5, 1957, with headlines announcing the first Russian satellite, Sputnik. Clarence says, "The paper sold for seven cents! I was lucky enough to monitor the Sputnik on 20.005 megacycles."

In the fall of 1957 I was lucky enough to receive signals on 20.005 megacycles (no megahertz back then) of the Russian Sputnik orbiting the earth. I also monitored the 2-meter ham band in the '50s. It was all AM simplex as there were no repeaters back then! There was very little activity, even in the Chicago area.

In 1979 the ham bug bit hard and I got my ham license. My calls is W9AAZ. I'm still an avid shortwave listener as well as a contester. I work most all the ham DX contests and enjoy RTTY and PSK 31 using MMTTY and DigiPan. My favorite mode is CW.

The equipment has changed so much in the past 40 years. It's hard to imagine what will be next. You can rest assured that I will be one of the first to try it when whatever it is becomes available. After all these years radio has not lost its magic for me; to me it is fascinating to this day! ■

"Have you ever wanted to record something off-air but didn't have the proper recording equipment?"

I'd also like you to consider writing a guest column for me. I've been plugging away for the last year or so trying to lay down some fundamentals, but I'm sure that there are more than a few of you out there who are experimenting with either software or hardware. Speaking of that, do you know of some interesting software you'd like to tell the readers about, or maybe you'd like to do a review of some software you've been using and have been pleased with (or not pleased with, for that matter). Maybe some of you do some tinkering and have building projects to share? Don't worry about the writing; just get me the main points and I'll help you put the words together.

For The Record

Have you ever wanted to record something off-air but didn't have the proper recording equipment? Or was the program on at a time you simply couldn't be there to turn the recorder on? Well now there are some excellent new software programs that allow you to record your monitoring radio via your computer's sound card on a programmable basis.

In my next column I'll introduce you to some of the best computer-based auto programs for radio monitoring applications. You don't need to have a compatible radio to make these programs work. For those of you who do have a computer-compatible radio, however, I'll also show you some techniques for setting up a very sophisticated monitoring schedule so you'll never miss a broadcast again (propagation conditions permitting, of course).

Please e-mail or write to me with ideas, comments, and suggestions. The e-mail is CARM_POPCOM@HOTMAIL.COM and my mailing address is "Computer-Assisted Radio Monitoring," c/o Joe Cooper, PMB 121, 1623 Military Rd. Niagara Falls, NY 14304-1745.

Don't forget that I cannot answer general questions about computers, software, or operating systems, but I will do my best for any questions about the content of the columns or computer-assisted radio in general. Thanks again and I hope that the information provided here will help you get the more out of your computer and monitoring radio than you ever thought possible. ■

RSGB Books now available from



Antenna Topics

by Pat Hawker, G3VA

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

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

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Practical Projects

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

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The Antenna File

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The Antenna Experimenter's Guide

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

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Amateur Radio

Mobile Handbook

RSGB, 2002 Ed., 128 pages.

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



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Radio Communication Handbook



Edited by Dick Biddulph, G8DPS

and Chris Lorek, G4HCL.

RSGB, 7th Ed., 2000, 820 pages.

This book is an invaluable reference for radio amateurs everywhere. It also provides a comprehensive guide to practical radio, from LF to the GHz bands, for professionals and students.

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RSGB Prefix Guide

By Fred Handscombe, G4BWP.

RSGB, 6th Ed., 2003. 48 pages.

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global information guide *listening to what your world says every day*

by Gerry L. Dexter

AFN On New Frequencies From Iceland!

The U.S. American Forces Network broadcasts have turned up on a couple of new frequencies, emanating from Keflavik, Iceland. The transmissions are on **7590** from 2100 to 0800, **13855** from 0500 to 1830 and **15620** from 0700 to 1800. That, at least, is the official word. However, DXers are hearing this one mostly on 13855, including at times outside the listed hours, so it may be that all three frequencies are not yet in full use.

By the way, for what it's worth, the official AFN station list still includes the long unheard **Diego Garcia** on **4319** and **12579** and, according to sources that should know (more or less!), it is still on the air. Somehow it figures that this, the site most wanted by most DXers has not been reported in more than a year.

DX Partyline Is Still Breathing!

This longtime popular program was scheduled to perish in the mass destruction of HCJB's English services to North America, but some re-thinking has saved the show, although we won't enjoy the armchair copy we used to. The program will be aired on HCJB's station in Australia but will still be produced in Quito. There is a chance that some other station—perhaps

more than one—will carry it for listeners in North America, an idea that fits perfectly into the “no brainer” category. The popular “Morning in the Mountains” will also continue, probably just from the Australian site.

That elusive Paraguayan station, **Radio Americas**, has increased its power to a full 1 kW and is said to be active on **7370** and **15185** 24 hours a day. So far, we still don't recall anyone having logged this in North America but, with the power increase, the chances are at least somewhat improved.

And here's some encouraging news for a change: The latest government budget in New Zealand includes a significant increase for Radio New Zealand International.

Adventist World Radio has put two new—to them—transmitters on at their station in Guam. They were formerly positioned in South Africa and were to be used by a station that never went on the air.

For whatever it's worth, **Radio Nacional Angola**, most commonly heard on **4950** and **11955**, has begun slipping some English language identification announcements.

Japan's **Radio Tampa** will get a new name next year, as will its owner, the Nihon SW Broadcasting Company (NSB), which will become the Nikkei Radio Broadcasting Corp (effective October 1). Radio Tampa celebrates its 50th anniversary next year.

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Radio Kuwait's Programmes

Main Programme / البرنامج العام

الوقت المحلي	الوقت العالمي	البرنامج
8:00-9:00	13:00-14:00	News
9:00-10:00	14:00-15:00	THE G.C.C. MARCH
10:00-11:00	15:00-16:00	ISLAM THE RELIGION OF TRUTH AND JUSTICE
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Listening In

...to the World

Mr. & Mrs. George L. Glotzbach, 5 Herraba Court, Santa Fe, New Mexico, U.S.A. 87508
Registered Radio Monitor # K3M/BK

New Mexico

Maximum Land of Containment
Land Area: 121,300 sq. mi. (31)
Highest Peak: Mt. Wheeler Peak, 13,810 ft. (8.6)
Population: 1,521,779 (21)
Largest City: Albuquerque

N431A

The Journal of the
North American Shortwave Association

DW

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EDXC

Flex European Ltd. Contact: J. Dicks
P.O. Box 581, 111
"The Village", 20th
www.edxc.org

CCRradio by GRUNDIG

DRAKE R8-B

COMMITTEE TO PRESERVE RADIO VERIFICATIONS

into memory re: 1174 Jan
"W/1" 1994 and 1

Thank You!

9-1/03

George Glotzbach of New Mexico sends this colorful and creative sheet out with his reception reports. It's a lightyear or two from the old fashioned SWL card!

The **Voice of Croatia** has increased its transmissions about as much as anyone can—to 24 hours a day. The schedule is 0400 to 0900 on **6165, 7385, 9830 and 13830**; 0900 to 1700 on 6165, **9830** and 13830 and 1700 to 2300 on 6165 and 13830. Transmissions on 6165 and 13830 are via Deanovac, the others via Julich, Germany.

World Music Radio may have begun broadcasting from Denmark by the time you read this. This station is now registered as a 24-hour-a-day from Denmark on **5790, 6290, 7700, and 15810**. Some of the broadcasts will be in the new digital DRM mode.

The planned programming and services shakeup at **Radio Netherlands** didn't turn out to be as serious as expected. A total of 17 RN employees will lose their jobs; Dutch programming to Europe will be cut back, as will a few other languages. But the expected wholesale destruction of entire language services won't happen when the plan is implemented next year.

On a personal note, we had the great pleasure of spending a couple of hours with "GIG" reporter **Ray Paradis** of Maine, who was in our area recently along with his great big monster of a truck. Although his time is limited, Ray is an enthusiastic SWL and even (gasp!) promised to send in a shack photo soon!

Rick Barton of Phoenix, Arizona, is our book winner this month. Rick has received a copy of the *Official Shortwave Log and Call Book*, a reprint of a 1933 magazine, which listed stations active at that time, including shortwave. It's a fascinating collection of nostalgia from Tiare Publications Group, publish-

Abbreviations Used In This Month's Column

//	—	Parallel frequency
ABC	—	Australian Broadcasting Corporation
AFRTS	—	Armed Forces Radio Television Service
AFN	—	Armed Forces Network
AIR	—	All India Radio
anncr	—	announcer
anmt(s)	—	announcement(s)
BSKSA	—	Broadcasting Service of the Kingdom of Saudi Arabia
CNR	—	China National Radio
GOS	—	General Overseas Service
ID	—	identification
Int'l	—	international
IS	—	interval signal
Lang	—	language
LSB	—	lower sideband mode
NBC	—	National Broadcasting Corporation
OA	—	Peru, Peruvian
(p)	—	Presumed
PBS	—	People's Broadcasting Station
Pgm	—	program
RRI	—	Radio Republik Indonesia
sked	—	schedule
SIBC	—	Solomon Islands Broadcasting Corporation
(t)	—	Tentative
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

ers of *Limited Space Shortwave Antennas* and *Cop Talk!* More info on these books can be found at www.tiare.com.

Now the usual plea for your informational support in the form of your loggings (by country, double spaced with your name and state after each), photos of you in your shack, schedules, spare QSLs, or clean crisp copies, or station pictures—we welcome whatever you think might be of interest!

