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# POPULAR COMMUNICATIONS

FEBRUARY 2004

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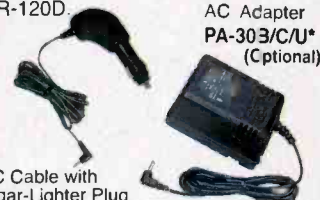
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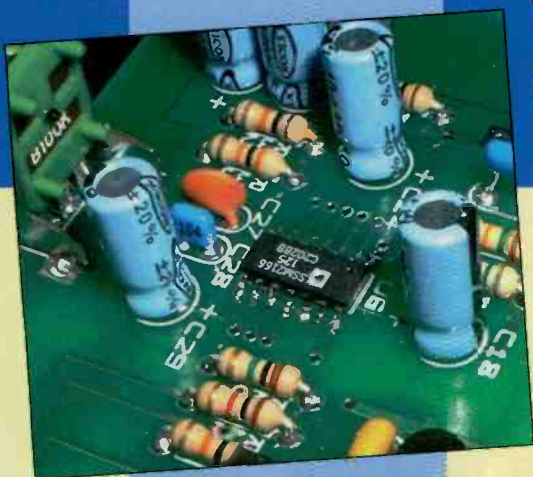


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### On The Cover

While the recent Southern California fires tested thousands of firefighters and public safety personnel, this widespread emergency also brought American Radio Relay League (ARRL) trained emergency communicators together on the front line and beyond. The ARRL's new Level 1 emergency communications course is your ticket to being prepared when disaster strikes. Be sure to read Gordon West's "Radio Resources" column this month on page 10 for details on how you can help your community, (Photo by Ron Eggers, KA6RWK)

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## Survey Results: Are You Helping Others?

In our December issue I said we'd have more survey results "next month." Well, once we put it all together for the January *Pop'Comm* it became apparent we wouldn't have the space for them. So, here we are this month, reporting on hundreds of your responses. We appreciate your patience.

One of the most important aspects of our radio hobby is a sharing of information, whether it's accomplished on the Internet, over the air, or in person at a club meeting or face-to-face with your neighbor. It's also important for your magazine. You see, unlike the big million-circulation magazines where information comes at you from the editorial offices and little input is needed, except for an occasional letter to the editor, *Pop'Comm* depends on your loggings, photos, articles, QSL cards, and letters. It's the lifeblood of many of our columns.

A while back we told you how a very small number of readers contribute this material, and we asked you when you last sent in a photo, logging, or short article. A whopping 68 percent of you reported that you've *never* contributed anything to the magazine. That leaves about one-third of our readers pulling the load. Now, I suppose when you look at the numbers of what that might amount to, it's quite a lot, but in reality all you need to do is look at the "Global Information Guide," "Utility Communications Digest," "Broadcast Technology," and other columns where contributors are listed, and you'll find less than a dozen.

About 10 percent of you said you didn't remember when you contributed something, but it was a long time ago. Equal numbers of you said it was within the past month or one to two years ago. Not surprisingly, no one said they wrote in a couple of months ago.

Why, we wonder, is this the case? We asked you for answers, and 25 percent of you said we wouldn't use them anyway because you believe your loggings/information is very ordinary. Please don't feel that way, because what might be ordinary to you might be a challenge to another reader. I heard plenty of radio action this weekend alone and casually mentioned it to one of our writers who said he was surprised that station was still on the air.

Twenty-two percent of you said the columns are already full of information and contributions, while about 20 percent of you said you only have a little bit to contribute, perhaps a handful of loggings. Again, look at the columns, please. It's that "handful" of loggings that comprise the column!

Understanding the loggings, especially in the "Utility" column can be a problem. By its very nature, utility comms are full of jargon, acronyms, and coded transmissions. Everyone does their best trying to decode the mumbo-jumbo, putting it in print so we can understand the communication.

Forty-three percent of you said the "Utility Communications Digest" column loggings are fine as they are; 35 percent of you would like to see them organized by service: aircraft items first, for example, followed by military, etc., so they're easier to find.

About 11 percent of you would like to see each logging made very brief with much less jargon, while still others (about 8 percent of you) would greatly reduce the number of loggings and have more information in the actual column. It's important to note that when these questions were asked, the loggings were sometimes longer than the actual column itself.

## Going Mobile Again

Telematics—all your mobile gear, including CB, ham, GMRS, FRS, and your cell phone, that keeps you aware and in touch with the rest of the world while on the road—means big bucks to the industry, but what does it mean to you, the consumer? We asked you if it were affordable and available, if you'd prefer to have a permanently installed true *mobile phone* in your vehicle. Only eight percent of you said you'd want a full-power mobile phone, while 38 percent of you said you'd actually prefer a handheld wireless phone on the road as it offers obvious portability.

About one-fourth of you told us you'd want a true full-power mobile phone if you could still have a portable wireless phone at little or no additional expense. About 11 percent reported liking the idea

## POPULAR COMMUNICATIONS

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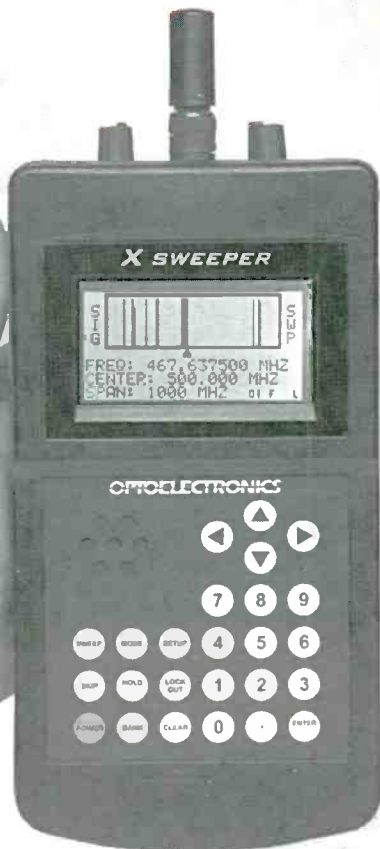


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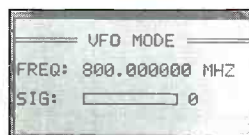
Antenna pictured sold separately

## SWEEP MODE



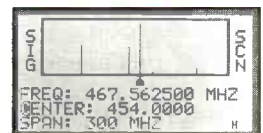
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## VFO MODE



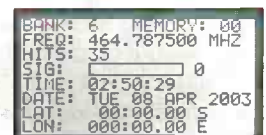
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# The Stealth Loop Antenna

## Need Better Reception? Throw A Little More Wire In The Air... Or Wherever You Can

by Phil Karras, KE3FL

**D**o you live in a place where TV antennas aren't allowed on your roof or balcony? Not everyone is paying the monthly price for satellite or cable TV, and could benefit from a simple homebrew loop antenna. If so, this article is for you.

In the early 1980s I was thinking about some new technology that was being used in the calculators of the day. I had wondered if those real flat-film-type wires could be used as stealth antennas. It seemed to me since the wires were so flat, one could lay them on the roof and, since the material was essentially see-through, they would be very difficult to detect.

Since then, I haven't had the opportunity to test the idea. But recently a friend of ours bought a nearby townhouse and she is not allowed to use outside antennas. She has a cable TV connection but does not watch enough TV to make paying for the privilege of not watching a realistic option.

Our town, Mount Airy, Maryland, sits about 30 miles north of Washington, D.C., and about 25 miles west of Baltimore. Our elevation is fairly high in most locations so almost anyone can get most Baltimore and Washington stations with little more than rabbit ears.

When I set up her TV, I checked it out with just the set-top rabbit-ears antenna. Reception was, as expected, fairly good. There were a few problems: the NBC and FOX stations, Channels 4 and 5, from Washington did not come in at all. With some movement of the antenna (this was also limited by the placement of the TV) I was able, at times, to just be able to discern a picture. This gave me hope that throwing a little more wire at the problem would actually do some good. As



*Here's the completed ceiling loop TV antenna.*

most people with antenna restrictions will tell you, we had three options:

*1. Put more wire up right where you are, inside on the ceiling.*

Advantages: It's out of sight of the neighbors. There is no antenna degradation due to weather. Reception is affected only slightly by the weather.

Disadvantages: It's usually in plain sight of anyone in the room. It may be too low to be of any help; only testing will tell.

*2. Put the antenna in the attic*

Advantages: It's out of sight of the neighbors. It is higher, which, in most cases, improves reception. It is out of

sight of house guests. There is no degradation due to weather.

Disadvantages: It is more difficult to get the feedline to the TV. Being closer to the outside (the roof) it may be affected by weather.

*3. Put a stealth antenna on the roof*

Advantages: It is higher than the others and should improve reception the most.

Disadvantages: It is more difficult to get the feedline to the TV without it being seen. It is in plain sight and may be visible to some neighbors. Being outside and directly on the roof, it will be affected by rain, snow, and ice accumulation, and it will degrade over time.



Sometimes a little more height makes things worse. In reviewing the situation, I noticed that the homes to the south were going uphill, each being about two feet higher than my friend's house. Also, the outside portions of these houses had brick sides. In this case, keeping the antenna in the attic might actually be better since the signals would be going through the less dense wood of these homes rather than through brick.

If you are like me, you figure the best over-all return for the investment is in using antenna situation No. 2—an attic antenna. Sometimes, however, we need that extra height and must go with an outside antenna. In the case I was faced with, since there was some signal possible at times just from the rabbit ears, I believed that testing a simple loop antenna designed for Channel 4 (NBC) attached to the ceiling would help the situation. What I didn't know was whether it would help enough.

## The Basics

The TV is located on the bottom floor, so any height advantage over the rabbit ears is not much (though sometimes even a little is enough). The big advantages of a simple loop antenna are:

1. More wire usually means a better signal.
2. A horizontal loop is nondirectional and receives equally well in all directions.

This nondirectionality is important because I was unable to put the rabbit ears in a position I thought would be best for reception of Washington stations.

The antenna wire was cut to 4.2 meters (13 feet, 8.5 inches) to match up with a frequency of 71.75 MHz (the audio frequency of Channel 5.) The video is actually at 67.25 MHz so the antenna should be a bit longer (about 14.5 feet). I used the sound frequency because I knew it off the top of my head, I later looked up the video frequency.

I cut some 300-ohm twin lead to go from the antenna connection to the ceiling and then I cut some white wire to length. After soldering the antenna wire to the twin-lead, I attached the antenna to the ceiling.

I strung the wire out to three points and started playing with the fourth attachment point, and the picture and sound kept coming in. Once I had it all up, the picture and sound were usable. While not perfect, it was easy to see the picture and the sound was perfect. For some reason, the camera doesn't do the better image justice. I guess this is because the brain helps filter poor video and we "see" a better image than is really there.

I checked the other stations as well and noticed some improvement even on some of the UHF stations, most noticeably Channel 67, a public TV station in Maryland that was now perfect. Not all stations improved, and some were even a bit worse. I should point out that I did not disconnect the rabbit-ear antenna since one can still tune things a bit better with it. If you really want the best reception, I would recommend an antenna switch. (I wish manufacturers would include a switch option to combine signals from at least two of the antennas.) Since I knew my friend would not bother with tuning anything, I selected the best arrangement of the rabbit-ear antenna while using the loop at the same time. All-in-all, I don't believe there is now any station worse than it was with only the rabbit-ear antenna, and Channels 4 and 5 are now viewable.

As far as improving the UHF stations, Channel 50 is very



*Here's how one station looks using both the rabbit ears and loop antenna. Your mileage may vary, of course, but with a little experimentation this indoor loop might be just what you need to improve reception.*

poor from this location. A second experiment might be to attach a UHF loop for Channel 50 to see if it helps reception. In this case, I would simply attach it to the same twin lead and make a loop inside the VHF loop already on the ceiling. At 687.15 MHz, this would only be a loop of about 17.2 inches total length. If this didn't help, the next thing I would try would be a small Yagi pointed in the Channel 50 direction.

## Get The Picture?

I hope this little example helps some of you enjoy your TV watching a bit more, even if you can't put up an outside antenna. Remember, sometimes "throwing" just a little more wire at the problem is all we need to make things work.

Also, don't think that you have to use one antenna or another. Receiving antennas are not exclusive; they can be combined. Don't be surprised if that's all it takes for an improvement. While there will be some interaction between the antennas, I have found that many times simply combining the signals to the receiver, whether radio or TV, works out just fine.

If that simple loop on the ceiling is not enough, you can try an attic antenna or the roof stealth-loop antenna, but the indoor loop is a whole lot easier and not as labor intensive! Good luck and better TV viewing!



# THE VERY BEST IN S



## YB 400PE AM/FM/Shortwave Radio

This high-performance PLL synthesized, dual-conversion YB 400PE receiver pulls in AM, FM-Stereo, Shortwave, and Longwave, including continuous coverage from 520-30,000 KHz. Even Ham radio two-way communications can be heard using the SSB circuitry. Its highly sensitive auto-tuning system stops even on weak stations within the international Shortwave broadcast bands. Its 40 programmable memory presets allow quick, easy access to your favorite stations.

### Key features include:

- Easy tuning with direct frequency entry, up/down buttons, and auto-scan
- Multifunction LCD displays time, frequency, band, alarm wake time, and sleep timer
- Sleep timer, dual clocks, and dual alarm modes wake you with beeper or radio play
- Built-in antennas for complete portability and socket for supplementary Shortwave antennas
- Includes AC adaptor, earphones, carrying pouch, supplementary Shortwave wire antenna, and batteries

**\$149.95**



## YB 550PE AM/FM/Shortwave Radio

Unique features define the model YB 550PE, such as 200 randomly programmable memory presets with user-defined memory page customizing, digital fine-tuning control, and favorite station wake-up memory. Through its PLL synthesized digital tuner, receive AM, FM-Stereo, and Shortwave with excellent sensitivity and selectivity. Enjoy the entire Shortwave spectrum that includes all 14 international broadcast bands and continuous Shortwave coverage of 520-29,999 KHz. Its auto-tuning system stops even on weak stations within the international Shortwave spectrum, or with the direct frequency entry system, go instantly to any frequency in its tuning range.

### Key features include:

- Signal strength and battery power level indicators
- Digital clock with selectable 12/24 hour clock display format
- LCD with display light that shows simultaneous display of frequency and clock
- Alarm with snooze feature and 10-90 minute sleep timer
- Includes built-in antennas, sockets for supplementary Shortwave and FM antennas, earphones, and optional AC adaptor

**\$99.95**

# The Most Powerful Compact Shortwave Radios

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# HORTWAVE RADIOS



## S350 AM/FM/ Shortwave Radio

Incorporating a sensitive, high-performance analog tuner with digital frequency readout, the S350 receives AM, FM-Stereo, and continuous Shortwave coverage of 3,000 to 28,000 KHz, including all 14 international broadcast bands. Its classic analog tuning knob with superimposed fine-tuning control makes it a pleasure to operate, and the variable RF gain control, wide/narrow bandwidth selector and low pass filter give you complete control over incoming signals. Operates on 4 'D' batteries for long battery life.

### Key features include:

- Multifunction LCD shows digital frequency, clock, and more
- Alarm and 1-90 minute sleep timer
- Variable, independent bass and treble controls
- Left/right line-level outputs (stereo in FM)
- Includes built-in antennas, sockets for supplementary Shortwave and FM antennas, convertible nylon handle/carrying strap, earphones, and optional AC adaptor

**\$99.95**



## FR200 AM/FM/ Shortwave Emergency Radio

Requiring no external power source, the FR200 is a versatile multi-purpose tool for keeping informed, entertained, and safe. Combining AM/FM/Shortwave radio and flashlight in one, the FR200 operates without batteries – powered by its built-in hand-crank generator – allowing you to listen to news, music, and international programming from anywhere, including places where power is a problem.

### Key features include:

- AM/FM/Shortwave Tuning (SW1, 3.2-7.6MHz; SW2, 9.2-22MHz)
- Hand-crank power generator recharges internal Ni-MH battery
- Built-in flashlight perfect for emergencies or camping
- Splash-proof ABS cabinet withstands your adventures and abuse
- Can also operate on 3 AA batteries or optional AC adaptor

**\$39.95**

**in The World.**

*etón*  
GRUNDIG North America



## ARRL Emergency Course Pays Off In Southern California Fire Comms

During the Southern California forest fires siege, emergency radio operators were in big demand. Red Cross evacuation centers were opening up as fast as they could when facilities became available.

Emergency communicators responded with a variety of skills and specific radio equipment, including short-range ham radio, long-range ham radio, GMRS, MURS, FRS, business band itinerant channel equipment, Global Star satellite phones, ham radio packet, and Winlink Airmail, plus a fleet of vehicles sprouting every kind of antenna imaginable. The radio crews were there for the Southern California fires, and shelter managers welcomed them at all locations.

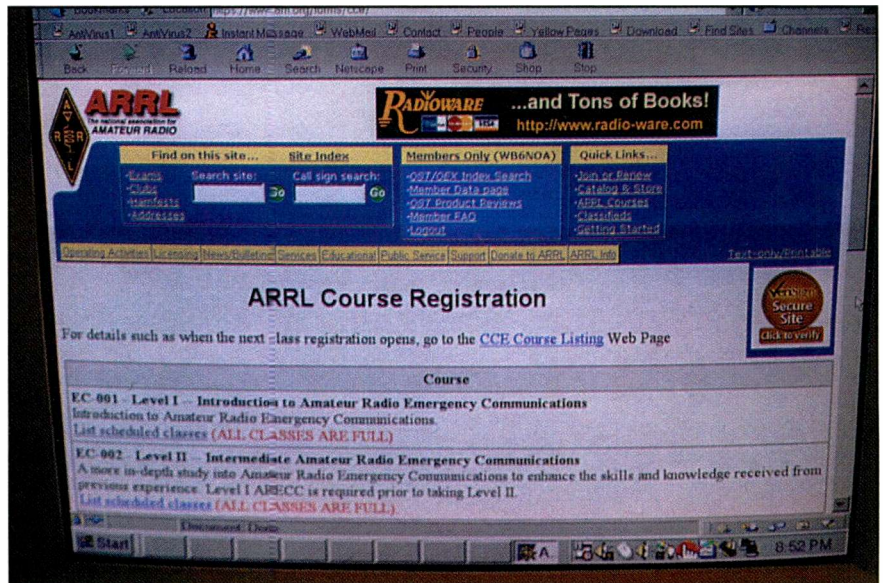
But one aspect of all of these radio operators coming together that was different than in years past was the number of radio operators who had recently completed the American Radio Relay League Level 1 emergency communications course. This course is available to all emergency radio communicators, not necessarily just licensed ARRL member amateur radio operators.

At my particular shelter, I worked beside a GMRS operator who was in contact with local REACT units, and I immediately knew he had taken the same ARRL emergency communications course by his level of professional communications technique. He was not a licensed ham, but an invaluable asset for the coordination of shelter radio operators working Family Radio Service, multi-use radio service, and GMRS links. Our inside-the-shelter communications were dramatically facilitated by these alternate VHF and UHF channels, apart from the very congested ham radio 2-meter, 220-MHz, and 70-centimeter frequencies.

### About The Course

The American Radio Relay League Level 1 emergency communications course is available both on-line and in classroom settings through the ARRL Certification and Continuing Education Program (CCEP). Printed manuals are available for three levels of the emergency courses; and while students could complete the course on computer *without* the manual, the manual serves as a handy reference guide.

The ARRL Level 1 course helped out during the Southern California fires because of the emphasis on ham radio working within multiple radio services at an emergency scene. The course was developed by a ham emergency radio operator, Dan Miller, K3UFG, along with a whopping two pages of fellow radio contributors who were instrumental in providing valuable



Sign-up for the ARRL Level 1 Emergency Communications Course is simple and can be done online.

assistance to the program. "The objective of the course is to provide a base line level of knowledge and skill in amateur radio emergency communications for ANYONE wishing to assist their local emergency communications organizations," said Miller. "Regardless of prior experiences and knowledge, the Level 1 course is designed to prepare volunteers for participation with their local emergency communications organization," he states in the first pages of the Level 1 course book.

There should be no question that those who put together the course were front-line emergency radio volunteers. Several references were made to the recent changing role of the radio volunteers. Now that cell phones and wireless local links to an Internet connection are the cutting edge technology, the emergency radio responder is no longer the one who may be asked to radio for more fire trucks, more bottles of water, or to work up a long list of needed supplies. Just when the digital radio operator is prepared to send the huge supplies lists via PSK-31 or packet, a shelter manager stuffs the list into a hard-wired FAX machine and the Southern California fire message gets through to Chapter headquarters before the hams can even get the wireless connection linked up.

Yet the shelter manager reveres the radio operator as a vital link. For instance, communications between one end of the gymnasium and the other became crucial when looting of some of the recently donated supplies was discovered and security was needed on the outside perimeter. This same radio person could also do double-duty in figuring out how to distribute massive coffee makers throughout the facility so they're not all on one common outlet blowing the circuit breaker. And when





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someone accidentally trips over the one and only cable TV lead-in, or the one and only television, the local radio operators get that F-connector back in shape!

And that is what the Level 1 course is all about—learning to adjust to the emergency operations center or evacuation shelter and work up wireless connections as necessary. The Level 1 emergency communications course is divided into 22 sections, named learning units. After each unit, you complete a simple five-question, multiple-choice test, followed by doing an assignment. The assignments are either completed in a classroom course or are e-mailed to the emergency communications course local instructor, known as a "mentor." The mentors are pivotal to the success of these courses, whether they are live in the classroom, or several states away on the computer. The mentors review each and every assignment sent to them and respond with comments on your work. The course is designed for 12 weeks, and you work at your own pace through the book and on the computer.

These hard-working mentors may gently nudge you if they don't hear from you on a weekly basis. They encourage you to complete the course and to receive your modest class fee back. The refund comes



The hills above the aircraft hangar shelter burned for a week

from a federal grant from the Corporation for National & Community Service (CNCS), a relationship developed by the American Radio Relay League certification and continuing education program.

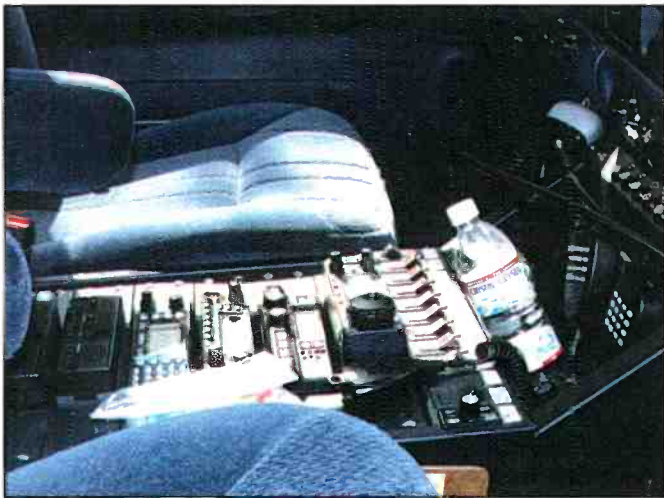
The League's Level 1 emergency com-

munications course has some terrific topics, including,

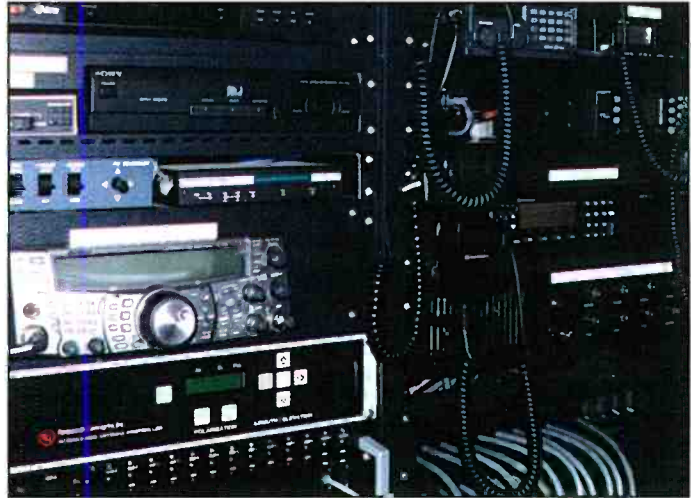
Emergency comm organizations and systems

Basic communications skills





*A look at the front seat operating position of the American Red Cross communications unit with three ham rigs within reach.*



*The inside operating position in the new American Red Cross communications unit.*



*The FRS (Family Radio Service) worked well within shelters to keep radio operators "tuned in" to their assignments.*

- Emergency nets
- Message handling
- Incident command system
- Preparing for deployment
- Equipment choices for emergency comms
- Emergency activation
- Set-up, operation, and shutdown
- Personal safety, survival, and health considerations
- Alternate communication systems and methods

The Level 1 course specifically addresses many radio groups, such as ARES, RACES, ACS, Skywarn, SATERN (Salvation Army Team Emergency Radio Network), REACT, GMRS, and the short-range FRS, and new multi-use radio service. "It is not the intent of this series of courses to promote any specific group over another," said Miller, who is also the Emergency Communications Course Manager. Check with Miller ([www.arrl.org/cce](http://www.arrl.org/cce) or e-mail at [dmiller@arrl.org](mailto:dmiller@arrl.org)) for course availability if you are not a licensed ham or current member of the American Radio Relay League. From what I understand, there are alternate sign-up periods for ALL emergency communicators.