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

AFGHANISTAN—Radio Afghanistan via Norway, **18940** at 1515 with long talk by a woman. (Barton, AZ) (*Presume in Pashto or Dari?*—gld)

ALBANIA—Radio Tirana, **6115** with letters program at 0245. (Moser, PA) **7160** at 0231 with schedule, ID, news. (Barton, AZ) **7270** at 0200 with IS, ID, and into Albanian to North America. (Linonis, PA) 0254 in presumed Albanian. (Charlton, ON) Trans World Radio via Albania, **6235** at 0508 with tentative ID 0514 after IS. In Slovak language with several mentions of Slovakia. (Montgomery, PA)

ALGERIA—RTV Algerienne, **11715** in AA heard at 2005. (Charlton, ON)

ANGOLA—Radio Nacional, **4950** at 0340 with PP singing, ID, and frequency anmt at 0248, highlife music. // **11955.7**. (D'Angelo, PA) **11955** at 2304 with news in PP. (Montgomery, PA)

ANGUILLA—Caribbean Beacon, **11775** at 1134 with jazz and talk. (DeGennaro, NY) 1500 with Dr. Gene Scott. (Paradis, ME) 2307 with Gene Scott. (Brossell, WI)

ANTIGUA—Radio Netherlands, **9785** with news at 1031. (DeGennaro, NY) BBC relay, **5975** with news at 2300. (Moser, PA)

ARGENTINA—RAE, **11710** at 0200 with note not to send cash to the station through the mail. (Charlton, ON) 0245 with cultural news,

sports at 0250, IS, and anthem at 0258. (Barton, AZ) Radio Nacional, **6060** in SS with news at 1007. (DeGennaro, NY) Radio Baluarte (t), **6215** at 0034 with two men in long talks. (Montgomery, PA)

ARMENIA—Voice of Armenia, **9960** at 1940 with news and comment. (Paradis, ME) 1957 with EE ID. (Charlton, ON)

ASCENSION ISLAND—BBC relay, **21470** at 1800. (Paradis, ME)

AUSTRALIA—Radio Australia, **9580** with "Asia-Pacific" news program at 1511. (Barton, AZ) **9710** with news in Pidgin at 1038. (DeGennaro, NY) **21740** with news features at 2150. (MacKenzie, CA) ABC Northern Territories Service, Katherine, **2485** with news at 1331. (Miller, WA) ABC NT, Tennant Creek, **2325** with news and music at 1136. (Miller, WA)

AUSTRIA—Radio Austria Int'l, **7325** at 0237. (Charlton, ON) **9870** in SS at 0040. (DeGennaro, NY) **17860** via Canada at 1500. (Wood, TN) Adventist World Radio via Austria, **9660** with contact address at 2141. (Charlton, ON) **15175** at 1931 with ID and religious programming. (Jeffery, NY)

BELGIUM—Radio Vlaanderen Int'l, **13650** with ID in presumed Flemish at 1859. (Charlton, ON) **15565** via Bonaire with "Flanders today" at 2240. (Miller, WA) 2248 to sign off at 2359. (Wood, TN)

BENIN—Radiodiffusion du Benin, **7210.3** at 2255 with FF pop vocals, man with ID, and sign off routine at 2259. (D'Angelo, PA)

BOLIVIA—Radio Mosoj Chaski, **3310** at 0923 with rustic vocals, SS talk, ID, and frequency. (D'Angelo, PA) 0017 to 0100 close. (Montgomery, PA) Radio San Gabriel, **6080** at 0917 with SS talk, flute music and series of ads PSAs. ID 0932 f/by religious program. (D'Angelo, PA) La Cruz del Sur, **4876.8** in SS at 0055. (Strawman, IA)

BOTSWANA—Radio Botswana, **4820** at 0327 African music selections, phone number and back to more music. (Montgomery, PA) VOA relay, **17895** at 1942. (Charlton, ON)

BRAZIL—Radio Nacional da Amazonia, **11780** with PP talks, anmts at 1015. (DeGennaro, NY) PP news at 2248. (Miller, WA) 0030 with ID. (Moser, PA) Radio Clube do Para, Belem, **4885** with music and PP talks at 0231. (Miller, WA) Radio Nacional, Macapa, **4915** in PP with news at 0240. (Miller, WA) Radio Brazil Central, Goiania, **4985** in PP with music at 0243. (Miller, WA) 0902 with music and commercials in PP. (DeGennaro, NY) Radio Educacao Rural, Campo Grande, **4755** in PP at 0157. (Miller, WA) 0200. (Jeffery, NY) 0221 on **4765**, //4755 in PP. (Montgomery, PA) Radio Tupi, **9565** (p) at 0752 with long religious talk in PP. (D'Angelo, PA) Radio Novas de Paz, **6080** at 2342 with soccer match. (Montgomery, PA) Radio Inconfidencia, **6010.2** at 2245 with Brazilian pops and PP annr. (D'Angelo, PA) Radio Rio Mar, **9695** with local news, commercials, and anmts at 1012. (DeGennaro, NY) Radio Aparecida, **5035** at 2307 with commercials and talks in PP. (DeGennaro, NY)



Radio Senado, **5990** with listener messages at 0952. (DeGennaro, NY) Radio Cancao Nova, **9675** in PP at 2324. (Charlton, ON) Rdf. Taubate (t), **4925** at 0124 with easy listening music and tentative ID by woman at 0125. (Montgomery, PA)

BULGARIA—Radio Bulgaria, **7400** in Bulgarian at 0155. Into FF at 0200. (Charlton, ON) **9400** with news at 2300. (Paradis, ME) 2312. (Moser, PA) **11700** with talk at 2304, ID 2320. (Barton, AZ) 11900 with news at 2303. (MacKenzie, CA) 0235. (Brossell, WI)

BURKINA FASO—Radio Burkina, **5030** at 2310 with mix of highlife and rap, FF annr, woman with ID at 2324. Gone at 0000 recheck. (D'Angelo, PA)

CANADA—CBC Northern Quebec service, **9625** at 0227. (Barton, AZ) 2315. (Moser, PA) CKZN, St. John's, **6160** with PSAs at 0925. (DeGennaro, NY) RCI, **9515** at 1402. (Moser, PA) **15170** at 0130. (Linonis, PA) 15200 via Austria in AA at 1936. (Jeffery, NY)

CHAD—RN Tchadienne, **6165** at 2220 with lively highlife vocal, FF sign off anmts, and orchestral anthem. (D'Angelo, PA)

CHILE—Voz Cristiana, **15375** in SS at 0149. (Charlton, ON) **11935** in SS with religious talks and music at 1142 and **17680** with U.S. and SS vocals at 2028. (DeGennaro, NY) **21500** in SS at 1830. (Paradis, ME)

CHINA—China Radio Int'l, via Spain, **9570** via Cuba in CC at 1221. (Moser, PA) **9690** with talks and features at 0335. //9790 via Canada. (MacKenzie, CA) 11800 to Australia & Asia at 1330. (Barton, AZ) **11835** in FF at 2001. (DeGennaro, NY) CPBS/CNR **11935** (Beijing) at 2136 to Taiwan with CC music, ID at 2200, and news in CC. Off abruptly at 2203. (D'Angelo, PA) CPBS/CNR, Xi'an, **12045** at 1030 sudden sign on, CC ID, man/woman with news. (D'Angelo, PA) Music Jammer, **11900** at 2000. (Linonis, PA) 17640 at 1735. (Brossell, WI)

COLOMBIA—Radio Melodia (t), **6140v** in SS at 0300. Lots of spill from DW. (Linonis, PA) Caracol Villavicencio, **5958** with news in SS at 0948. (DeGennaro, NY)

CONGO—Radio TV Congolaise, **5985** at 2152 with hi-life vocals and various men in FF talks, nice ID at 2243. (D'Angelo, PA) 0430 with local drums, ID and into local music. Completely covered by WYFR sign on at 0455. (Alexander, PA)

COSTA RICA—University Network, **9725** at 0133. (Charlton, ON) Faro del Caribe, **9644** with hymns at 1037. (DeGennaro, NY)

CROATIA—Voice of Croatia, **9925** via Germany with news at 0226. (Miller, WA) 0250. (Brossell, WI)

CUBA—Radio Havana, **9600** in SS at 1118, **9820** in EE at 0143, and **13750** in SS at 2130. (Charlton, ON) 9820 at 0117. (Moser, PA) **15230** in SS at 0145. (Linonis, PA)

CZECH REPUBLIC—Radio Prague, **6200** heard at 0112. (Moser, PA) 6200 at 0204, **7345** at 0108 and **9440** at 0008. (Charlton, ON) 7345 with Czech news and discussion at 0249. (Miller, WA) **11600** at 2219 in FF. (Brossell, WI) at 2233 with EE features. (DeGennaro, NY)

DENMARK—Radio Denmark, via Norway **9925** in DD at 2230. (DeGennaro, NY) **9945** in DD at 2351. (Charlton, ON)

ECUADOR—HCJB, **15115** at 1355. (Benton, AZ) **15140** with Argentine-style vocals in SS at 2234. (DeGennaro, NY) Radio Quito, **4919** with SS music and ID at 1008. (DeGennaro, NY)

EGYPT—Radio Cairo, **9900** at 2115 with time pips, ID, news headlines, music. (Barton, AZ) 2146. Also **11780** at 0227. (Charlton, ON) 11725 (ex 9900) closing at 0025, back at 0145 re-tune. Also Egyptian Radio in AA t 2100 on 12050. (Brossell, WI)

EL SALVADOR—Radio Imperial, **17835** in SS at 0003 with religious vocals, preaching, several IDs. (D'Angelo, PA)

ENGLAND—Adventist World Radio, **15140** in FF at 2030. (Charlton, ON) British Forces Broadcasting Service, **6135** at 0315 with talk by Tony Blair. (Linonis, PA)

EQUATORIAL GUINEA—Radio Africa, **15185** with religious program at 2133. (Charlton, ON)

ETHIOPIA—Radio Ethiopia (p) **9560** at 1315 with vocals in listed Afar, apparent news at 1320. (Strawman, IA) Radio Fana (p), **6210** at 0317 with music, woman annr. Missed the sign on so ID is presumed. (Montgomery, PA)

FINLAND—Radio Finland, **17660** in Finnish at 1330 with presumed news. (Linonis, PA) **17670** with live sports coverage in Finnish at 1735. (Brossell, WI)

FRANCE—RFI, **9550** in FF at 0400. (Barton, AZ) **11890** via Japan with news in FF at 1101. (DeGennaro, NY) **15160** with EE news and features from 1600 to 1700 on **11615**, **17605**, and **17850**. (Alexander, PA) 17605 at 1645. (Wood, TN)

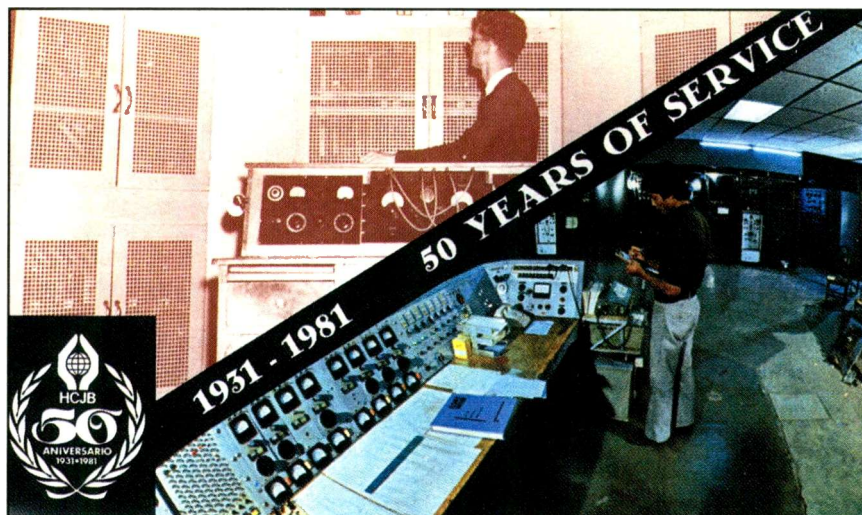
FRENCH GUIANA—RFI, **17860** in FF to abrupt close at 1400. (Barton, AZ) RFI relay, **11955** at 2059 with address and "RFI can be heard all over the world via shortwave—click on our website www.rfi.fr—for frequencies." (Brossell, WI) 11995 with FF to Africa at 2015. (Linonis, PA)

GABON—Africa No. One, **9580** in FF at 2237. (Charlton, ON) 17630 with FF discussion at 1048. (DeGennaro, NY)

GERMANY—Bayerischer Rundfunk, **6085** heard at 2123 with two-man discussion in GG. (DeGennaro, NY) Deutsche Welle, via



This VOA QSL showing work being done on an antenna system confirmed George Glotzbach's reception of RFE/RL!