If you're serious about your commitment to serve in an emergency as a well-trained emergency radio operator, the Level 1 amateur radio emergency communications course is an essential element as you prepare to move out to the emergency scene. Here in Southern California, it was very apparent which operators had completed the minimum of Level 1 of this valuable course.

Let us know what you think about the course and your emergency preparedness!



*GMRS repeaters were constantly busy with fire traffic.*

## FCC Commissioner Abernathy Apologizes For Comments

The American Radio Relay League (ARRL) reports that FCC Commissioner Kathleen Q. Abernathy has expressed regrets over her remarks in a fall speech about BPL (Broadband Over Powerline). Her office said, "We regret that the Commissioner's remarks may have been interpreted as suggesting an absence of concern over harmful interference," said her Senior Legal Adviser Matthew Brill. He said that Abernathy is "keenly interested" in seeing multiple broadband platforms develop, but that she didn't intend to suggest that BPL "necessarily will emerge as a viable platform or that it does not present interference issues."

You'll recall that Abernathy embraced BPL, suggesting it was a step toward "Broadband Nirvana." Brill told the ARRL that "ensuring that BPL and all new technologies avoid causing harmful interference to licensed RF users is a bedrock position for Commissioner Abernathy." He issued similar responses to several hams who complained following her speech to the UPC (United Powerline Council) in September.

ARRL Chief Executive Officer David Sumner, K1ZZ, is delighted. He said, "Commissioner Abernathy's affirmation of this important principle as a 'bedrock position' is most welcome and reassuring news."

Fact is, harmful interference from BPL test sites has been found and documented, which, Sumner said, confirmed "that our original concerns were well founded."

### AWR's New Relay, And AWR In Digital Mode!

In addition to the usual seasonal changes in scheduling for the new transmission period, Adventist World Radio is also beginning the relay of new programming to a new area. AWR is now heard in Spanish, broadcasting to the Americas for a two-hour daily block via the Radio Netherlands relay station on the island of Bonaire. This new program will be heard from 2300 to 0100 UTC on 6165 kHz.

Adventist World Radio has announced that specially endorsed QSL cards will be issued from the Indianapolis address for their first broadcast on shortwave in the digital mode. This broadcast will also be heard in the analog mode in a series of special broadcasts from Radio Miami International WRMI, in Miami, Florida.

"There are 25 privately owned shortwave stations in the United States, 18 of which are members of NASB, the National Association of Shortwave Broadcasters," states NASB President, Jeff White. Jeff is also the General Manager of the commercial shortwave station WRMI. He states that NASB is commencing a special series of test broadcasts in the digital mode in cooperation with the European-based DRM (Digital Radio Mondiale).

NASB in the United States was formed in 1990 and joined the European DRM in 1999, just one year after DRM was formed. Shortwave broadcasts in the digital mode were officially launched on June 16, 2003, and since then more than 25 shortwave stations have been on the air with digital transmissions.

The NASB digital broadcasts will be on the air from a VT Merlin transmitter, located at Rampisham in England. These broadcasts will be beamed primarily to Europe and will be on the air each Sunday at 1330 to 1400 UTC on 9785 kHz.

This digital series of shortwave broadcasts will begin on Sunday, October 26, and will run through March 28, 2004. This series of programs is under the general title, the "Voice of NASB," and the program each week will be produced by a different station. Throughout the 23-week series of digital broadcasts, each of the shortwave stations and organizations that form the NASB will receive their turn to present a program.

The opening broadcast on October 26 was a special edition of the global DX program, "Wavescan," from Adventist World Radio. AWR was first in the alphabetical list; their news release said, "We count it an honor to present the first program."

Each week, station WRMI will also broadcast the same digital program in analog mode and these programs will be heard on 7385 kHz at 0330 to 0400 UTC on Sunday (which is Saturday evening in North America).

These special broadcasts from the North American shortwave stations over WRMI will provide a unique once-in-a-lifetime opportunity for shortwave listeners, international radio monitors, and DXers to obtain QSL cards verifying these relay transmissions. In addition, NASB will offer a special QSL card to confirm both the analog and digital versions of the broadcasts. These cards will be available from Box 526 852, Miami, Florida 33152.

Adventist World Radio also honored the initial broadcast on October 26 with a special endorsement on a new QSL card. If you listen to the digital broadcast on an analog receiver, they would like to know the reception conditions, including the width of the digital signal in your radio receiver.

The schedule of digital radio broadcasts from NASB is:

**Digital Mode**—Each Sunday at 1330 to 1400 UTC on 9785 kHz from Rampisham, England; began Sunday, October 26, and extends to March 28, 2004 (AWR program on 1st date only).

**Digital Program in Analog Mode**—Each Saturday evening (Sunday UTC) from 0330 to 0400 UTC on 7385 kHz; began Sunday, October 26, and extends to March 28, 2004 (AWR program on 1st date only).

### APCO Applauds 9-1-1 Legislation

The Association of Public-Safety Communications Officials (APCO) International has applauded the House of Representatives for its approval of the "E9-1-1 Implementation Act of 2003."

"The bill will authorize a critical source of funding to help state and local governments implement technology to locate 9-1-1 emergency calls from wireless telephones," said APCO President, Vincent R. Stile. "We hope the Senate will follow shortly with its version of the bill, and that funds will soon be appropriated for this vital public safety function."

FCC regulations currently require wireless telephone companies to implement technology to locate 9-1-1 calls. However, state and local government emergency communications centers, known as public safety answering points, or PSAPs, also must upgrade their operations to receive and process that information. Unfortunately, many jurisdictions lack the resources to make those upgrades.

"The legislation passed in the House will establish a modest, but critical source of funding for this life-saving technology," Stile noted. Importantly, such federal funds would not be available to states that divert to other purposes 9-1-1 fees intended to support PSAP operations.

The Association of Public-Safety Communications Officials-International, Inc., is the world's oldest and largest not-for-profit professional organization dedicated to the enhancement of public safety communications. With more than 16,000 members worldwide, APCO International exists to serve the people who manage, operate, maintain, and supply the communications systems used to safeguard the lives and property of citizens everywhere. ■



# S hannon's B roadcast C lassics

a look back at radio & TV's golden years

## One FM In An AM World

ground, the site still links the small city of Oswego to some important broadcast history—and to the top rated radio station in Central New York.

AM was definitely king of the broadcasting hill when local *Palladium-Times* newspaper publisher, E.M. Waterbury, first dreamed of establishing a powerful station in Oswego, dubbed the "Port City." Even in 1944, however, most of the decent upstate AM frequency allocations were already taken by media firms in Albany, Syracuse, Rochester, and Buffalo. That's why Waterbury got so enthused about America's fledgling commercial FM broadcast industry. Here was an entire set of channels almost completely vacant.

By 1947, Waterbury prompted his paper to build one of the region's potentially largest FM outlets. What made the Oswego station such an unorthodox venture was that almost nobody in the county owned an FM radio, and this FM station had no AM sister to help support it. Undaunted, Waterbury and his staff worked tirelessly to oversee construction of a Quonset hut headquarters for transmitter, control room, and three studios, as well the installation of a massive, 342-foot antenna tower right off Route 104 in Scriba, New York (near a trio of atomic power plants, today).

Reportedly, the tower had been part of a big midwestern station's array and was floated over to Lake Ontario by barge. On this tall stick, 3000 watts of effective radiated power would go a long way in FM's early, uncrowded days. Plus, engineers promised additional range when the nod to upgrade was given. From the latest G.E. electronic gear, to quiet "rubberoid" flooring, the station facilities were state of the art. In fact, the financially cautious Waterbury had expressed concerns to his partners about "starting too fancy." He speculated that a more modest beginning, using a downtown, pole-mounted antenna, and a simple studio in the *Pall-Times'* headquarters, would give the fledgling FM fiscal room to grow with its hopefully expanding advertising revenues. Once equipped first class, however, the little building began buzzing with auditions for announcers, musicians, singers, newscasters, disk jockeys, and engineers. Much of the staff had either just graduated from, or were currently students at, the then Oswego State Teacher's College.

This was the era of the "78," just prior to CBS' 1948 introduction of the less scratchy, 33-1/3 rpm, long-playing LP record.

Somewhere in the Lake Ontario shoreline community of Scriba, New York, a few pieces of broken cement mark the remnants of what once was Oswego County's highest point. Today, 50-plus years after a giant steel tower bolted to that concrete base eerily crumpled to the

*During the lead-up to WOPT-FM's debut, its owner, the Oswego Palladium-Times gave discounts to stores that advertised FM radios. A section of this December 30, 1947, ad shows the bold announcement that a local appliance store called Circle had sold at least 201 FM sets. Notice the WOPT-FM eagle with wings spread over the station frequency and FCC channel allocation*

*number. To save money while getting the facility going, the WOPT-FM schedule only ran six hours daily, from 3 to 9 p.m.*

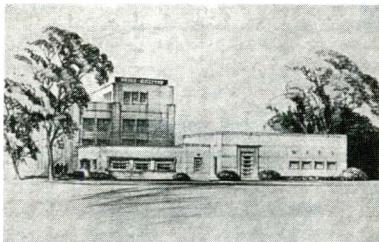


Reasonably priced tape recorders were still some years off, too. Consequently, much of the station's programming would be "live," requiring constant human resources. For most of the personnel, it was their first real broadcasting job and provided great experience. Pay was understandably modest, but anyone helping debut the project got a chance to write "WOPT-FM" (which stood for Wonderful Oswego Palladium-Times' Frequency Modulation) on their first resumes. A proud eagle, symbolizing mastery of the air, was selected to represent the station's letterhead logo and program log prominently printed in each afternoon's paper.

## On The Air, But Hard To Prove

Although the glass transmitter tubes had glowed cherry-red during several days of a December, 1947, dress rehearsal, WOPT-FM didn't air its official dedication program until 8:00 p.m. on December 31. As 1948 got underway, the new Oswego station ran a 3:00 p.m. to 9:00 p.m. broadcast schedule. It was six hours that began and ended with news. Then there were lots of 15 minute shows like "Farm Fair," "Listen Ladies," "Sports Review," "South of the Border," and "Music While You Dine." To say area residents "ate up" such fare would be an exaggeration, as there weren't too many listeners or FM radios around.

There's a New  
**RADIO BUY**  
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**GREEN BAY**



**WJPG**  
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DAYTIME ON CLEAR CHANNEL

**WJPG-FM**  
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FIRST FM STATION  
184 Kc. E. R. F.

THE  
**RADIO SERVICE**  
OF THE

**GREEN BAY PRESS-GAZETTE**

*WJPG went on the air with a 1000 watts in late 1947 at 810 kilocycles, but later abandoned its daytime only frequency for a full-time home on 1440. There, WJPG could run 5 kW day and 500 watts night. WJPG-FM was dropped in the 1950s and the Green Bay, Wisconsin, 101.1-MHz spot resurfaced under competitor's WBAY ownership in 1960. Notice that the radio studio/offices were built on the newspaper building's front lawn.*

Native Oswegonian Ken Gilbert has grade school memories of playing his flute over a WOPT-FM microphone. "No one we knew had a radio that got FM," Gilbert admitted, "so an engineer from the station brought one over to my mother so she could hear me on the radio." No matter, the people who worked there sometimes had to provide ways for folks to listen—WOPT-FM had the distinction of being Oswego County's only radio station—and as Mr. Waterbury would tell his critics, "our station is offering a hometown service provided locally nowhere else!" Then a Fulton businessman dropped a bombshell: AM was coming to the county.

In 1948, someone approached Fulton, New York-based manufacturer Don Kesterke about starting a local radio station in Fulton, only about a dozen miles from WOPT-FM. When Kesterke stated that Oswego County already had one, he was told, "If you mean the *Pall-Times* thing, that doesn't count because it's FM. And, everybody knows FM isn't real radio because you can't take it with you!" This was long before cars had FM radios.

You probably couldn't even have purchased a portable FM set in all of Syracuse. It was clearly an AM environment, and those trying to make a go of it at WOPT-FM knew it.

Kesterke's WOSC 1300 AM was months away from hitting the air when the Oswegonian broadcasters asked for a meeting. In the spirit of "if you can't beat 'em, join 'em," they suggested combining forces to offer programming and sell commercials together. Dubbed "The Oswego County Network," it gave listeners a choice of hearing the Network's offerings on AM until sundown when the Fulton station was required to sign-off, or day and night through the full-time FCC authorization of WOPT-FM. The Oswego group figured people would soon see the sense in being able to hear local broadcasts from 6 a.m. to 10 p.m. on one station, and would then go out and spend the dough on an FM radio. Few did. Most folks who had enough money to shop in a home appliance store, excitedly walked out with their first television. Milton Berle on NBC-TV in New York City was the media public's after dark focus now, not some moon-

lighting college kid reading public service announcements on small town FM.

Word that the Fulton AM was profitable shortly after its August 1949 introduction added insult to WOPT-FM's injury. Consequently, the *Pall-Times* authorized "plan B." This called for an FCC application seeking permission for WOPT-FM to fire-up a new AM sister and cut Fulton right out of the Oswego County Network picture.

### Can You Hear Me Now?

No one clearly recalls whose idea the Oswego AM plan was. From perusing old issues of the paper, it would seem that *Pall-Times* officials thought the whole deal was a disappointment, not to mention a bit sneaky. Listings for the Fulton AM/Oswego FM network simply vanished after Saturday July 22, 1950, with a program roster, featuring the WOPT 1220 AM and 104.7 FM frequencies quietly appearing in the Monday edition. At least in print, there was no official introduction of the new Oswego AM outlet. Nor did the paper devote even a line to

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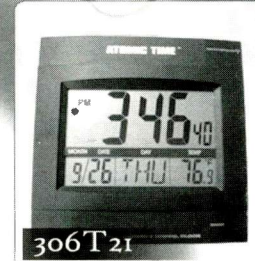
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The black wall clock with arabic numerals is great for home or office use. This clock features the German made Hechinger radio-controlled movement.

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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.



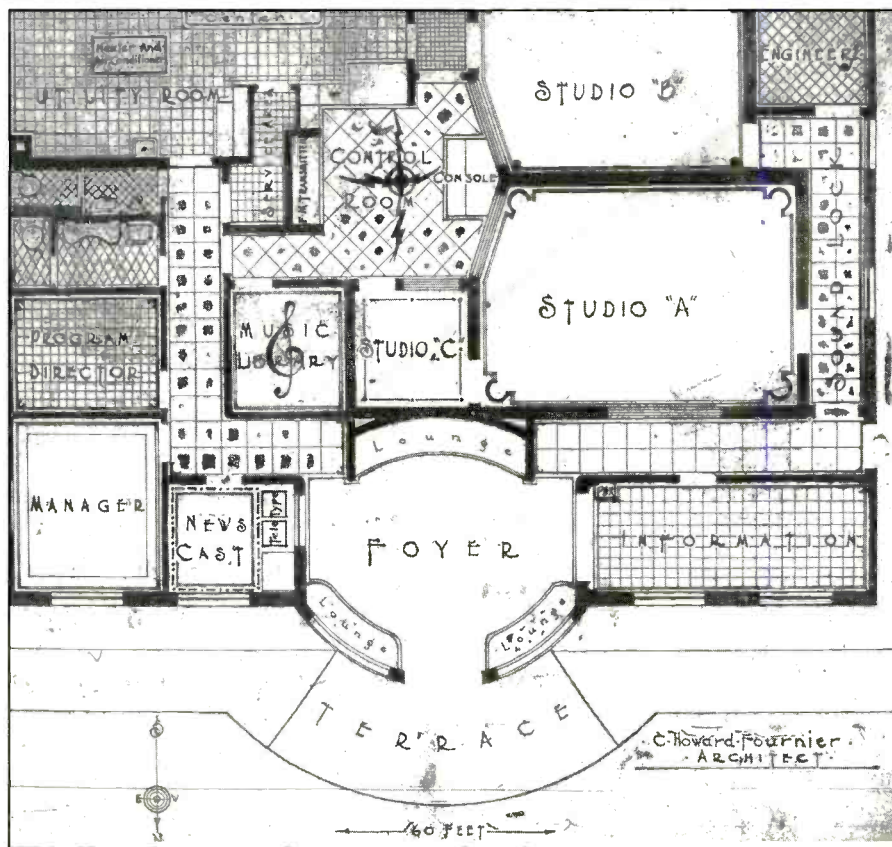
#### Atomic Time Clock Radio ^ RCL-19 \$29.95

AM/FM radio with dual alarms, temperature, and date display. Includes an AC adapter and an optional external antenna to help reception.

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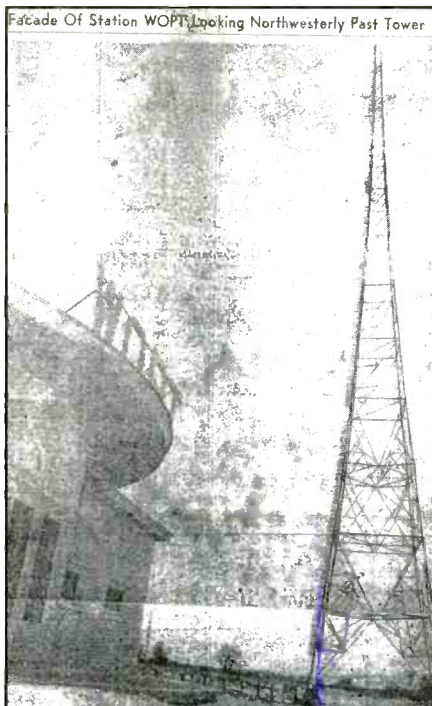


An architect's rendering of the WOPT-FM floor plan. The station building consisted of a curved "marquee" entrance attached to a Quonset hut metal structure.

explaining why the Fulton branch of the suddenly erstwhile Oswego County Network had been unceremoniously given the "brush-off."

Apparently, WOPT-AM was rushed on the air via a jerry-rigged antenna arrangement that barely carried it out of Scriba. "We lived on the West side of the city, maybe about three miles from WOPT," a life-long radio local buff remembers, "and the debut of the 1220 AM signal sounded weak and lifeless on our new Crosley kitchen radio. Seems to me there was a funny hum, too." This fellow clearly recollected his father getting annoyed with the dial fiddling, buzzing, and static, so yelled at him to "tune the darn thing back to that Fulton station so we can hear something clear!"

Within 20 days of WOPT-AM's debut, the discouraged *Pall-Times* board of directors decided to pull the plug on both of its poorly rated stations in order to slash expenditures and have time to regroup. "Economic reasons coupled with personnel problems emanating from the Korean crisis resulted in the decision to suspend broadcasting operations for an indefinite period, and to offer the station for sale," was the sad admission relegated to a few



Though the image looks like one of those mysteriously hazy photos taken of a flying saucer, this low-resolution newspaper picture is just about all that remains of WOPT-FM's vestige. The tower appears to be mighty hefty, but couldn't withstand a 1950 windstorm.

**Announcing**  
**RADIO STATION WOPT (AM)**  
 IS JOINING  
**WOPT FM**  
 TO PROVIDE  
 The Best in News, Fine Music, Drama, Entertainment,  
 Science, Education and Sports  
 For  
 All the Folks Of Oswego, Northern Cayuga  
 and Wayne Counties

**ROUND THE CLOCK RADIO**  
 Opening At 6:30 A. M. and Broadcasting Continuously Through 10 P. M. (Eastern Daylight Time) Each  
 Week Day; Sundays From 6 A. M. to 10 P. M.

The  
**Palladium-Times Stations**  
 PRINCIPAL STATION AND PRESENTATION AT SCRIBA BUSINESS OFFICE AT 1618 WEST FIRST ST., OSWEGO

Without much fanfare other than this full-page ad (curiously run three days after the AM was activated), the *Palladium-Times* installed an AM sister for its struggling FM operation. Previous radio stories in the co-owned daily paper had derisively referred to AM as "old-style broadcasting." With the July 23, 1950, debut of WOPT 1220 AM, the newspaper hoped to cut listeners away from the most popular local radio venue in Oswego County, New York: the 1-kw daytime WOSC AM 1300. WOPT in AM form only lasted a few days, and its FM mate died with it.

**AM WOPT FM**

**1220 ON YOUR AM DIAL**  
 Dial 104.7 on FM

**STATION WOPT-FM**  
 104.7 On Your FM Dial  
**STATION WOPT-AM**  
 Frequency 1220

**Program Log 6:30 A. M. to 10 P. M. Daylight Time**

MONDAY, JULY 24	TUESDAY, JULY 25	Afternoon
6:30—News	6:30—Sign On	12:15—Farm Fair
6:45—Sammy Kaye Show	6:30—Wake With Watly	1:00—Paul's Platter Parade
6:50—Album Review	7:00—News and Sports	1:30—Paul's Platter Parade
6:55—Sports Review	7:10—Wake With Watly	2:00—Paul's Platter Parade
6:55—Dick Haymes Show	8:00—News	2:30—Lean Back and Listen
6:55—Three Quarter Time	8:05—Wake With Watly	2:45—Milt Herth Trio
6:45—Something Old	8:45—Morning Devotions	3:00—News
6:55—News	9:00—News	3:05—Strictly Social
7:00—The Best On Wax	9:05—HomeMaker	3:30—The Tilt Pine
9:00—News	9:30—The Morning Special	3:45—Excursions In Science
9:05—Reading Rhythms	9:45—Leave News	5:00—Ray Black Presents
9:50—News and Sports	10:00—Music For Tuesday	Evening
9:50—Dancing In The Dark	10:30—A Call From Paul	6:00—News
9:55—News	11:00—Bob Eberly Show	6:05—Sports
10:00—Sign Off	11:15—Do You Remember	6:15—Dick Haymes Show
	11:30—Musical Menu	
	12:00—News	

Though not much was mentioned about WOPT-AM in its sister paper, the printed radio schedule shown here was quick to bump WOPT-FM from the banner under the logo eagle, and to replace the FM with the AM dial position. The advent of WOPT-AM also caused the instant demise of the WOSC dominant, Oswego County Network and its related daily listing in the *Palladium-Times'* entertainment section. Most radio listeners in the area probably didn't even notice, though, as it simply meant that the WOSC announcer stopped giving the WOPT-FM station identification each quarter hour.



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**Frequency Coverage:** 25,000-512,000 MHz., 806,000-823,987 MHz., 849,0125-868,9875 MHz., 894,0125-956,000, 1240,000-1300,000 MHz.

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**Bearcat® 895XLT Trunk Tracker**  
**Manufacturer suggested list price \$499.95**  
**Less -\$320 Instant Rebate / Special \$179.95**  
**300 Channels • 10 banks • Built-in CTCSS • S Meter**  
**Size: 10<sup>1</sup>/<sub>2</sub>" Wide x 7<sup>1</sup>/<sub>2</sub>" Deep x 3<sup>3</sup>/<sub>8</sub>" High**  
**Frequency Coverage:** 29,000-54,000 MHz., 108,000-174 MHz., 216,000-512,000 MHz., 806,000-823,995 MHz., 849,0125-868,995 MHz., 894,0125-956,000 MHz.

The Bearcat 895XLT is superb for intercepting trunked analog communications transmissions with features like TurboScan™ to search VHF channels at 100 steps per second. This base and mobile scanner is also ideal for intelligence professionals because it has a Signal Strength Meter, RS232C Port to allow computer-control of your scanner via optional hardware and 30 trunking channel indicator annunciators to show you real-time trunking activity for an entire trunking system. Other features include Auto Store - Automatically stores all active frequencies within the specified bank(s). Auto Recording - Lets you record channel activity from the scanner onto a tape recorder. CTCSS Tone Board (Continuous Tone Control Squelch System) allows the squelch to be broken during scanning only when a correct CTCSS tone is received. For maximum scanning pleasure, order the following optional accessories: **PS001** Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter \$14.95; **PS002** DC power cord - enables permanent operation from your vehicle fuse box \$14.95; **MB001** Mobile mounting bracket \$14.95; **EX711** External speaker with mounting bracket & 10 feet of cable with plug attached \$19.95. **CAT895** Computer serial cable \$29.95. The BC895XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO, EDACS, ESAS or LTR systems.