HCJB celebrated its 50th anniversary 22 years ago! (Thanks Brian Rogers)

Vladivostok, Russia, **9545** in GG at 2353. (Moser, PA) **9900** via Russia with GG news to East Asia at 1200. (DeGennaro, NY) 11695 with Arabic service at 2111. Also **13640** (t) at 1424. (Wood, TN) 17860 at 2313 with comments and interviews. (MacKenzie, CA) Universal Life, **9435** in EE at 0105. (Charlton, ON)

GREECE—Voice of Greece, **7200** about Venus and when it is visible. (Charlton, ON) **12105** with news at 1839. (Miller, WA) **15630** with Greek music at 2009. (DeGennaro, NY)

GUAM—KTWR, **9500** in CC at 1225. (Northrup, MO) **15330** with EE religious talk at 1511. (Charlton, ON)

GUATEMALA—Radio K'ekchi, San Cristobal, **4845** with local Quechua music heard at 1424. (Miller, WA) Radio Cultural Coatan, **4780** at 0225 with SS anmts, local rancho music, ID at 0231 and off at 0233. (Alexander, PA)

GUYANA—GBC (t) **3291.2** at 0400 but too weak to catch any details. Also noted at 0925. (Alexander, PA)

HAWAII—KWHR, **9930** at 1035 in CC. (DeGennaro, NY) **17510** at 0136 with EE religious program. (Montgomery PA) AFN—Pearl Harbor, **6350 USB** in EE at 1039. (Jeffery, NY)

HONDURAS—Radio Misiones Int'l./HRMI, **5010** with SS and local music at 1048. (Miller, WA) La Voz Evangelica, **4819v** at 0300 in SS. (Linonis, PA)

HUNGARY—Radio Budapest, on **9835** heard at 0206 and 11885 in HH at 2230. (Charlton, ON)

INDIA—All India Radio, Port Blair, **4760** at 1345 in unidentified language. (Miller,

WA) **9445** at 2138. (Charlton, ON) **9690** at 1335. (Barton, AZ) **11620** with news at 2100. (Brossell, WI)

INDONESIA—Radio Republik Indonesia, Cimanggis-Java, **9680** in II at 1501. (Miller, WA) RRI Sulawesi, **4753.4** with long II talk by woman at 1140. (Barton, AZ) Voice of Indonesia, **9520** in CC at 1039. (Jeffery, NY) **11785** at 2020 with western or western-influenced pops. Woman asking for reports at 2028. (Wood, TN)

IRAN—VOIRI, 9705 with Koran prayers at 0212. (Miller, WA) 9655 in SS at 0051 and **11710** with apparent news at 2240. (DeGennaro, NY) **11695** in AA at 2009. (Charlton, ON) 11710 in AA at 2223. (Brossell, WI) **11775** in EE at 1532. Dueling with Gene Scott/Caribbean Beacon. (Barton, AZ)

IRELAND—RTV Eireann, **6155** via England at 0147. **13640** (via Canada—gld) at 1834 and **15585** (via England—gld) at 0147. (Charlton, ON)

ISRAEL—Kol Israel, **9453** at 0403 with news, weather, "Reshet Bet" ID and into FF at 0415. (Barton, AZ) **11585** in HH at 2239; **11605** in EE at 2001 and **15640** in HH at 2116. (Charlton, ON) **17535** in HH at 1929. (DeGennaro, NY) **17545** coming on in FF at 1526. (Barton, AZ) **17585** with news in HH at 0901 and **17600** in EE at 0415. (Miller, WA) Galei Zahel, **6973** in HH with U.S. pops at 0200. (Linonis, PA)

ITALY—RAI, **6110** in II at 0200. (Linonis, PA) (via Ascension—gld) **9475** at 1935 and **9675** at 0104. (Charlton, ON) **9840** at 2247. (DeGennaro, NY) **11800** in II at 0250 with classical vocal music past 0300. //9675. (MacKenzie, CA) 11880 at 2044 with ID and sign off. (Brossell, WI) **11895** at 2213 with international news in EE. (DeGennaro, NY) **21520** in unid. language heard at 1830. (Paradis, ME)

JAPAN—Radio Japan/NHK, **6120** via Canada at 1121 with phone calls to people who had sent reception reports. (DeGennaro, NY) **6145** via Canada at 0000. (Moser, PA) **9695**

at 1150. (Barton, AZ) **17825** in JJ at 2205. //11680, **11895** (Fr. Guiana) and **11910** (Ascension). 17825 in JJ at 2205, //11895 (Fr. Guiana) and **15220** (Ascension). Also **21670** at 2154 to closing at 2159. (MacKenzie, CA) **21600** in JJ at 1754. (Brossell, WI) Radio Tampa, **3925** in JJ/EE at 1200. (Barton, AZ)

JORDAN—Radio Jordan, **11690** heard at 1500 with news, discussion, music, more news, "Radio Jordan, 96.3 FM" at 1623. (Barton, AZ)

KUWAIT—Radio Kuwait, **9855** in AA at 2210. (DeGennaro, NY) **11675** in AA at 0235. (MacKenzie, CA) **11990** in EE at 1801. (Burrow, WA) **13620** in AA at 1415. (Wood, TN) **15495//15505** in AA at 2110. (Charlton, ON) **15505** at 0400. (Barton, AZ)

LITHUANIA—Radio Vilnius, **9875** at 2330 with program preview, news. (Barton, AZ) 2252 with ID "This is Radio Vilnius, Lithuania" to 2300 opening.

LIBYA—Radio Jamahiriya, **11635//11715** (via France—gld) in AA at 1946. Also **15205** (France—gld) and **15435** in AA at 1735. (Charlton, ON) 2105. (DeGennaro, NY)

MADAGASCAR—Radio Voice of Hope, **12060//15320** in unid. language at 0439, music, and then talk. (Barton, AZ)

MALAYSIA—Radio Malaysia, **7295** with dedications and "Radio 4" ID monitored at 1639. (Barton, AZ)

MALI—RTV Malienne, **4835** at 2345 with lively highlife vocals and FF talk. ID and s/off anmts at 0001 and marching band national anthem. (D'Angelo, PA) **5995** at 2219. (DeGennaro, NY)

MAURITANIA—Radio Mauritanie, **4875** with news in AA at 2301. (DeGennaro, NY) (You mean 4845?—Gld)

MEXICO—Radio Educacion, **6185** with SS music at 0457. (Miller, WA)

MOLDOVA—Voice of Russia relay, **9665** with news at 0205. (DeGennaro, NY) **11750** in RR at 0220. (Brossell, WI)

MONGOLIA—Voice of Mongolia, **12015** at 1509 with "This is the Voice of



Radio Australia's oversize full color cards are always welcome in the mailbox. Brian Rogers got this one, featuring the scarlet-crested parakeet.



Slovak Radio sent this neat QSL to Bob Charlton, Ontario.

Mongolia" by woman and again at 1516. News items and music interludes. (Wood, TN)

MOROCCO—RTV Marocaine, **7135** in AA at 2344 to 0000 close. (D'Angelo, PA) **7185** (tent) at 0235 in AA with music, news at 0245, schedule at 0259 and off. (Barton, AZ) **11920** in AA at 0006. (Moser, PA) **15335** (p) with Mideast music at 1450. (Wood, TN) **15345** with AA talk at 1858. (DeGennaro, NY) 2108. (Miller, WA) VOA Relay, **7255** at 0219, **15240** at 1814 and **15410** at 1815. (Charlton, ON)

NETHERLANDS—Radio Netherlands, **9895/11655** on health care at 1926. (Moser, PA) **13700** with news in DD at 2132. (DeGennaro, NY)

NETHERLANDS ANTILLES—RNI relay, **6165** at 2330. (Moser, PA) **21590** at 1900. (Linonis, PA) 1930. (Wood, TN)

NEW ZEALAND—RNZI, **9885** at 1035 with talk about communal life in NZ during the '60s. (DeGennaro, NY) **11725** at 1829. Also **17675** at 0419. (Miller, WA)

NIGERIA—Voice of Nigeria, **7255** at 2245 in presumed Swahili. (Charlton, ON)

15120 at 2255 with news, anthem, tone and off. (Miller, WA)

NORTH KOREA—Voice of Korea, **11335** at 1906 with DRPK news. (Barton, AZ) **11710** at 1240 in SS. Anthem at 1249, off at 1250, sign on again at 1259 with IS, three IDs, anthem, and news. (Brossell, WI)

NORWAY—Norwegian Radio, **11635** heard at 0017 in NN. (Moser, PA) **9925** in NN at 2220. (DeGennaro, NY) **15705** in NN at 1816. (Charlton, ON) 17505 in NN at 1909. (Miller, WA)

OMAN—BBC relay, **9510** at 1750 with soccer results. (Barton, AZ)

PAKISTAN—Azad Kashmir Radio (p) **4790** at 0107 but quite weak and subject to swoosher interference. (Strawman, IA)

PARAGUAY—Radio Nacional, **9737** at 0115 with what sounded like a Security Council meeting in SS/EE. (Linonis, PA)

PAPUA NEW GUINEA—NBC, **4890** at 1000 in EE/Pidgin. Problems with rebels in several areas. (Linonis, PA) 1031. (Miller, WA) Radio Sandaun, Vanaimo, **3205** in Pidgin at 1139. (Miller, WA) Radio West New Britain, Kimbe, in Pidgin with local singers at 1142 on 3235. (Miller, WA) Radio Gulf, Kerema, **3245** with local music in Pidgin at 1148. (Miller, WA) Radio Manus, Lorengau, **3315** at 1213 with pops. (Miller, WA)

PERU—Radio Lucan, **5678** at 0200 with SS talks and music. Off abruptly at 0245. (Alexander, PA) Radio Cultural Amuata, Huanta, **4960** with SS and QQ music at 1012. (DeGennaro, NY) Voz del Campesino, **6956.6** at 0233 with OA music. (Montgomery, PA) Radio Macedonia (p) **4890** at 0122 with flute music and SS talk. (Strawman, IA) Radio del Pacifico, **4975** at 1000 with SS and QQ. Vocals, maybe religious talks. (DeGennaro, NY) Radio Atlantico, **4790** at 0948 with SS talks and music. (DeGennaro, NY) Radio Huanta **2000** (p) at 0140 but very weak with only pieces of talk and music. (Strawman, IA)

PHILIPPINES—Radio Pilipinas, **17720** in partial EE at 1834, //15190. (MacKenzie, CA) Radio Veritas Asia, **9520** at 1031 in CC with hymns in EE. (DeGennaro, NY) 1122 in CC. (Jeffery, NY) **9670** in JJ. (Northrup, MO) VOA relay, **11825** at 1302 in CC. Also **17820** at 2240. (Brossell, WI) 17820 at 2346. (Charlton, ON)

PORTUGAL—RDP, **9715/11655** in PP at 0040, **11675** in PP at 2241 and **15540** in PP at 2111. (Charlton, ON) **11945** in PP with futbol at 2013. Also **17575** with live futbol at 2020. (DeGennaro, NY) **15140** in PP at 1155. (Montgomery, PA) **15295** in PP at 0150 with flute and chimes IS, "Thank you very much." PP ID and into PP pops. (Linonis, PA) 21540 with sports event at 1931. (Wood, TN)

PUERTO RICO—AFN, **6458.5** at 1011. (DeGennaro, NY) 0138 with live sports. (Charlton, ON)

ROMANIA—Radio Romania Int'l, **9550** at 0211, **9570** at 2322 and **11940** heard at 0215. (Charlton, ON) 9570 at 2355 with mailing address IS and off. (Moser, PA) **9690** at

1934. **11970** at 2103 with schedule. (DeGennaro, NY)

RUSSIA—Voice of Russia, **9550** at 0211 and **15290** in RR at 1810. (Charlton, ON) Armavir, **11675** at 1844 with talk on weather and climate in Russia. (DeGennaro, NY) **12060** in SS at 0003. (Moser, PA) **15455** with mailbag show at 2026. (Jeffery, NY) Radio Rossii, **9845** in RR at 2017. (DeGennaro, NY) **11980** at 0238. (Brossell, WI) **12045** at 1022 with RR ID at 1032. (D'Angelo, PA) **13705** at 1435 with two men in RR. (Wood, TN)

RWANDA—DW relay, **15275** at 0155 in GG. (Linonis, PA) **17765** in EE at 2130 and **17860** in GG at 1905. (Charlton, ON) **17800** in unid. African language at 1325. (Brossell, WI)

SAO TOME—VOA relay, **7290** at 0540 with religious program, editorial, address and ID. (Wood, TN) **11975** with news at 2100. (Brossell, WI)

SAUDI ARABIA—BSKSA, **11820** in AA at 2040. (Brossell, WI) **11915** in AA at 2221. (DeGennaro, NY) **15230** in AA at 2047 and **15315/15435** in AA at 1537. (Charlton, ON) **21600** in FF at 1500. (Paradis, ME)

SERBIA/MONTENEGRO—Radio Yugoslavia, **7115** in EE at 0111 and **7130** at 0210. Also **9580** at 0019. (Charlton, ON)

SINGAPORE—BBC relay, **9740** with sports excerpts at 1025. (DeGennaro, NY) Mediacorp/Radio Singapore, **6150** with news at 1243. (Miller, WA)

SLOVAKIA—Radio Slovakia Int'l, **5930** at 0113. (Moser, PA) **9440** with ID at 0113. (Charlton, ON)

SOLOMON ISLANDS—SIBC, **5020** at 0924 with local news and island music. (D'Angelo, PA) With BBC programming at 1037. (Miller, WA)

SOUTH AFRICA—BBC relay, **3255** at 0430 with ID, rooster crow, sports talk and into news about Liberia. (Montgomery, PA) Adventist World Radio, **15295** at 2007. Talk about forests and address in Nairobi. (Charlton, ON) Channel Africa **15265** at 1814 and off at 1828. Also **17725** in FF at 1533 and **17870** in FF at 1903. (Charlton, ON)

SOUTH KOREA—Radio Korea Int'l, **9560** (via Canada—gld) at 0155 after VOA sign off. IS, ID, and into EE. (Linonis, PA) **9650** via Canada at 1135. (DeGennaro, NY) via Canada, **11715** with news in SS at 1011. (DeGennaro, NY)

SPAIN—Radio Exterior de Espana, **9535** in SS at 0110. **15110** with sports news in SS at 2231. And **17560** in AA at 2015, including EE ID. (DeGennaro, NY) **15160** in SS at 0145. (Linonis, PA) **17850** in SS at 2138. (Charlton, ON) **21700** in SS at 1730. (Paradis, ME)

SRI LANKA—SLBC, **4869** with music in EE at 1227. (Miller, WA) **9770** with vocals at 1217. (Strawman, IA) **17745** at 0025 sign on with open carrier, drums, group song, 5 + 1 time pips at bottom of the hour f/by woman anncr and ID, opening anmts in EE. (D'Angelo, PA)

SWEDEN—Radio Sweden, **9495** with news at 0204. (Miller, WA) **13580** in Swedish at 2117. (DeGennaro, NY)

SWITZERLAND—Swiss Radio Int'l, **9885** at 2332. (Moser, PA) **11815** at 2000 with "Swiss Info." (Paradis, ME) **11660** in GG at 2251 and **17660** in AA at 1903. Also **13660//15485//17660** at 1931. (Charlton, ON) **11905** via French Guiana with interview on economics at 2217. Also **15220** via Germany in GG at 2044. (DeGennaro, NY) **15510** at 1750 ending news, giving website, e-mail and snail mail addresses. (Brossell, WI)

TAIWAN—Radio Taipei Int'l, **5950** via WYFR at 0200. (DeGennaro, NY) **11605** (direct) in CC at 1250. (Brossell, WI) **11915** at 1230 possible VV to SE Asia. (Barton, AZ) **15600** via WYFR with mailbag at 2230. (Watts, KY)

TAJIKISTAN—Voice of Russia relay, **11500** with talks and music in presumed Hindi. (Brossell, WI) **11510** at 0022 in SS via Dushambe. (Strawman, IA)

THAILAND—Radio Thailand, **6030** with Thai news at 1238. (Miller, WA) **7260** at 1100 with gongs, IS, ID and into VV. At 1115 another EE ID and into Khmer. (D'Angelo, PA) **15395** at 0026. (Charlton, ON) VOA relay, **11785** at 1258 translating EE phrases into CC. VOA IS at 1300. (Brossell, WI)

TOGO—Radio Togo, **5046.7** at 2330 with continuous EE lyric pops till man in F. Off with anthem just after 0000. (D'Angelo, PA) 2253 with FF news items. ID presumed. (Montgomery, PA)

TUNISIA—RTT Tunisienne, **7190** with AA talks and music, ID at 2300, then news headlines and off at 2301. (D'Angelo, PA) **9720** in AA at 1945. (DeGennaro, NY) **12005** in AA at 0250. (Brossell, WI)

TURKEY—Voice of Turkey, **9460** in TT at 2000. (DeGennaro, NY) **9890** in EE at 1934. (Charlton, ON) **11665** in TT at 0345 with ID 0347 and off. Also **11960** at 2220 with EE talk. ID at 2228. (MacKenzie, CA) **11885** in TT at 0235. (Brossell, WI) **12000** at 2200 with IS, ID, EE features. (Paradis, ME) **17790** at 1530. (Wood, TN)

UKRAINE—Radio Ukraine Int'l, **7375** in EE at 0141. (Charlton, ON) **12040** in possible RR at 2327. (Miller, WA)

UNITED ARAB EMIRATES—UAE Radio, **11905** with ID, news, music, letters from 2130. (Paradis, ME) **13675** at 0320 to 0346 close. EE from 0030. // **12005** buried. (D'Angelo, PA) **15395** with news in AA at 1902. (DeGennaro, NY) **21605** at 1339. (Wood, TN)

UZBEKISTAN—Radio Tashkent **7205** heard at 0210 in presumed Uzbek with U.S. R&B type things, woman annr. (Linonis, PA) **11905** at 2130 with news, comment, local music, ID. Covered by Switzerland at 2155. (Alexander, PA)

VATICAN—Vatican Radio, **7305//9605** at 0250. (Moser, PA) **9605** with news in SS at 0159. (Miller, WA) **9645** at 2006. (DeGennaro, NY) **11625** at 2007 and **15235** at 1548. (Charlton, ON)

VIETNAM—Voice of Vietnam, **6175** via Canada at 0340. (MacKenzie, CA) **13740** in VV at 1749. (Miller, WA)

ZAMBIA—Christian Voice, **6065** with religious talk at 0310. (Charlton, ON)

And that does it for this month. Sound the trumpets and bring on a giant round of applause for the following who provided the goodies: Brian Alexander, Mechanicsburg, PA; Rick Barton, Phoenix, AZ; Jack Linonis, Hermitage, PA; Bob Charlton, Windsor, ON; Robert Montgomery, Parkville, MD; Rich D'Angelo, Wyomissing, PA; Ciro DeGennaro, Flure Bush, NY; Robert

Brossell, Pewaukee, WI; Bill Moser, New Cumberland, PA; Ray Paradis, Pittsfield, ME; Stewart MacKenzie, Huntington Beach, CA; Mike Miller, Issaquah, WA; Joe Wood, Gray, TN; David Jeffery, Niagara Falls, NY; Mark Northrup, Gladstone, MO; Jerry Strawman, Des Moines, IA; Bruce R. Burrow, Snoqualmie, WA and R.C. Watts, Louisville, KY.

Thanks to each one of you and, until next month, good listening! ■

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RADIO EMERGENCY ASSOCIATED COMMUNICATIONS TEAMS



Lakeland's Sun 'n' Fun

This is the first year that the Sun 'n' Fun fly-in at Lakeland Linder Regional Airport in Lakeland, Florida, didn't begin and end on a weekend, but started on Wednesday and ran through the following Tuesday. This was, of course, the second Sun 'n' Fun following the WTC attacks, and attendance was still a little lower than in previous years, not quite reaching the reported 645,000 at the 2001 fly-in. But of note were two related things occurring at Lakeland.

The first was the unveiling of a postage stamp the day before the opening of the festivities. Why would that be of interest to flying? It was the stamp honoring the flights of Orville and Wilbur Wright on December 17, 1903. The 37-cent stamp, which went on sale on May 22, is a simple design showing the "Wright Flyer" against a blue sky over the dunes at Kill Devil Hills, North Carolina. The bottom of the stamp reads "FIRST FLIGHT • WRIGHT BROTHERS • 1903."