**Bearcat® 245XLT Trunk Tracker II**

Mfg. suggested list price \$429.95/CEI price \$189.95  
**300 Channels • 10 banks • Trunk Scan and Scan Lists**  
**Trunk Lockout • Trunk Delay • Cloning Capability**  
**10 Priority Channels • Programmed Service Search**  
**Size: 2<sup>1</sup>/<sub>2</sub>" Wide x 1<sup>3</sup>/<sub>4</sub>" Deep x 6" High**  
**Frequency Coverage:**

29,000-54,000 MHz., 108-174 MHz., 406-512 MHz., 806-823,995 MHz., 849,0125-868,995 MHz., 894,0125-956,000 MHz.

Our Bearcat TrunkTracker BC245XLT is the world's first scanner designed to track Motorola Type I, Type II, Hybrid, SMARTNET, PRIVACY PLUS and EDACS® analog trunking systems on any band. Now, follow UHF High Band, UHF 800/900 MHz trunked public safety and public service systems just as if conventional two-way communications were used. Our scanner offers many new benefits such as Multi-Track - Track more than one trunking system at a time and scan conventional and trunked systems at the same time. 300 Channels - Program one frequency into each channel. 12 Bands, 10 Banks - Includes 12 bands, with aircraft and 800 MHz. 10 banks with 30 channels each are useful for storing similar frequencies to maintain faster scanning cycles or for storing all the frequencies of a trunked system. Smart Scanner - Automatically program your BC245XLT with all the frequencies and trunking talk groups for your local area by accessing the Bearcat national database with your PC. If you do not have a PC simply use an external modem. Turbo Search - Increases the search speed to 300 steps per second when monitoring frequency bands with 5 KHz. steps. 10 Priority Channels - You can assign one priority channel in each bank. Assigning a priority channel allows you to keep track of activity on your most important channels while monitoring other channels for transmissions. Preprogrammed Service (SVC) Search - Allows you to toggle through preprogrammed police, fire/emergency, railroad, aircraft, marine, and weather frequencies. Unique Data Skip - Allows your scanner to skip unwanted data transmissions and reduces unwanted birdies. Memory Backup - If the battery completely discharges or if power is disconnected, the frequencies programmed in your scanner are retained in memory. Manual Channel Access - Go directly to any channel. LCD Back Light - An LCD light remains on for 15 seconds when the back light key is pressed. Autolight - Automatically turns the backlight on when your scanner stops on a transmission. Battery Save - In manual mode, the BC245XLT automatically reduces its power requirements to extend the battery's charge. Attenuator - Reduces the signal strength to help prevent signal overload. The BC245XLT also works as a conventional scanner. Now it's easy to continuously monitor many radio conversations even though the message is switching frequencies. The BC245XLT comes with AC adapter, one rechargeable long life ni-cad battery pack, belt clip, flexible rubber antenna, earphone, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO, ESAS or LTR systems.



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Bearcat BCI25D APCO Project 25 digital software card.....	\$299.95
Bearcat 278CLT 100 ch. AM/FM/SAME WX alert scanner.....	\$139.95
Bearcat 250D 1,000 ch. TrunkTracker III handheld scanner.....	\$339.95
Bearcat 245XLT 300 ch. TrunkTracker II handheld scanner.....	\$189.95
Bearcat 248CLT 50 ch. base AM/FM/weather alert scanner.....	\$84.95
Bearcat Sportcat 200 alpha handheld sports scanner.....	\$159.95
Bearcat Sportcat 180B handheld sports scanner.....	\$139.95
Bearcat 80XLT 50 channel handheld scanner.....	\$99.95
Bearcat 60XLT 30 channel handheld scanner.....	\$74.95
Bearcat BCT7 information mobile scanner.....	\$139.95
AOR AR16BQ Wide Band scanner with quick charger.....	\$199.95
Sangean ATS909 306 memory shortwave receiver.....	\$209.95
Sangean ATS818 45 memory shortwave receiver.....	\$139.95
Uniden WX500 Weather Alert with S.A.M.E. feature.....	\$39.95

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AOR8200 Mark IIB-A wideband handheld scanner/SPECIAL \$539.95  
**1,000 Channels • 20 banks • 50 Select Scan Channels**  
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**Frequency Coverage:**

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The AOR AR8200 Mark IIB is the ideal handheld radio scanner for communications professionals. It features all mode receive: WFM, NFM, SFM (Super Narrow FM), WAM, AM, NAM (wide, standard, narrow AM), USB, LSB & CW. Super narrow FM plus Wide and Narrow AM in addition to the standard modes. The AR8200 also has a versatile multifunctional band scope with save trace facility, twin frequency readout with bar signal meter, battery save feature with battery low legend, separate controls for volume and squelch, arrow four way side rocker with separate main tuning dial, user selectable keypad beep/illumination and LCD contrast, write protect and keypad lock, programmable scan and search including LINK, FREE, DELAY, AUDIO, LEVEL, MODE, computer socket fitted for control, clone and record, Flash-ROM no battery required memory, true carrier reinsertion in SSB modes, RF preselection of mid VHF bands, Detachable MW bar aerial. Tuning steps are programmable in multiples of 50 Hz in all modes, 8.33 KHz airband step correctly supported, Step-adjust, frequency offset, AFC, Noise limited & attenuator, Wide and Narrow AM in addition to the standard modes. For maximum scanning pleasure, you can add one of the following optional slot cards to this scanner: **CT8200** CTCSS squelch & search decoder \$89.95; **EM8200** External 4,000 channel backup memory, 160 search banks, \$69.95; **RU8200** about 20 seconds chip based recording and playback \$69.95; **TE8200** 256 step tone eliminator \$59.95. In addition, two leads are available for use with the option socket. **CC8200A** personal computer control lead \$109.95; **CR8200** tape recording lead \$59.95. Includes 4,100 mA AA ni-cad batteries, charger, cigarette lighter adapter, whip aerial, MW bar antenna, belt hook, strap and one year limited AOR warranty. For fastest delivery, enter your order on-line at <http://www.usascan.com>.



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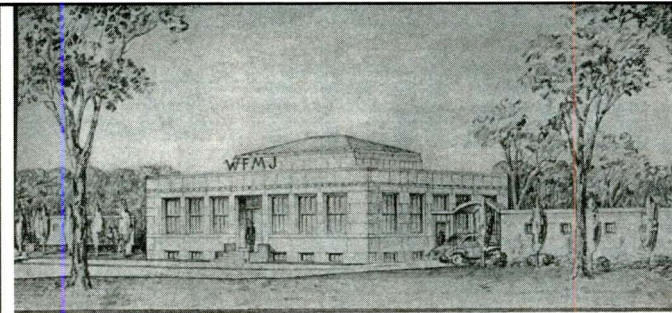
Total Families	80,972	Average Percentage Radioes	89.8
Urban Families	26,462	Total Radio Families	74,266
Rural Farm Families	28,912	1940 Population	214,268

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**WTHH and  
WTHH-FM**

OWNED AND OPERATED BY  
THE TIMES HERALD COMPANY  
PORT HURON, MICHIGAN

Here's a 1947 sketch of the WTHH AM/FM transmitter shack. The self-supporting "stick" is crowned with a pole and four-bay FM antenna. It'd be interesting to learn how much of the "LARGE AUDIENCE" touted in the ad was actual listenership or simply the possible market share. Bragging rights were also attributed to having "industry trained personnel" on staff. Sunrise-to-sunset WTHH-AM, which signed on with a kilowatt on 1360 kHz in December of 1947, later moved up the band to 1380 and gained full-time status with a directional pattern for day and another at night. The FM was long gone when the additional AM towers needed to be installed.



**WFMJ's transmitter building, to be erected this year**

WFMJ has been granted 5,000 watts AM and 50,000 watts FM, which will make it one of the most powerful of all FM stations. Meanwhile WFMJ, as usual, offers complete coverage of the concentrated Youngstown market.

**WFMJ**

*Affiliate of the American Broadcasting Company*  
News Reports of Press Association,  
the United Press and the Youngstown Vindicator

WFMJ-FM's proposed transmitter building, circa 1947, looks more like a well-endowed college library than an engineering shack. Lower level windows indicate it included a full basement. For some reason, the artist neglected to render a tower that should have been somewhere nearby, rising above the trees. The Youngstown Vindicator built its WFMJ-AM in 1939. Perhaps concentrating on this "standard" broadcast station and the WFMJ-TV operation caused FM plans to fade?

skinny columns on page four. It's no wonder why no buyers came calling, since there were also FM properties available for a song in bigger places like Los Angeles, Chicago, and New York.

**Gale Storm To The Rescue**

Eight of the local station's 10 employees were given severance and vacation pay, then let go. Two others were retained on an as-needed basis. "This gave me an opportunity to take some time off to go deer hunting," recalled Cyrillic Edmund, WOPT's chief engineer. While he was in the vicinity of Blue Mountain Lake, a gale force wind blew across the northeast, claiming the 50-ton WOPT radio tower as one of its victims. Edmund's said he rushed out of the woods only to be slowed down by many storm-induced detours on his way back to Oswego.

Together with a *Pall-Times*' night watchman who discovered the disaster, Edmunds saw how the four-legged structure had been sheered off three of its base insulators with such force that it flattened to the form of the ground except for a bump where it hugged a nearby stonewall. It was as if it were made of pipe cleaners bent on a jig.

The massive tower beacon didn't survive the blow much better, and the two men observed that it was "reduced to red pow-

der on the road" in front of the station building. "That ended the whole operation" on November 25, 1950, he noted, saying, "I stayed on long enough to sell WOPT AM and FM's technical equipment [mighty cheap], and then moved on."

And how had E.M. Waterbury reacted to the news of the tower crash? Having to call it quits certainly upset him. Prior to the storm, he wrestled with where to come up with the funds to have the tower taken down, and whether or not to cancel the station insurance policy. Not long before the gale, the policy was reluctantly renewed and a call to the expensive tower rigging crew was postponed. He still possessed a spark of hope that WOPT AM/FM might be returned to service so it could be sold as a going broadcast operation. "When my father was notified that the huge antenna fell down on its own," recalls Waterbury's daughter, Marie Layer of Ithaca, New York, "he was grinning the biggest smile I'd ever seen. Of course the insurance adjuster was happily summoned to the scene!" The \$40,000 settlement (lots of money in 1950 dollars) provided a needed salve.

The most tangible remaining reminder of the Oswego County's maiden radio venture, its Quonset hut studio site, was eventually acquired by the VFW. A few years back, it was razed. E.M.'s grandson, Ned Waterbury, has fond childhood memories of some WOPT artifacts, including one of the original microphones proudly emblazoned with its call letters. As if the wind

weren't enough, these rare local radio remnants were lost in a fire at the family's summer camp.

## An Inadvertent Legacy

WOPT-AM's dormant 1220 spot attracted the attention of a broadcaster looking to build a daytimer in North Syracuse. This 1000-watter hit the air in the summer of 1959 as WSOQ, sustained numerous callsign and format modifications—from easy listening to disco—and in the early 1990s became a full-time operation (with all-news and then “standards”) on 1200 kHz not long after the clear channel frequencies were diluted.

During the 1950s, with the hope of promoting the use of the long-underestimated FM band, FCC officials sometimes let dormant stations hibernate in the Commission file cabinets. More than once, a silent FM went back on the air for another try. Had, the Oswego paper requested that the FCC re-authorize WOPT-FM during most any day in the 1950s, permission would have likely been gladly granted. No such query, though, was ever advanced to officials. That's probably why a Washington engineer suggested to Richard and Anna Mae Mitchell, then owners of Fulton's WOSC-AM that they consider re-activating FM broadcasting in Oswego County via the erstwhile *Pall-Times* station's vacant 104.7 MHz frequency.

The Mitchells did so first as WOSC-FM (where some of the programming consisted of light classical music primarily appropriate for the lobby radio in Mr. Mitchell's law office) before switching the call sign to WKFM-FM and format to contemporary hits in the early 1970s. This is the same Fulton station that, under different management, moved to Syracuse, spending about a decade as “KIX-FM.” Sold in the 1990s, for a multi-million dollar price, it was quickly transformed into top rated country music outlet *B-104.7 FM*, now under the Clear Channel Communications banner. (Incidentally, WOSC-AM hit upon hard times and went dark in 1987, was revitalized a year later under the call WZZZ, and recently underwent an ownership/programming change as WAMF).