Now this doesn't make much sense in a communications magazine, except that it also coincided with the unveiling of a reproduction of the Wright brothers' craft. On December 17 of this year, at the exact hour and minute—10:35 am EST—this reproduction aircraft will be flown at Kill Devil Hill, weather permitting.

The reproduction aircraft was located in a very large and air-conditioned tent next to the Lakeland Flight Service Station. I had seen the original flyer on numerous occasions at the Smithsonian in DC, but always at a distance. The detail is exquisite. It is copied down to a reproduction of the four-cylinder, 12-horsepower (that's right, 12-horsepower!) engine. The 40-foot wings are covered with muslin, like the original. As on the original, the steering is a push-pull stick controlling the pitch of the aircraft (climb/descent) and shifting the hips left and right which controls the yaw, or the turning of the aircraft left and right. On the wall in front of the aircraft is a countdown clock showing the time left until the flight.

And for those who want to try their hands (and hips), off the left wing are large screen Microsoft Flight Simulators. No small 15- or 17-inch screens here, but large 60-inch projection screens show the view of the North Carolina site of the Wright Flyer. The "controls" are as the original, lying down with the pitch stick in your hand and your hips controlling the yaw.

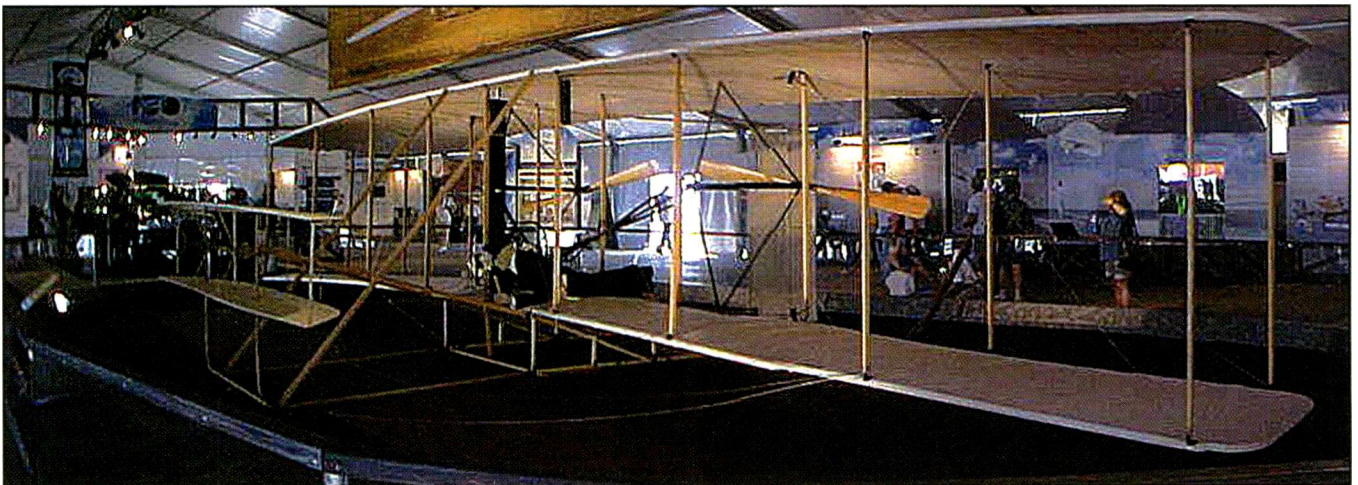
Though I never tried it due to the number of people there, I did see a number of people crash the plane in trees or on rocks. And many of these are real pilots. In fact, the young lady shown in the photo of the simulator is Susan Meyer of New Jersey, who is currently a student at the Pan American Flight Academy in Fort Pierce, Florida, where she has completed her single-engine, commercial, and instrument licenses and is currently working on, I believe, her multi-engine ticket.

If you get a chance to see the flyer on display, please go. It is well worth the drive there, and you can get much closer to it than to the original in DC.

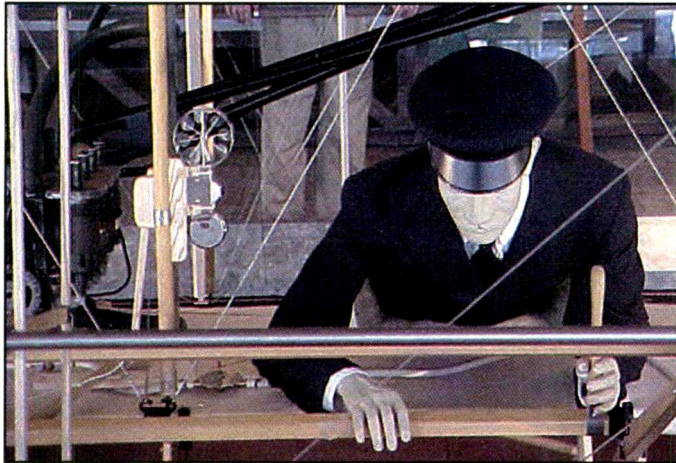
SCATANA: The Plan In An Emergency

Many of us here at *Pop'Comm* are under additional "pressure," so to speak, to have our columns as up-to-date and current as possible. As such, I have a tendency to give Harold extra ulcers as I get my column in at the very last second. A few months ago my column was written after the destruction of the shuttle *Columbia*. It was supposed to be a continuation of the various military demo teams, particularly the USAF Thunderbirds. But I was beaten to the punch.

This month is no exception. This column was originally written on the brink of the new war in Iraq. As I finished this column President Bush was preparing to address the nation, American diplomats had been told to leave the Middle East, and the various news personnel were preparing to "out-scoop" the competition. And my family was, of course, on edge as my son-



A look at the Wright Flyer reproduction that will be flying in December.



Here's the position of Orville Wright in the pilot's "seat."

The view of the flight simulator screen when one is "piloting" the Wright Flyer simulator. →



Susan Myer taking the simulator's controls. ↓



in-law was being shipped out from his base in Germany in mid-April for Iraq. Today he is in Baghdad, and obviously my family and I are closely watching the news, as it seems every day there is a new U.S. casualty. And it's especially hard on my daughter as her husband left for Iraq just a few days after their first wedding anniversary.

Though the majority of our military has now returned from overseas, those who remain are, obviously, on high alert. At any time our aviation structure here in the United States may, for national security, be shutdown, much like what happened in the days following the September 11th attacks. That shutdown is called SCATANA, an acronym for Security Control of Air Traffic and Navigation Aids. The SCATANA plan was formatted in the 1960s and, until September 11, 2001, had never been implemented. There was, however, a partial activation of SCATANA procedures when there was a false alarm at NORAD Headquarters in 1979.

When SCATANA is implemented the entire aviation system in the United States is *completely* shut down. Nothing flies without the express permission of the U.S. military. Each of the air route traffic control centers (ARTCCs or Centers) has military liaison personnel assigned to the premises. In the case of SCATANA, the only aircraft flying are military planes in the direct protection of our nation. All other aircraft are grounded. They don't fly. Period. It doesn't matter if they are local law-enforcement, news gathering, ambulance flights, local helicopters, or cross-country business jets.

The last time SCATANA procedures were in effect (actually the only time) all civilian aviation frequencies were eerily silent. Centers, approaches, towers, and flight service stations were lifeless. The few transmissions were either in control of military aircraft or to the few unwitting civilian pilots. Readers of my column may remember the time immediately following September 11 when I reported on the ATC system in Alaska, where I was on temporary duty. A normal day at Northway Alaska FSS (ORT) consisted of talking to upwards of 50 to 75 aircraft. Then the frequencies went quiet.

In Alaska there are pilots who would be on a two-week flight plan and would have absolutely no way to communicate with the outside world, with the exception, perhaps, of amateur radio. Cell phones don't work in the north boonies of Alaska. I know of no satellite phones in use there either. (Someone please correct me if I'm wrong). The only way a pilot could communicate would be by taking off and getting up to altitude. In the few days that

SCATANA was in effect the few times I talked to a pilot was to tell him he couldn't fly. Some hunters were clueless as to what happened in New York, Washington DC, and Pennsylvania. Those who did want to fly couldn't. Many were told: "If you fly, you may die!" Pilots flying fighters had orders to shoot to kill.

Just a week after the attacks, while we were slowly getting our ATC system back up and running, I was in a restaurant in Tok, Alaska, just 100 miles from Yukon, Canada. I was talking to a couple from Minnesota who had flown up on a commercial flight for some hunting north of Fairbanks. They had no clue as to what had happened while out in the wilds. As soon as they heard it they packed up their belongings, went to a local used car dealership, and drove back to Minnesota. They informed me that they would probably never fly, commercially or otherwise, again.

I hope and pray that we never have to implement SCATANA procedures again.

Where To Listen

For now you can hear the goings-on high above. From CAP flights to military aircraft on other missions, here are a few confirmed frequencies to check out on your scanner: 252.0, 262.4, 271.0, 276.4, 276.65, 279.4, 282.6, 285.9, 288.4, 295.8, 298.3, 300.125, 320.9, 324.0, 364.2, 364.8, 387.0 and 397.25. Of course, this is by no means anything close to a complete list, but jot them down and be sure to keep searching the mil aviation band from 225 to 400 MHz.

Keep on monitoring. Keep on praying. And please keep on giving blood. ■

NEW/DELETED/CHANGED FREQUENCIES

NEW			
AL			
Jasper, Walker County-Bevill Airfield (JFX)			
AWOS-3	119.225		
Ozark, Fort Rucker (OZR)			
CTAF	135.2		
AK			
Big Lake, Beaver Lake Seaplane Base (D71)			
UNICOM	122.8		
Eagle River, D&C Fire Lake Flying Club Seaplane Base (D72)			
UNICOM	122.8		
Kivalina, Kivalina Airport			
UNICOM	122.8		
Wasilla, Blodget Lake Seaplane Base (D75)			
CTAF	122.9		
CA			
El Monte Airport			
UNICOM	122.95		
Inyokern (IYK)			
Edwards AFB Apch (Callsign Joshua)	133.65/348.7		
Stockton, Stockton Metropolitan (SCK)			
NG Ops	139.4/356.9		
NORCAL Apch	123.85/124.8/263.15/278.3/363.2		
CT			
Bridgeport (BDR)			
Boston Flight Watch	122.0		
DE			
Wilmington, New Castle County (ILG)			
CD 119.95			
FL			
Bushnell, Flying W Air ranch Airport (9FL1)			
UNICOM	122.8		
Key West International Airport (EYW)			
ATIS	119.675		
Pensacola, Saufley Field NOLF Airport (NUN)			
CTAF	126.2		
Tampa, Vandenberg Airport (VDF)			
ILS Rwy 23 (I-VDF)	111.35		
IN			
Elkhart Municipal (EKM)			
AWOS-3	124.475		
Greencastle, Putnam County (4I7)			
AWOS-3	118.125		
Richmond Municipal (RID)			
AWOS-3	121.225		
KS			
Moundridge Municipal (47K)			
Kansas City ARTCC Apch	134.9/363.2		
LA			
Galliano, South LaFourche Airport (L49)			
UNICOM/CTAF	123.0		
ME			
Swans Island, Banks Airport (ME5)			
CTAF	122.9		
MN			
Preston, Fillmore County (FKA)			
AWOS-3	118.925		
MS			
Bay St. Louis, Stennis International Airport (HSA)			
ILS Rwy 18 (I-HAS)	110.35		
MO			
Ava, Bill Martin Memorial Airport			
UNICOM	122.7		
Harrisonville, Lawrence Smith Memorial Airport (LRY)			
AWOS-3	119.975		
Lebanon, Floyd W Jones Airport (LBO)			
AWOS-3	118.975		
Malden Municipal (MAW)			
AWOS-3	119.825		
Mexico Memorial (MYJ)			
AWOS-3		120.575	
Moberly, Omar N Bradley (MBY)			
AWOS-3		120.0225	
Piedmont Municipal (PYN)			
AWOS-3		118.475	
Sullivan Regional Airport (UUU)			
AWOS-3		119.375	
Warsaw Municipal Airport (RAW)			
AWOS-3		118.325	
MT			
Ferndale, River Bend Ranch Heliport (2MT4)			
UNICOM		122.8	
NE			
Kimball Municipal/Robert E Arraj Field (IBM)			
AWOS-3		118.075	
Nebraska City Municipal (AFK)			
AWOS-3		128.325	
Omaha, Offutt AFB (OFF)			
GC was 275.8, now 289.4			
NV			
Elko, Elko Regional (EKO)			
Salt Lake ARTCC Apch		132.25/338.35	
NY			
Arcade, Tri-County Airport (D23)			
CTAF		123.0	
Oneonta, Oneonta Municipal (N66)			
AWOS-3		119.575	
NC			
Holly Ridge, Camp Davis MCOLF (14NC)			
Cherry Point Apch		119.35	
ND			
Grand Forks AFB (RDR)			
ATIS		was 274.675, now 273.45	
OH			
Bellefontaine, Bellefontaine Regional (4F5)			
Dayton Apch		127.65	
Cleveland Approach (CLE)			
Port Clinton, Carl R. Keller Field (PCW)			
Sandusky, Griffing Sandusky (SKY)			
Cleveland Apch		135.875/360.6	
Cleveland Hopkins International Airport (CLE)			
LC 124.5			
OK			
Medford Municipal (O53)			
Vance Apch		118.075/326.2	
OR			
Roseburg, Napier Ranch Airport (OG40)			
UNICOM		122.725	
The Dalles, Mid-Colombia Fire & Rescue Heliport (OG43)			
UNICOM		123.0	
PA			
Huntingdon, Hilling International Airport (PN64)			
UNICOM		122.75	
SD			
Vermillion, Harold Davidson Field (VMR)			
Sioux City Apch		124.6/325.8	
TN			
Memphis, Memphis Police Department Heliport (27TN)			
Unicom		123.075	
TX			
Grand Prairie Municipal (GPM)			
ASOS/AWOS-3		118.475	
Midlothian Waxahachie, Mid-Way Regional Airport (JWY)			
AWOS-3		119.575	
Sanger, Flying C Airport (TA87)			
CTAF		122.9	
UT			
Kanab Municipal (KNB)			
AWOS-3		133.175	

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Panguitch Municipal (U55) AWOS-3	118.275	CHANGED	
VA Charlottesville-Albemarle (CHO) ASOS	118.425	AL/FL Cairns AAF Apch Bonifay (FL), Tri-County (IJ0) Marianna (FL) Municipal (MAI) Ozark (AL), Fort Rucker (OZR) Cairns Apch	was 291.65, now 270.35
Falls Church (2D2) Washington FSS RCO	122.6	CA Dunsmuir Municipal-Mott Airport (106) UNICOM/CTAF	was 122.8, now 122.9
Williamsburg, Jamestown Airport (JGG) AWOS/ASOS	120.675	El Centro NAF (NJK) ATIS	was 271.4, now 269.275
WV Buckhannon, Upshur County Regional (W22) AWOS-3	119.975	Oakland ARTCC (ZOA) Angeles Camp Low Fresno Low	was 319.9, now 322.55 was 343.8, now 257.2
WI Appleton, Outagamie County Regional Airport (ATW) AWOS-3	127.15	FL Homestead ARB (HST) CD was 39.85, now 275.8 Jacksonville Cecil Field (VQQ) Herlong (HEG) Jacksonville Apch	was 121.025/123.8/351.8/377.05/ 379.9, now 124.4/284.6
WY Saratoga, Shively Field (SAA) ASOS/AWOS	118.175	Milton, Whiting Field NAS North (NSE) ATIS GC was 341.0, now 251.15 LC was 344.2, now 306.925 PMSV	was 284.2, now 290.325 was 317.0, now 316.95
DELETED		Milton, Whiting Field NAS South (NDZ) ATIS was 281.2, now 273.575 LC was 349.8, now 348.675 PMSV	was 317.0, now 316.95
AL Ozark, Fort Rucker, Hanchey AHP (HEY) Cairns Apch	125.4/327.125	Valparaiso/Eglin AFB (VPS) Pensacola Apch	was 124.05/132.1/281.45/360.6, now 119.0/269.375
AK Port Clarence (KPC) Nome A/G	2182kHz	GA Athens (AHN) VORTAC	was 109.6, now 112.7
AZ Tucson, Cascabel Air Park Airport CTAF	122.9	ID Burley Municipal (BYI) UNICOM/CTAF	was 122.95, now 122.9
AR England, Bredlow Farm Airport (17AR) CTAF	122.9	Idaho Falls VOR (IDA) was 109.0, now 113.85 Twin Falls Apch (TWF) Burley Municipal (BYI) Jerome County (JER) Twin Falls, Joslin Field-Magic Valley Regional Airport (TWF) Twin Falls Apch	was 398.2, now 353.75
Jonesboro, Nolan Airport (4AR9) CTAF 122.9		IN Bloomington, Monroe County (BMG) LC was 121.2, now 125.05 Indianapolis ARTCC (ZID) Ultra High Peru (GUS) ATIS Grissom VORTAC	was 385.4, now 269.05 was 116.5, now 108.45 was 116.5, now 108.45
AZ Chandler Municipal (CHD) AWOS-3	407kHz	KS Wichita Apch McPherson (MPR) Newton City (EWK) Wichita Apch	was 325.8, now 306.2
CA Oakland ARTCC (ZOA) Tonopah NV Low	319.8	KY Hopkinsville/Fort Campbell AAF (HOP) GC was 261.25, now 266.8 LC was 241.2, now 278.8 RDR SFA PTD	was 277.5, now 307.025 was 130.65/356.4, now 122.95/230.1
KS Pratt, Pratt Industrial Airport (PTT) AWOS-3	118.725	Fort Knox/Godman AAF (FTK) GC	was 241.0, now 239.3
KY Fort Campbell/Hopkinsville, Campbell AAF (HOP) Radar	134.35	LA Alexandria Alexandria International (AEX)	
LA Rayne, Haynes Airstrip Airport (12LS) CTAF	122.9		
MS Meridian, Key Field (MEI) ASOS	126.475/279.575		
NE Aurora (AUH) NDB	278 kHz		
Crete (CEK) NDV	420 kHz		
NV Elko, Elko Regional (EKO) Reno AFSS RCO	122.6		
OH Bellefontaine Municipal (717) Dayton Apch	127.65		
WI Cornell Municipal Airport (2WN8) CTAF	122.8		

Esler Regional (ESF)		Greenwood, Robinson Field Airport	8IN2
Bunkie Municipal (2R6)		Montezuma, Garrard Airport	9IN6
Marksville Municipal (MKV)		Morgantown, Zupancic Field Airport	9IN7
Natchitoches Regional (IER)		Springport, The Last Resort Airport	7IN9
Winnfield (0R5)		IA	
Polk Apch	was 125.4, now 132.05	Keosauqua, Old Field Airport	27IA
New Orleans, NAS JRB/Alvin Callender Field (NBG)		Lemars, Plueger Airfield Airport	12IA
Baseops	was 384.25, now 379.15	Mason City, Harris Field Airport	73IA
MO		West Burlington, Ancam Antique Airfield Airport	19IA
Grain Valley (3GV)		KS	
Kansas City CD	was 124.25, now 121.3	Topeka, Colmery-O'Neil VAMC Heliport	14SN
NV		Winchester, Sanders Airport	85KS
Reno		ME	
Minden-Tahoe (MEV)		Berwick, Perrotti Sky Ranch Airfield Airport	09ME
Reno-Tahoe (MEV)		Brunswick, Mid Coast Hospital Heliport	ME42
Apch	was 325.8, now 279.55	Rockwood, Socatean Bay Airport	13ME
ATIS	was 277.2, now 363.0	Rumford, Dyer's Field Airport	23ME
OH		West Bath, Miara Heliport	ME65
Cleveland, Hopkins International Airport (CLE)		MA	
Gnd Metering	was 124.5, now 133.6	Fall River, Charlton Memorial Hospital Heliport	MA31
OR		Manchester-by-the-Sea, Crownhurst Heliport	34MA
Lakeview VOR (LKV)		North Adams, North Adams Regional Hospital Heliport	32MA
was 112.0, now 116.95		Rowley, Grandview Farm Heliport	60MA
RI		MI	
North Kingstown, Quonset State (OQU)		West Bloomfield, Cass Heliport	M159
Operations	was 49.7, now 38.95	MO	
was 244.1, now 252.4		Granby, Lynch Field	44MU
TN		Hawk Point, Monroe Field	2MU9
Clarksville, Fort Campbell		Neosho, Freeman Neosho Hospital Heliport	10MU
Clarksville, Outlaw Field (CKV)		MN	
Sabre Army (EOD)		Aitkin, Riverwood Healthcare Center Heliport	14MN
Apch	was 118.1/255.6, now 134.35/307.025	MT	
Sabre Army (EOD)		Augusta, Sun River Ranch Heliport	2MT6
LC	was 280.9, now 290.45	Ferndale, River Bend Ranch Heliport	2MT4
VA		Kalispell, Braidwater Farm Airport	2MT2
Newport News, Williamsburg International Airport (PHF)		NE	
LC was 280.1, now 257.9		Chadron, Chadron Community Hospital Heliport	60NE
Quantico, Quantico MCAF (NYG)		Grant, Hendricks Field Airport	27NE
ATIS	was 265.0, now 263.15	NH	
Richmond International (RIC)		Littleton, Littleton Hospital Heliport	NH92
Apch	was 319.8/371.1, now 288.75/282.375	Loudon, Harris Homestead Heliport	76NH
WA		Meredith, Bossey's Seaplane Base	16NH
Spokane, Fairchild AFB (SKA)		Pelham, Sean Heliport	NH93
ATIS	was 256.4, now 257.625	NJ	
NEW/CHANGED IDs AND CLOSED/ABANDONED AIRPORTS		Bridgewater Crossing Heliport	90NJ
NEW		Waterford, Breezy Acres Farm Heliport	JY30
AK		NY	
Big Lake, Beaver Lake Seaplane Base	D71	Niagara Falls, Mesmer Airport	NY49
Deadhorse, Badami Airport	AK78	Perth, Johnson Airport	NY50
Delta Junction, All West Airport	AK77	NC	
Eagle River, D&C Fire Lake Flying Club Seaplane Base	D72	Concord, Hendrick Motorsports Heliport	NC41
Marshall, Don Hunter SR Airport	3A5	Roxboro, Holeman Field Airport	NC40
Palmer, Grouse Ridge Airport	AK93	OR	
Wasilla, Blodget Lake Seaplane Base	D75	Glendale, Nace Family Airstrip Airport	OG41
Wasilla, Hart Lake Airport	AK79	Pendleton, Quail Field Airport	OG42
Wasilla, Lake Lucille Seaplane Base	4A3	Roseburg, Napier Ranch Airport	OG40
CO		The Dalles, Mid-Colombia Fire & Rescue Heliport	OG43
Calahan, Aero Bear Field Airport	CD23	PA	
CT		Burnt Cabins, Mills Brothers Airport	05PS
New London, Global Development Facility Heliport	20CT	Huntingdon, Hilling International Airport	PN64
FL		Lehighton, Motola's Helicopter Service Inc. Heliport	1PA8
Arcadia, Taylor Breeze Airport	09FL	Plum, Chero'kee Furko Heliport	PN61
Clermont, Kings Field Airport	21FL	West Homestead, Cherokee Island Castle Heliport	06PS
GA		SC	
Naylor, Christians Folly Airport	GE01	Johnsonville, Weaver Field Airport	SC94
IN		Sumter, Flying O Airport	00SC
Churubusco, Green Field Airport	9IN8	TN	
		Belvidere Airport	1TN3