Even the most enthusiastic Oswegonians of five-plus decades ago might not have mused that the *Palladium-Times'* noble experiment in a “new type of broadcasting to add sparkle to your listening,” would ever amount to much. Of course,

in retrospect, we can see that the local people who pioneered WOPT made a tall, radio industry contribution, helping to pave some of the way for FM's acceptance. They also provided their region with lessons about dreams, technology, and timing—and with a slice of worthwhile broadcast history to value as we consider how today's emerging Internet audio, digital in-band-on-channel (IBOC), and satellite radio services will impact traditional AM and FM.

## An FM Headline That Didn't Stay Long On Page One

There must have been seminars about FM radio presented at most late 1940s newspaper conventions. Driving these sessions was the promise of facsimile or fax, as we know a phone line-delivered mode today. We'll cover this interesting radio/paper transmission process in a future column. For now, however, suffice it to say that many newspaper officials viewed fax as a potentially cheap way to deliver its print product to readers, and saw FM as an electronic paperboy.

Late 1940s shop talk had it that the good FM frequencies were getting snatched up fast, so more than a few newspapers dashed off FCC applications asking for a frequency modulation construction per-

mit capable of yielding good coverage. But when this phase of fax faded to dark by the early 1950s, some newspapers holding FM permits let them lapse and other print organizations, like the aforementioned Oswego operation, shut down their FM facilities. This was especially true when there was no co-owned AM sister to provide a cheap “simulcast” program source. Even when a paper ran an AM, it was not an uncommon occurrence to cut the FM and put the money elsewhere.

Three randomly selected examples include the Green Bay (Wisconsin) *Press-Gazette's* WJPG, Port Huron (Michigan) *Times Herald's* WTTH, and WFMJ of the Youngtown, Ohio, *Vindicator*. Each proudly announced its FM addition circa 1948. Architect conceptions of the respective broadcast buildings were displayed. A few years later, none mentioned the ventures. Probably even more obscure than the promotional advertising surrounding these flash-in-the-pan FMs would be actual “air checks” or recordings of the routine station identifications and a sample of the programming designed to keep the transmitter warm until either more listeners or the facsimile business materialized.

And so ends another day of *Pop Comm* broadcasting history. See you next month!

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## Citizen Awareness: Scanning For Your Safety

This month's column will be entirely dedicated to VHF/UHF scanning. With the cowardly terrorists' attacks of September 11, 2001, the naïveté of the American people was abruptly shattered. No longer were we invincible, immune to the terrorist events occurring in other parts of the world. Suddenly Americans became targets. The average citizen's awareness of the possibility of terror incidents increased dramatically overnight.

If you are a regular reader of this column, you already know my personal philosophy: "Preparedness is *NOT* and option!" Being prepared involves a lot more than having your 2-meter HT and spare battery pack beside your bed. Preparedness is a state of mind—constantly being aware of your surroundings and the activities and events going on around you.

I work in a prison. For the last 14 years I have developed a personal survival philosophy that centers on being aware of my surroundings and the things going on around me. In my working environment, this type of thinking is essential to walking out the gate every evening still ambulatory and in one piece. I have tried carrying this philosophy over into of my monthly "Homeland Security" column in *Popular Communications*.

If you want to be in tune (pardon the pun) with your community, you really need to be "tuned in" via a VHF/UHF scanner. A scanner lets us listen in on our local public service radio channels in real time. Since 9/11/01 I have become a scanner fanatic. I *want* to know what is going on in and around my community. My scanners keep me abreast of developments and potential hazards while at home and on the road.

We've all heard stories of how some local catastrophe was monitored by private citizens who owned scanners and how a virtual blow-by-blow of the unfolding events provided a safe ringside seat for those who had the ability to listen in on the right frequencies. This is only one benefit of owning a good scanner. Scanner owners/users can be of assistance to their community by being observant and reporting back to the various public service agencies.

On two occasions I have personally assisted the local Wilkes-Barre (Pennsylvania) Police Department by providing information to the dispatcher regarding individuals who were wanted for questioning. The first incident occurred in January of 1996, during the evacuation of South Wilkes-Barre due to rising floodwaters. My family was one of the last to leave the area. I had been listening to the scanner as the WBPD tried to locate a gray cargo van with two male occupants who were seen driving around the area, possibly looting evacuated homes.

As I heard the second broadcast of the description, guess who drove right by my front porch? I grabbed my phone and immediately called the WBPD dispatcher and gave her a better description of the van, the occupants, and their direction of travel. A couple of squad cars soon had the van pulled to the side of the curb and were questioning the occupants. Quick reaction time was paramount in preventing a possible crime.



Uniden's 300-channel trunktracking scanner, the BC-895XLT.

The second incident occurred a couple of years ago. I had been to a doctor's appointment and had stopped by the house prior to returning to work. As I drove up the street, the scanner broadcast a description of a teenager wanted for questioning in a violent incident which had occurred only a few minutes before at the local high school, just a few blocks from where I lived. Looking up from the instrument cluster, I spotted a young male fitting the description of the suspect wanted by the WBPD for questioning.

Luckily a squad car was patrolling about two blocks away, and I flagged the officer down and gave him a direction of travel and last known location of the teenager. He sped off and shortly afterwards I heard the dispatcher confirm that the teenager was in custody and headed back to the school.

Now these two incidents show that a law-abiding citizen in the possession of a VHF/UHF scanner can contribute to the safety and well being of his or her community by providing real-time information to public service agencies. While I'm sure that none of the suspects were Jack the Ripper incarnate, by getting these people off the street, the police were able to concentrate their law enforcement efforts in other areas.

### Arland Comes Out Of The Stone Age

Until several months ago, my inventory of VHF/UHF scanners consisted of one Bearcat BCT-7, a PRO-79 handheld, an old 20-channel RadioShack base station model, and a PRO-2026 mobile scanner. About eight years ago I acquired three eight-channel Bearcat crystal scanners for about \$5 each. These were great little boxes and virtually immune to the intermod encountered by today's fully synthesized scanners.

At that time RadioShack still sold crystals for their earlier models which also worked in the Bearcat scanners. These crystals cost only \$5 each, so these older Bearcat scanners became a relatively inexpensive way to cover a lot of local frequencies. Unfortunately, RadioShack no longer stocks these crystals, so older, crystal-controlled scanners are no longer a cost-effective means of monitoring the local public service agencies.

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In July of 2003 my good friend, Bob Reynolds, WB3DYE, a dedicated scannist, decided to put out some feelers over several of the scanner Internet newsgroups to explore the possibility of starting a local scanner users organization. Unfortunately, I missed the first meeting but was able to attend the second one a couple months later. It was at this meeting that I found out exactly how "out of the loop" I was when it came to scanners. These guys were serious about the scanning hobby. And I do mean *serious*.

As I sat listening to these people talk about state-of-the-art scanning it became apparent that I needed to invest some real money and pick up a new, high-end scanner and get with the program. Dropping over \$300 on a scanner would take a world-class sales pitch to my wife, who tolerates my radio hobby, up to a point. This just might push her over the edge!

After perusing several magazine advertisements, something caught my eye. The folks at Communications Electronics, Inc. (800-USA-SCAN; [www.usascan.com](http://www.usascan.com)) were offering a Bearcat BC-895XLT 300-channel analog trunk-tracking scanner for \$204, which included second-day UPS shipping from Indiana. Now *that* is a bargain for a top-of-the-line, state-of-the-art scanner. Not bad.

Since no one in my area of northeastern Pennsylvania was using a trunked system (WBRE-TV, Channel 28, not withstanding), I really didn't care whether the 895 could cope with trunked systems or not. But did I mention that the BC-895XLT is computer controllable? It sure is! That was one of my highest priorities when looking at upgrading my scanners. The ability to program, load/download banks of frequencies, scan, search, and log a specific range of frequencies using a comput-

er interface, along with military air band coverage (225 to 400 MHz), were all "must haves" for my new scanner. The BC-895XLT covered all these bases with the added plus of being able to decode analog trunked systems. The price was definitely right and it didn't take much of a sales pitch to bring my wife on board (always a big plus).

The BC-895XLT arrived in the promised two days. I had it on the air scanning in a matter of minutes after unpacking. Having taken advantage of the free on-line manual at Communications Electronics' website, I already had a working knowledge of the new scanner. The controls on this rig are intuitive and the radio is very user friendly overall.

The marriage between computers and scanners is one made in heaven. Owning a scanner with more than 25 to 50 channels brings up the hassles of programming all those frequencies into the receiver. With a scanner that has the ability to interface with a computer, the problems of rapid programming are easily overcome.

The BC-895XLT has 300 channels (10 banks of 30 channels) and covers the bands between 25 MHz and 1 GHz. That's a lot of spectrum and arranging your channels and monitoring needed frequencies can be a real challenge. Organizing your frequencies by bank is a simple way of sorting out the inevitable mess that comes from having multiple agencies that you want to monitor. Load your local PDs in bank one, FDs in bank two, county fire/EMS in bank three, state police in bank four, etc. This provides rapid access to those agencies you need to monitor as different situations arise.

Recently, the Luzerne County Jail suffered an escape. Two inmates scaled down the side of the six-story facility using a





A classic RadioShack eight-channel crystal-controlled scanner.

rope made of bed sheets (yes, it *really* happened that way!). One of the men fell and was severely injured while the other one, a man being held on suspicion of a double homicide, made good his escape. As you can imagine, pandemonium ensued and the local cop frequencies came alive with radio traffic regarding the escape and subsequent search for the inmate.

The Luzerne County Sheriff's Office frequency (155.415 MHz) which rarely has any traffic at all was suddenly hopping with Sheriff's Office, PSP, and U.S. Marshall's radio traffic, along with search coordination efforts by the county comm center. The Wilkes-Barre PD freqs of 154.845 MHz (dispatch) and 154.800 MHz (Channel 2) were also quite busy. This necessitated my implementing the dual scanner concept: I fired up my handheld scanner and left it on the Sheriff's Office frequency and kept the WBPD channels on the 895, designating 154.845 MHz as the priority channel for that bank. I locked out the rest of the banks on the 895 to decrease the scan time on bank one. This allowed me to closely follow the unfolding events from about 2145 Friday evening until 0330 the next day. Three days after the daring escape the inmate was recaptured and whisked away to an undisclosed location pending arraignment and trial.

To follow the action, had I needed to upload some special frequencies that would normally not be kept in the scanner, it would have been a simple matter to do so via the scanner's computer interface and my laptop. God, I *love* computers!

Speaking of scanning software, I have tried three programs to date, all of which are designed to run under Microsoft Windows. The first one, ScanPro Remote Control Software for the Uniden BC-895XLT, is an inexpensive offering from Black Bag Software ([www.blackbagsoftware.com](http://www.blackbagsoftware.com)) that costs only \$14.95 and is downloadable from the Internet. This is a basic program that allows the user to enter frequencies, PL tones (CTCSS), alphanumeric tags (if your scanner supports them) in a template format. Once saved, these frequencies can then be uploaded to the BC-895XLT via a serial cable from the computer's RS-232 port to the back of the 895. You can also download frequencies already stored in the scanner into the program under a separate file name. This program also features an extended 12,000-channel capacity along with the ability to record radio traffic while scanning.

Note that the 895's input port is *not* a standard RS-232 DB-9 or DB-25 connector. It is a five-pin edge connector that

requires a special plug. This entire serial cable can also be purchased from Black Bag Software.

The Black Bag folks also offer another scanner program, called Frequency Logger, for scanning a group of frequencies and/or large chunks of spectrum and logging the "hits" on various frequencies within the scanning range. Frequency Logger also has a spectrum analyzer display, that is really quite versatile, and an extended scanning range. These "captured" frequencies can be programmed in to the 895 for future investigation. In all, the two pieces of software and the I/O cable for the computer/scanner interface can be purchased for around \$30 from Black Bag via credit card on their secure website.

This inexpensive software provides an excellent method for the uninitiated scannist to enter the world of computer-controlled scanning. The software is somewhat limited in what it can do, but unlike other, much higher priced software, the Black Bag offering has a great virtual BC-896XLT scanner (it appears on the laptop screen) that is controlled by moving the mouse cursor to the various buttons on the computer screen and left clicking the mouse. It is really neat to watch the scanner respond to commands generated on the computer screen via the mouse buttons.

The second scanner software I tried was Scancat-Gold for Windows-SE, (trial edition) from Computer Aided Technologies (P.O. Box 18285, Shreveport, LA 71138; [www.scancat.com](http://www.scancat.com)). I downloaded this software from their website and loaded it on my laptop. This is a big program that's loaded with lots of features. However, it's not terribly user friendly from the neophyte's point of view. The actual program will support expanded trunking for the BC-895 (along with other scanners) and will allow the importation of frequency information from external databases such as Excel.