Memphis, BHM Heliport	28TN	NE
Memphis, Memphis Police Department Heliport	27TN	Aurora (AUH) was Aurora Municipal, now Aurora Municipal-Al Potter Field
TX		
Canton, Rhines Roost Airport	91TA	ND
Celina Field Airport	TS40	Casselton (5N8)
Cresson, Chigger Field Airport	TE52	was Casselton Regional Airport, now Casselton Robert Miller Regional
Crowley, Allen Ponderosa Heliport	07XS	TX
Lone Oak, Reeder Airport	9XS7	Bandera (TE90)
Sanger, Flying C Airport	TA87	was Luigs, now Flying L Airport
Waco, Diamondaire Airport	XS74	Clarksville, Red River County Airport was 7F6, now LBR
VT		Midlothian Waxahachie, Mid-Way Regional Airport was 4T6, now JWY
Shelburne, Frogs End Airport	42VT	
Shoreham, Brisson Airport	37VT	
VA		CLOSED/ABANDONED
Woodstock, Shenandoah Airport	VG55	AK
WI		Livelock Airport (KLL)
Balsam Lake, Romeo Airstrip Airport	4WN5	Marshall Airport (MLL)
Land-O-Lakes, Simons Airfield Ultralight	1WN5	CA
Mountain, Johnson Island Seaplane Base	WS82	Carmel Valley, Vintage Airfield Airport (O62)
Shell Lake, Indianhead Medical Center Heliport	WS79	Eagleville, Eagleville Airport (A22)
CHANGED ID		El Cajon, Scripps Hospital East County Heliport (78CL)
AL		Los Angeles, West Valley Area Heliport (68L)
Guntersville (8A1)		Paso Robles, MacGillivray Airport (39CN)
was Guntersville Municipal, now Guntersville Municipal-Joe Starnes Field		FL
AZ		Arcadia, De Soto Aircraft Field Airport (23FL)
Chino Valley		Clermont, Johns Lake Seaplane Base (2FL3)
was Flying Circus Airport, now H&H Ranch Airstrip Airport		Fernandina Beach, Nassau Baptist Temple Field Airport (83FL)
Tucson, Cascabel Air Park Airport		Key West, Chalk's Key West Seaplane Base (61FD)
was 05A, now 74AZ		Kissimmee, East Lake Seaplane Base (83FD)
Wilcox (02AZ)		Ocala, Eagles Nest Inc. Heliport (25FL)
was Westchester Farm Airstrip, now Winchester Farm Airstrip		Panama City, Coastal Helicopter Charter Inc. Heliport (35FD)
AR		Panama City, Grand Lagoon Seaplane Base (4FD5)
Jonesboro, Nolan Airport		Panama City Beach, Yellow Whirley Bird Heliport (65FD)
was 69M, now 4AR9		Sarasota, Wallace I Heliport (0FD5)
CA		GA
Anaheim (CN43)		McDonough, Camfield Airport (GA36)
was RI AN Anaheim Helistop B/250, now Boeing Anaheim B/250		IL
FL		Ava, Reeds Creek Landing Airport (IL54)
Bushnell (9FL1)		Chicago, Merrill C Meigs (CGX)
was Birdland, now Flying W Air ranch		Morris, Nelson Airport (53IS)
GA		Nappanee, Rummel Aeroplane Farm Airport (II24)
Vidalia (VDI)		Wauconda, Oak Knoll Farm Airport (7LL0)
was Vidalia Municipal, now Vidalia Regional		KY
ID		Cadiz, Lowe Airport (20KY)
McCall (MYL)		LA
was McCall Airport, now McCall Municipal Airport		Grand Chenier, Nunez Airport (LA12)
IL		ME
Lincoln (37IL)		Brunswick, Memorial Hospital Heliport (ME07)
was Lincoln-Minder Airport, now Minder Airport		MI
LA		Auburn, Pear Grove Airport (9MI2)
Rayne, Haynes Airstrip Airport		Flushing, Minarik Airport (MI19)
was L81, now 12LS		Springport, Riske Airport (MI57)
ME		MN
Swans Island, Banks Airport		White Bear Lake, Northport Airport (64MN)
was ME84, now ME5		MS
MO		Picayune, Belle-Terre Airport (MS51)
Harrisonville, Lawrence Smith Memorial Airport		MO
was OA6, now LRY		Marceline Municipal Airport (6K1)
Mexico Memorial Airport		NE
was H41, now MYJ		Nebraska City, Grundman Airport (3GN)
Piedmont Municipal Airport		NY
was MO9, now PYN		Durhamville, Kamp Airport (1B4)
Warsaw Municipal Airport		NC
was 56M, now RAW		Burlington, Alamance County Hospital Heliport (4NC3)
MT		Zebulon, Cooper Field Airport (31NC)
Corvallis (MT72)		ND
was La Voie, now Hedditch		Baldwin, Dimond Airstrip Airport (4NA4)
		Coleharbor, Blotter Airstrip Airport (30ND)
		Dazey, Haugen Airport (8ND9)

Glenburn, Jeune Strip Airport (2NA1)
 Golden Valley, Backfisch Strip Airport (07ND)
 Golva, Finneman Private Airport (5ND1)
 Grassy Butte, Lillibridge Airstrip Airport (NA62)
 Grassy Butte, Watson Private Airport (6ND4)
 Hague, Hague Heliport (ND93)
 Halliday, Evinger Strip Airport (11ND)
 Hannaford, Dalamar Farms Airstrip Airport (4NA7)
 Harwood, Monson Field Airport (46ND)
 Hebron, Jaeger Farm Strip Airport (82ND)
 Heil, Schmidt Gall Farms Airport (42ND)
 Hettinger, Erickson Field Airport (1ND0)
 Hettinger, Fordahl Airport (1ND1)
 Hoople, Fagerholt Airport (ND08)
 Hope, Schmitz Farm Airport (50ND)
 Horace, Bensen Airstrip Airport (0NA2)
 Hurdfield, Weckerly Private Airport (9NA1)
 Jamestown, Simmers Farm Airstrip Airport (NA93)
 Keene, Brenna Airstrip Airport (NA85)
 Lakota, R. Marquart Airstrip Airport (58ND)
 Larimore, Boulden Airstrip Airport (60ND)
 Leith, Leith Private Airport (ND67)
 Linton, Linton Hospital Heliport (ND63)
 Litchville, Nelson Private Airport (5ND5)
 Ludden, Visto's Airport (1ND6)
 Makoti, Makoti Airport (ND39)
 Mandan, Wachter Ranch Private Airport (1ND9)
 Mapleton, Kasowski Airport (0NA3)
 McCanna, Knudson Airport (85ND)
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 Moffit, Andrews Airstrip Airport (NA95)
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 Napoleon, D. Rau Airstrip Airport (NA43)

Neché, Hardy Private Airstrip Airport (8NA6)
 New Leipzig, Dietz Airport (92ND)
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 Portland, Rygg Airport (13ND)
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 Reeder, Reeder Airport (ND51)
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 Richardton, Richardton Hospital Heliport (ND64)
 Robinson, James Whitman Airport (ND53)
 Rock Lake, WCOM Airport (5NA4)
 Russell, Rubbert Aerial Airport (3ND8)
 Ryder, Ryder Airport (ND56)
 Sarles, Weston Airport (ND57)
 Scranton, Deutscher Airstrip Airport (NA04)
 Starkweather, Hofstad Airport (NA09)
 Taylor, Vaagen Ranch Airport (NA11)
 Turtle Lake, Boe Field Airport (NA52)
 Underwood, Johnson Private Airport (8ND1)
 Upham, J. Clark Salyer Refuge Airport (4ND3)
 Upham, L. Pfau Airstrip Airport (NA53)
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 Wimbledon, Wimbledon Municipal Airport (ND69)
 Wolford, Slaubaugh Airstrip Airport (8NA2)
 Wyndmere, Dotzenrod Airport (ND91)
 York, Haugen Airstrip Airport (8NA3)

OH

Bellefontaine Municipal Airport (7I7)

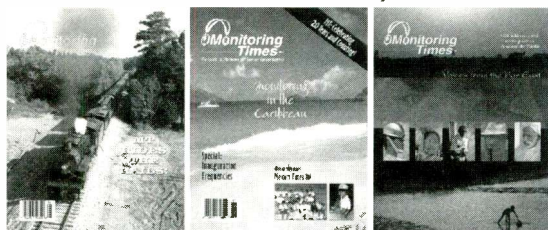
TN

Hillsboro, Lord's Landing Airport (99TN)

WI

Suring, Funk Field Airport (6WI6)

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September 2003 / POP'COMM / 77

clandestine communiqué

by Gerry L. Dexter

tuning in to anti-government radio

News From The Middle East

The war in Iraq came to an end shortly before we sat down to work on this column so it's impossible to predict whether **Information Radio** is still airing its broadcasts. We'd guess that it might be off the air by now, although the other version of this station, which focused on Afghanistan, did stay active for a time after the conclusion of that war. Unlike the Afghanistan broadcasts, those aimed at Iraq were heard by almost no one in North America, although you can bet that the frequencies **9715** (running 24 hours a day at one point), **11292** (1500 to 0900), and, later, **4500** were frequently and carefully checked out by a legion of monitors through the run of the war. European monitors had much better success at picking this one up than we in North America did.

The Iranians are busy trying to keep things in Iraq from falling into place the way the United States would like. The **Voice of the Mujahideen** was calling on Iraqis to fight coalition forces. The station is the mouthpiece for something called the Supreme Council for Islamic Revolution in Iraq, which is closely allied with Iran. This current version of the Voice of the Mujahideen only operates on mediumwave (720 kHz), so we aren't going to hear it here. Some monitors say that the station has replaced the former **Voice of the Islamic Revolution in Iraq** (also an SCIRI operation) which did operate on shortwave and had been heard several times in North America (using **6135**, **7100**, and **9535**).

Meanwhile, the **Voice of Iraqi Kurdistan** continues to be active—and illusive—on **4085** (sometimes **4090**) around 0300, although there seems to be some confusion as to whether this might actually be the **Voice of Iraqi Liberation**, which normally uses **4025**.

Brian Alexander in Pennsylvania had a tentative logging of the **Voice of the Kurdistan Toilers** on **4345.9** at 0210 in an unidentified language. And he heard the **Voice of the Iraqi People**, **4785**, par-



Subj: **Re: Reception Report - Voice of Ethiopia**
Date: 03/13/2003 9:10:00 PM Eastern Standard Time
From: info@democracyfrontiers.org

To:
Sent from the Internet ([Details](#))

Dear Mr. D'Angelo,

Thank you very much for letting us know of your reception of our program. Thank you too for letting us know about you and your family. We hope you will continue to enjoy our program and letting us know how we are doing with our program. If you have any questions, please do not hesitate to let us know.

With Best regards,

VOE

----- Original Message -----

From:
To: info@democracyfrontiers.org; articles@ethiopiancommentator.com
Cc:
Sent: Sunday, March 09, 2003 10:08 PM
Subject: Reception Report - Voice of Ethiopia

Voice of Ethiopia Broadcast Information

The Voice of Ethiopia is a new weekly radio service to the world on current events in Ethiopia from the perspectives of Ethiopians residing in Ethiopia and in the Diaspora. In this News service Ethiopians provide a reality check on the news and viewpoints on Ethiopia dispatched by foreign correspondents, resident Ambassadors, UN representatives, governmental & Non-governmental organization, and visiting dignitaries to Ethiopia.

The Voice of Ethiopia is broadcasted on:
·The 41 meter band; or
·On 7520 kilo hertz;
·At 2:000 UTC (Or at 5:00 PM Ethiopian Time).

Rich D'Angelo of Pennsylvania got this neat e-mail QSL from the anti-government Voice of Ethiopia.

allel with **9563**, **9570**, and **11710** at 0045, with Mideast music and AA talk, news at 0100 and Koran at 0309.

Radio Sedaye Iran is now using **17525** (formerly **11575**) for its 1530 to 1730 transmissions in Farsi. And something

called the **American Farsi Network**, based in Simi Valley, California, is airing a broadcast called Radio Yaran (friends) via Norway from 1830 on **7525** and, before this, had already been active with satellite and internet broadcasts running

24 hours a day. The service can be reached at P.O. Box 1601, Simi Valley, CA 93062. The website URL is www.afnl.com

Radio International, beaming to Iran, is now active on **13800** via Kvitsoy, Norway in Farsi from 1630 to 1715. And still another one now targeting Iran is the **Voice of Iran**, broadcasting in Farsi from 1800 to nearly 2100 on **7515** (via Norway) and also operating on **11575** from 1630 to 1830 via the Issoudun (France) transmitter site.

Other recent changes include the **Voice of the Iranian Communist Party** now operating from 1630 to 1730 and 0230 to 0330 on **3880** and **4380**. **Voice of the Iranian Revolution** uses those same two frequencies from 1430 to 1530 and 0430 to 0530. The **Voice of Komala** is now on from 0200 to 0330 and 1600 to 1730 on **3930** and **4615**.

Jakada Radio International, which is beamed to Nigeria, is active from 1900 to 1930 on **15170** with broadcasts in the Hausa language.

Fang Guang Ming Radio, the broadcasts of the Falun Gong group, is now aired on **6035** and **9945** from 2100 to 2200.

Radio Banaadir (Somalia) is now on variable **7002** from 1600 to 1900.

Radio Hargeisa, which claims to represent the mostly unrecognized Republic of Somililand, is active from 0400 to 0600 on variable **7530**; also from 0900 to 1200 and 1500 to 2000.

The **Voice of Freedom/Voice of Free Lebanon** uses **11515** from 1600 to 1700 via Byelorussia. Another anti-Lebanon shortwave station, the **Voice of Liberty**, is active during the same hour on **11520**, via Russia.

Que Hong Radio, broadcasting to Vietnam, is on the air from 1330 to 1400 on **9930**. **Radio Free Vietnam** operates on the same frequency from 1230 to 1300.

And that covers things for this month. Remember that we greatly value and appreciate your informational input for this column. That includes everything from what clandestine broadcasts you are hearing to addresses, websites, and e-mail addresses, transmitter locations, background information on the groups which support these broadcasts and, of course, copies of any QSL replies you receive.

Thanks for your continued support. Until next time, good hunting! ■

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WANTED: a good used analog AIRCRAFT BAND receiver, including also low frequency band. Such as SPORTY'S Air Scan radio of some years back (tunable, analog, not scanner. L.S. Brey, 1705 Co. Rd 137, Waite Park, MN 56301

Bill "Pushes to Talk" Just A Little Too Hard

Okay, so a lot of you make fun of me because I have pet rats. I'll bet if I took a survey, more pet rat owners are happier with their choices than spouses of "wireless communication executives."

So I hear via the grapevine (which might have been copyrighted in the words to a song but so far hasn't been registered as a trademark, to my knowledge) that "PTT" and "Push to Talk" (for which it stands, indivisible, one nation, etc.) has become a MARCA REGISTRADA, or ERIK ESTRADA, or some pair of words (like the bearded Smith Brothers, Trade and Mark, that we of the "Push-to-talk" brigade no longer own.

I hear that, for the time being, we are still allowed to *do* it (that is, we may "press" to talk) through the gracious goodwill of Nextel™, so long as we refer to it as "Jell-O Brand Gelatin Desert" or Kleenex-Brand Facial Tissues," but soon we'll be warned not to use "PTT™" generically so as not to destroy its trademark value. Oh, I can see the lawyer-letters spewing forth already. At least the postal service will benefit from this folly.

This does not seem to have come from a lack of use, such as the frequencies within the 220-MHz band, where the commercial entities were quick to spot unused and underused ham and other non-commercial radio frequencies. Not hardly. No, we've been pushing and talking and PTTing, and P-ing-to-T, and every variation known to mankind, including the hands-free VOX (which gave birth to the ubiquitous "Uh...") for a long time now.

As far as I know, we have been taking diagonal shortcuts across real estate acronyms owned by virtually everyone in the "contact-making" business, whether it be push-to-talk, pull-to-talk, squeeze-to-talk, grimace-to-talk, or any number of little digital, or even bodily, functions enabling our two-way communicators to do their "thing." We have taken claim to these paths by eminent domain long ago, much the same as amplifiers "pushed-and-pulled" and operated "class-A," or "class-B," or even "class AB."

So before I even get into how stupid this is, suppose I were to rush in to the USPTO (yes, I can spell patent and trademark office) and register the term, "On"? You know...the "On" part of an On/Off switch? Besides being just plain arrogant, how would it strike you as users of such devices? Would it apply to faucets too?

"Sorry, mom, can't turn the water on to take a bath, Bill owns that position now. You'll have to get his permission before you can make me take a bath!"

Oh, would I be every kid's pal and every mom's nemesis. What power I would wield. Then again, if the moms of the world ever caught sight of me in a parking lot, I'd be history. They'd have me run through a carwash faster than you could dig up a fistful of quarters, and something tells me it wouldn't be the "brushless" kind.

"We have taken claim to these paths by eminent domain long ago, much the same as amplifiers "pushed-and-pulled" and operated "class-A," or "class-B," or even "class AB."

As a graduate of the HPFWCS,* I am constantly inundated, yes, even *bombarded*, by warnings from owners of various trademarks such as Rollerblades™, Kleenex™, and so many other misused trademarks which are genuinely at risk for falling into generic use that I am perhaps overly conscious of their trademark status. Because of that, I (and other sensitive writers) will likely be heard telling people to press their "Push-to-Talk-Brand Buttons" on their two-way communication device, much the way Bill Cosby always says "Jell-O Brand Gelatin Desert Mix," or whatever it is he says so well.

By the way, Bill, this other Bill (who loves you dearly) has you on tape, telling the world that you're going to protect yourself from monsters by smearing Jell-O (and in this routine, you forgot to say "Brand Gelatin Desert Mix") ALL OVER THE KITCHEN FLOOR! I know that the Jell-O people want you to get out here and get all the copies of these tapes and add the words "Brand Gelatin Desert Mix" into that little routine, but so long as we're both named Bill, you're not getting my copy!

"I'm going to register "Dit" with the USPTO as a trademark of my charity."

I know that the use of Morse code is dwindling, but I still think I have a good idea for my little fund-raiser. You see, I'm going to register "Dit" with the USPTO as a trademark of my charity. I figure that everyone who uses the code can send a "TM" after every Dit, which may be a minor inconvenience, or they can license the use of the "Dit" from me for a few pennies a year, which will go 100 percent to my favorite charity, and that way they won't have to get those annoying letters from my attorneys advising them to be sure to send "Dit-Brand Morse code symbols" and not just any old "Dit."

And if any of you are bored out there, I hear that the "Dah" is still up for grabs, as well as the "Off" position on those switches and faucets.

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Editor's Note: You can write to Bill at chrodoc@earthlink.net or c/o the Cowfield County Home for the Silly.

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