Scancat-Gold also offers several spectrum analysis graphical screens for tagging and identifying frequencies in a scanning range. The trial edition will not support anything but the basic functions of this program, so you really can't get a good feel for how well the program runs on your scanner. It has a steep learning curve, which necessitates in-depth reading of the help files that accompany the trial software. At a price of \$159.95, Scancat-Gold for Windows-SE is out of my price range, but may be right for you.

The last piece of scanning software I checked out came courtesy of a friend of mine who loaned me his laptop which contained an older version of Scan Star from Signal Intelligence (P.O. Box 640891, San Jose, CA 95164, 408-926-5630; [www.scanstar.com](http://www.scanstar.com)). Like Scancat-Gold, Scan Star is a full-featured program chock full of bells and whistles. It also requires a lot of time on the help screens to fully understand and exercise this extremely flexible program. You can use it to import frequencies from other external databases and it will support trunking on the BC-895 and other scanners. Scan Star also features a spectral analysis program and a "band scope" that works like a spectrum analyzer, graphically displaying intercepted frequencies on an amplitude versus frequency display. In addition you can digitally record radio traffic on your system's hard disk.

Scan Star is a great program, but like Scancat-Gold, it's expensive (around the \$160 price range) and has a very intense learning curve. Plan on spending lots of time with the help screens before getting comfortable with this program.

My advice to the computer scanning *neophyte*: buy the Black Bag Software, complete with the serial I/O cable, for around \$30 and give it a try prior to spending a load of hard-earned

cash on a high-end program only to find that you aren't all that thrilled with computer controlled scanning.

All three of these scanning programs work on select models of Uniden, RadioShack, and other major scanner manufacturers' scanners. Be sure to check with the software manufacturer before ordering to ensure that their software will work with your particular scanner make and model.

## Computer Nirvana

I have arrived! I am one with my Bearcat BC-895XLT scanner and my laptop (purring quietly in the background). There isn't much that I can't monitor in my locale with my gear. On the horizon there lurks a replacement for my PRO-2026 in the truck. If you're like me and don't like to spend a small fortune on radio gear but want the best bang for the buck, watch for sales as the new crop of digital trunk tracker scanners hits the market around the first quarter of 2004. I'm sure that RadioShack and Uniden will be slashing prices to reduce inventories of the older gear, so that's the time to buy.

## Some Random Thoughts On Scanning

One of the myths that serious scannists need to quash is the idea that they go around prying into police, fire, or EMS business. Several years ago I remember a discussion I had with several of the staffers on the masthead of another radio magazine regarding scanning. The bottom line was that many non-radio-oriented people viewed anyone who owned a scanner as an "electronic stalker." WOW! How does one confront that issue and defend their ownership of a scanner without sounding like an electronic stalker or Walter Mitty-type eavesdropper?

To top this all off, book titles like *The Super-Secret List of Super-Secret Government Frequencies* do nothing to further our cause. People see these titles and automatically associate anyone owning and using a scanner with spying or eavesdropping on things better left alone. In some cases the government agrees (ergo the ECPA of 1866, as amended in 1994).

Anyone who has been in the radio hobby for over six months, however, knows that an entire listing of the FCC's

frequency database, including all those "Super-Secret Frequencies," is readily available online over the Internet or on CD! Unfortunately this fact is ultimately lost on "Joe Six-pack," who has to be spoon-fed his opinions by some (with apologies to Don Henley) "bubble-headed bleached blond on evening news."

To combat the images of being "electronic stalkers," law-abiding scanner owners/users must adhere strictly to their local, state, and federal laws regarding what they can and can't monitor. It's no secret that cordless phones (49- and 900-MHz units) are easily monitored by anyone with the gear to do it. Same goes for baby monitors. Users of these Part 15 devices tend to forget that they are engaging in radio traffic that is susceptible to intrusion and interception by anyone with a basic scanner.

These "creature comfort" RF devices have become so commonplace in our society that they are considered mandatory for the average household. And therein lies the problem: The uneducated user of a cordless phone or baby monitor does not comprehend that anything they say can be intercepted (sometimes for nefarious reasons) from several hundred feet to several blocks or more from their home. Talk about "laying your stuff out in the street."

Conversely, I am absolutely positive that this same technology has been and currently *is* being used by various law enforcement and investigative agencies as an intelligence-gathering tool for anti-crime or anti-terrorism investigations. Unlawful? Yes. Inadmissible as evidence in court? Yes. However, done surreptitiously and completely "off the record," it provides local, state, and federal agencies with intelligence data whereby they can direct further investigative efforts that may result in Probable Cause to secure wiretaps, video, and audio surveillance and ultimately arrest warrants.

The bottom line here (to quote an old U.S. Air Force slogan): "The Third Man is listening!"

As scanner owners/operators, we walk an extremely fine line. We want to keep abreast of the events happening real time in our communities, but we don't want to be misconstrued as to our motives. We want to aid the public service agencies in our locales, but we don't want to become known as "wannabees" or "groupies." Each time we provide valuable information to public service agencies, we reaffirm our commitment to the hobby and

further cement a positive relationship with these agencies.

Knowing what's happening in and around your community is the first step in becoming prepared to deal with adversity, whether it is from natural or man-made causes. Responsible ownership and use of a VHF/UHF scanner will put you on the right track to preparedness and, at the same time, offer the possibility of lending a helping hand to law enforcement, fire, and EMS agencies in your area.

Remember: Preparedness is *NOT* and option. See you next month. ■

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### Join The Part 15 Revolution With The SSTRAN AMT-3000 AM Broadcast Transmitter!



Photo A. You can't see it, but oldies music, provided by the Sony CD player, is being transmitted by the SSTRAN AM transmitter.

Perhaps you didn't know, but you can legally own and operate your own AM radio station. FCC Part 15 Rules permit unlicensed transmitter input powers of 100 mW between 510 and 1705 kHz—enough power to span a small portion of many urban neighborhoods!

Micro-broadcasting has many useful applications, including broadcasting your favorite programming over your favorite old radio. Why be at the mercy of ever dwindling AM program variety? Suitable audio sources for your micro-broadcast AM station include cassette, CD or MP3 players, satellite audio channels, or even Internet radio stations. AM radio is going digital, and when the sad day comes when analog AM radio goes *dark*, you'll be ready with your own radio station to fill the gap! Here's how!

The cornerstone for effective micro-broadcasting begins with a good quality transmitter, and the SSTRAN AMT-3000 kit is the best we've seen to date. The feature-packed transmitter is synthesizer controlled in 10-kHz channel steps (9-kHz for European export models) from 510 kHz to 1710 kHz, easily set via dip-switch entry.

#### Audio Features

Although this is a monophonic transmitter, the audio input will accommodate two RCA plugs from a stereo source. The stereo signal is summed in the transmitter to prevent loss of right or left channel information. The two inputs can also allow the transmitter to *mix* multiple mono audio sources for broadcast.

Photo A shows my AMT-3000 with my portable Sony CD player. When the picture was taken the combo was broadcasting '60s era *oldies* to a nearby vintage radio. It sounded great! An on-board jumper permits an 8-dB treble boost at 2 kHz; normally the transmitter audio is flat within 1 dB from 20 Hz to 20 kHz.

The transmitter is capable of full 100 percent negative modulation (tested and proven in our lab) and also features a front-panel adjustable 1:1 to 5:1 dB compression ratio. Audio levels exceeding the adjustable limiter level are compressed at a 15:1 ratio. The transmitter audio response is flat from 20 Hz to 20 kHz with low distortion—this is unit is capable of outstanding AM audio quality!

Three front-panel controls for Gain, Modulation, and Compression give the user full control of how the transmitter sounds. The elaborate audio processing (compression and limiting) is handled by an Analog Devices SSM2166 integrated circuit, a powerful level of audio processing that I haven't seen offered in competitive units. The manual shows how to quickly set these three controls for the best sounding signal and it also gives a more detailed explanation of the Analog Devices' features than space allows here.

#### The Kit

Photo B shows what you'll see when the AMT-3000 is unboxed. Most of the smaller electrical parts are carefully pre-sorted in plastic bags at the factory. The enclosure, knobs, and wall-wart power supply are included in the kit (too often these



Photo B. Here's what you'll find when the box is opened. All the parts have been carefully sorted and prepackaged at the factory. The enclosure and power supply are included; there's nothing else you need to buy.



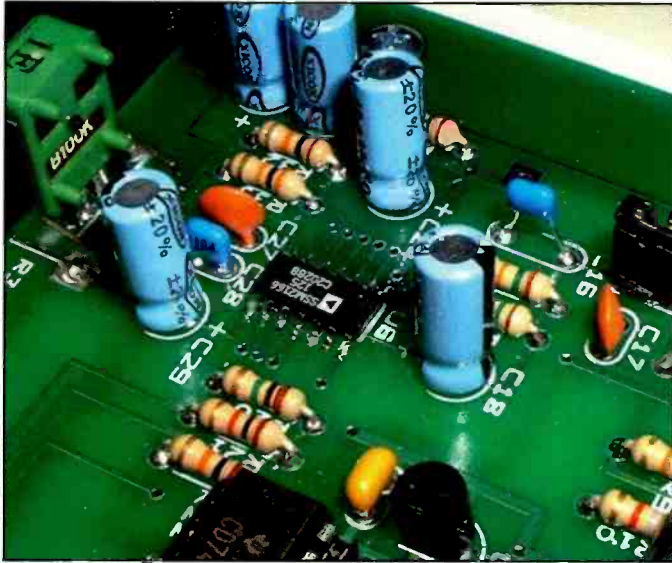


Photo C. Soldering the Analog Device surface-mount IC is the biggest challenge during assembly. The kit can be ordered with the part factory installed for a modest fee.

are expensive “options” in competitor kits; everything needed is here, and for one price). The enclosure is robust and professional looking. Considering the quality, complexity, and parts count, this kit is an exceptional bargain.

## Starting Assembly

Before picking up a tool or soldering iron, you need to inventory the parts and read the manual first! The kit is moderately

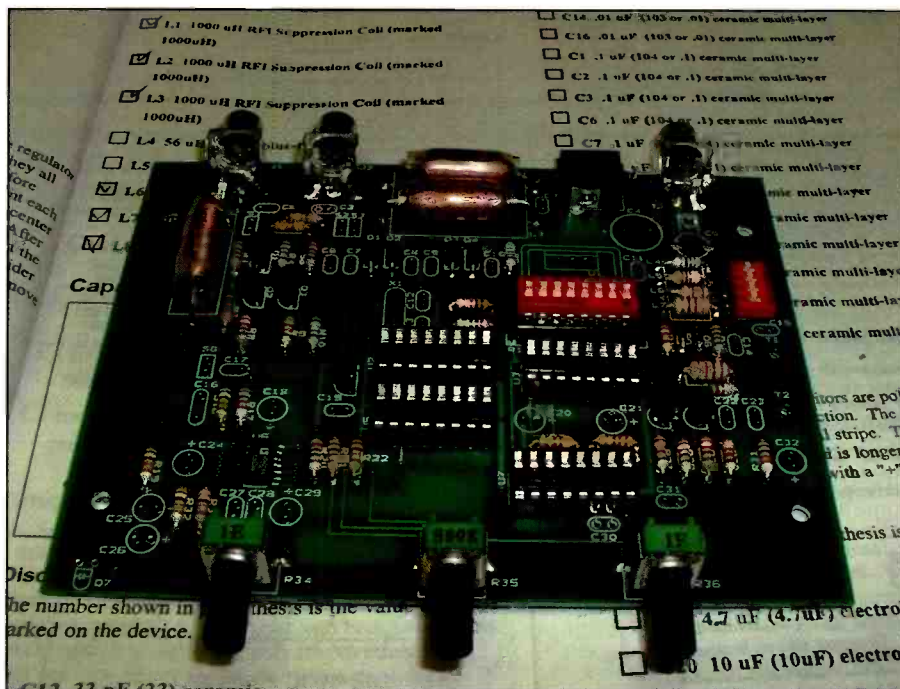


Photo D. Here, the pc board assembly is nearing 50 percent completion. Note that the component body outlines and parts legends are silkscreened onto the board. The assembly manual, in the background, allows each step to be checked off at completion. The larger IC DIP packages use sockets.

difficult to assemble, so the builder should have basic soldering skills and experience with simple kit construction before attempting to assemble the AMT-3000. This is not the kit for inexperienced first-time kit builders. If you’ve never held a soldering iron, you might have a friend do the assembly for you, or first hone your skills on simpler kits.

On the plus side, the manual is clear, concise, and well written. It shows you how to solder and is amply illustrated to aid with construction steps or in parts identification.

## The Hard Part

The most difficult task is soldering the SO-14 SMT (surface mount) Analog Devices audio IC with its .05-inch lead spacing! (Unfortunately, the through-hole version of this IC is discontinued.) The IC is shown in **Photo C**. If you don’t feel up to the task, the IC can be factory installed for a modest \$3 fee. One thing I’d suggest is to have a good hand magnifier nearby when building the kit! My near vision isn’t what it used to be, and a reading glass proved to be most useful during assembly when my eyes wouldn’t focus!

Another tricky construction step involves mounting two monolithic capacitors between IC socket pins on the bottom of the pc board. This was a design revision to clean up some artifacts from the synthesizer that were audible on the transmitter signal. The pc board is silkscreened—all of the component legends and body layouts are clearly printed on it! Also, the solder side of the board is masked, which helps prevent unwanted solder bridges across adjacent runs or between component pins. **Photo D** shows the PC board nearly 50 percent assembled. Note that the larger IC packages mount in IC sockets for easy replacement.

Plan to spend at least a weekend, interspersed with ample rest periods, to build this kit. It’s all too easy to become complacent and rush assembly, and rushing assembly is what leads to errors. My Waterloo was confusing a TO-92 packaged IC with a similarly packaged transistor. Had I *read* the instructions, I wouldn’t have erred. The assembled pc board, installed in the enclosure, is shown in **Photo E**.

## Hum Reduction

Many in-home AM transmitters are plagued by “tunable hum.” The kit designer felt most of these problems relate to poor power supply design and inadequate RF bypassing. Tunable hum is a loud hum on the receiver audio that’s only present when tuned into a station. This kit includes an AC wall wart supply, and the diode rectifiers are RF bypassed to prevent incidental 120-Hz modulation of RF currents flowing through the power supply cables. The transmitter also features (jumper removable) RF chokes in the power and audio lines to eliminate stray RF antenna currents from flowing on these cables (if



needed) to control tunable hum problems. I'm pleased to report that I never experienced this problem.

## Technical Tidbits

The synthesizer uses four 74HC series ICs to produce a crystal-referenced signal between 20 kHz to 2560 kHz (FCC Part 15 rules permit operation between 510 and 1705 kHz, and the actual transmitter operating range is limited to 530 to 1710 kHz by the RF stage tuning. The synthesizer uses a 4-MHz crystal oscillator for the reference.) The mumbo-jumbo means that, unlike inexpensive competitor models using free-running oscillators, this transmitter's frequency is *locked* to a very stable and accurate crystal oscillator; it won't drift with temperature, changes in humidity, or over time. My frequency counter showed the transmitter was within a few cycles of the frequency it was set to. This avoids audible heterodynes from weak distant AM stations on the same frequency, especially at night.

The S4 dip-switch settings set the binary divider count in the synthesizer to determine the transmitter frequency, based on the following formula:

$$\text{Frequency in kHz} = 10 * (\text{S4\_value} + 1)$$

Besides setting the transmitter frequency via S4, the transmitter RF stage output is set to the corresponding frequency range using S5, a four-position dip switch. SSTRAN breaks the broadcast band into several different band ranges, and this switch selects the optimal component values for each of those frequency ranges. The transmitter output tuning is peaked (via a ceramic trimmer) for the highest DC voltage at a meter test point on the PC board. A considerable amount of engineering time went to making the modulation quality relatively immune to improper transmitter tuning. This all sounds more complicated than it really is, since the manual clearly describes the steps for setting the audio controls, transmitter frequency, and tuning.

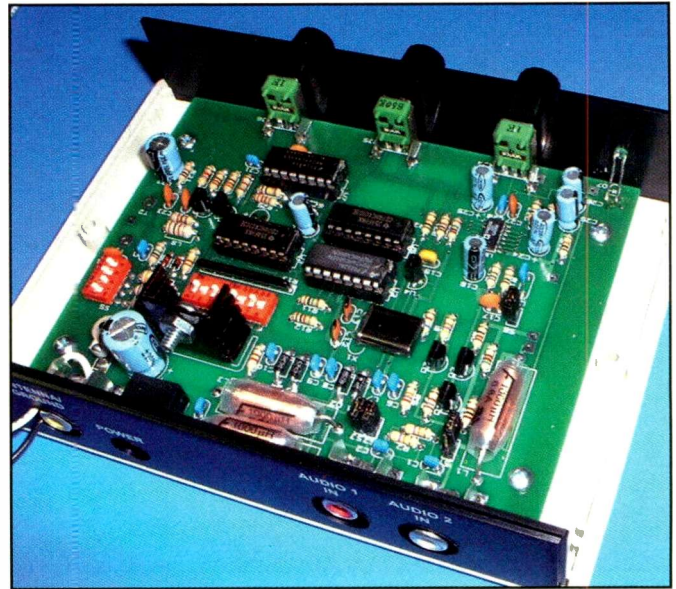
## Antenna Choices

The RF stage uses a tunable Pi-Net output for maximum power transfer to the integral Part 15 antenna system. The Pi-Net also limits harmonic radiation to better than -20 dBc to meet FCC regulations. The supplied antenna is a 118-inch length of white antenna wire and a 72-inch black ground wire counterpoise per Part 15 Regulations.

The manual instructs the builder to solder the supplied antenna and ground wires directly to the pc board to meet FCC Part 15 antenna requirements. However, the RF output is also available through an optional (but supplied) RCA jack should the builder elect to use another antenna system. This runs the risk of not meeting FCC Part 15 compliance if a different antenna system is used. If you live outside the United States, you will need to determine the local laws applying to unlicensed broadcasting.

## Getting The Most Range

The SSTRAN antenna yields best efficiency at the high end of the broadcast band; that is, you'll transmit farther at 1700 kHz than at 530 kHz. Look for a relatively quiet frequency at the high end of the band to get the best range. In many areas of the country this means going into the relatively unoccupied expanded AM band above 1600 kHz, especially at night when distant stations



*Photo E. The finished pc board installed in the lower portion of the supplied enclosure. This view gives some indication of the complexity of the kit—you get a lot of value for the money.*

are barreling in across the dial. Many vintage radios won't tune above 1500 or 1600 kHz; while others will tune to 1700 kHz, which was the old police band used prior to WWII.

How far you can transmit depends on a lot of variables—every location is different. Some Part 15 broadcasters claim they can cover several blocks; others have trouble reaching across a ranch house! Regardless, with everything being done legally, a properly engineered and efficient Part 15 transmitter with good audio and decent modulation depth will have the edge at any location.

## Wrapping It Up

Here's the bottom line: This is a well-engineered product that delivers what it promises. It's an exceptional value. The transmitter audio is great. You won't be disappointed with this transmitter. Since a small family-run company produces the kit, I suspect the product is more a labor of love than a profit-motivated venture. The e-mail customer support was good.

My transmitter is in daily use broadcasting old time radios across neighborhood, a topic we'll be discussing in a future "Wireless Connection" column! Stay tuned for more details and join our micro-broadcast revolution. ■

## Ordering Information

### Price Class

Full kit, AMT-3000, AMT-3000-9K (9-kHz European)—\$89.95;

SMT Chip pre-soldered, AMT-3000-SM, AMT-30000-9KSM (9 kHz European)—\$92.95

### Contact

SSTRAN, 3053 Griffith Rd., Norristown, PA 19403; Web: [www.SSTRAN.com](http://www.SSTRAN.com) E-mail: [info@SSTRAN.com](mailto:info@SSTRAN.com)

# the Pop'Comm

by Eric Force, eric@dobe.com

## puzzle corner *test your radio knowledge*

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



### ACROSS

- 1 Grain husks
- 5 Now called Class B airspace
- 8 Korean Radio & TV Network (abvr)
- 11 Basic monetary unit of Ghana
- 12 A.K.A. "Ribbon" cable
- 13 Sullen
- 15 CD format (Rewritable)
- 16 1200 as Roman Numerals
- 17 Basic currency of Papua New Guinea
- 18 Engraved stamping device
- 20 WinRADIO programming language
- 22 Pop' Comm Assn't. Production Mgr (RevSp)
- 25 Unseen before
- 26 Moonbounce
- 27 Keyboard key: go to EOL
- 28 Callsign, Saudia Arabian Airlines
- 31 Pop' Comm's Publisher

- 33 International Atomic Time (abvr)
- 34 Units of work
- 38 151.625 MHz used by these types of organizations
- 41 Associated with CAD for analysis
- 42 The "555 Timer" makes use of this
- 45 Get 80 channels with this CB "feature" (abvr)
- 46 Seaport of Mecca
- 48 Radio or TV antenna (RevSp)
- 50 Airport code, Regan National
- 51 Continuous dull pain
- 52 Hearing organ (RevSp)
- 54 UK body responsible for clearing TV commercials (abvr)
- 58 Person, place or thing
- 59 NBC, CBS competitor
- 60 Unbalanced to unbalanced transformer
- 61 Constellation: The Lion
- 62 "FM \_\_\_\_" (Replaced "FM SCS")
- 63 Measured food intake
- 8 AM 1020 KHz, Pittsburgh, PA
- 9 Airport BOI
- 10 Sign of West Longitude (RevSp)
- 14 Wire run
- 19 Precision aircraft instrument approach system
- 21 Airport code, Baltimore, MD
- 22 Yemen Radio & TV network (abvr)
- 23 Airport, Reno, NV
- 24 Provides for "snack breaks" during shows (abvr)
- 25 CRT pioneer (RevSp)
- 29 FL Airport SRQ (RevSp)
- 30 174 as Hexidecimal
- 32 CW abvr, Sweepstakes
- 35 CW abvr, Received
- 36 Wander about idly
- 37 Canvas bag anchor
- 39 CW abvr, Please
- 40 dit dit dit, dit dah dah dah, dah dit dah dit
- 42 The "P" in ZIP (postal code)
- 43 FCC Channel type of AM Freq 1230 KHz (RevSp)
- 44 HI Airport LIH
- 47 Callsign, Dubai Airwing (RevSp)
- 49 NV city, 39.5N, 119.8W
- 50 Prefix, ten
- 53 ASCII 65, 66, 67
- 55 CW abvr, Any
- 56 Billiard stick
- 57 CW abvr, Can't, cannot

### DOWN

- 1 Invisible email "carbon copy"
- 2 Resistor color code 2
- 3 CW abvr, address
- 4 Boy's Name (RevSp)
- 5 The "T" in OTR
- 6 U.S. Government health organization (abvr)
- 7 Provide with credentials

(Solution on page 80)

### THIS MONTH IN RADIO HISTORY - "Scrambled Tiles" On February 27, 1922 ...

(Unscramble the tiles to reveal message.  
Puzzle created at: <http://school.discovery.com/>)

F	I	R	E	N	O	O	V	S	T	E	C	R	T	H	E	T	E	D	N	A
N	F	E	D	H	E	R	D	I	O	R	A	T	H	N	A	L	R	Y		
S	C	E	T	A	<del>U</del>	<del>N</del>	V	E	N	O	M	M	T	I	O	C	O	B	E	R
A	T	E	<del>C</del>	<del>E</del>	C	O	N	R	S	T	E	R	E	S	E	R	C			

U	N	I																		

Solution: United States Commerce Secretary Herbert Hoover convened the first National Radio Conference.

### Pop'Comm Trivia...

Other than some prototypes, I am part of, and vital to, virtually every type of radio and electronics product or project. I'm known by many names and part numbers yet lose my identity when used. Novice kit or project builders often take me for granted but quickly learn of my importance when their project doesn't work or fails prematurely.

What am I?

Learn more at: <http://www.epemag.wimbome.co.uk/solderfaq.htm>  
Answer: Solder / Soldering

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



## Supersize Solar Flare Sets Record, Scorches MW DX Signals

The following message is for concerned 700 WLW listeners. You may have heard about a recent massive bubble of gas expelled by the sun. Some believe this bubble could wreak havoc with communications systems. Rest assured that 700 WLW expects no problems. Thanks to certain employees we've learned to overcome the most severe gas attacks. So when you tune in this weekend, you'll hear your favorite shows, on 700 WLW The Big One.

This was how radio station WLW Cincinnati responded to a major solar flare that produced radio blackouts, visible aurora, and enhanced mediumwave reception of signals from southern latitudes.

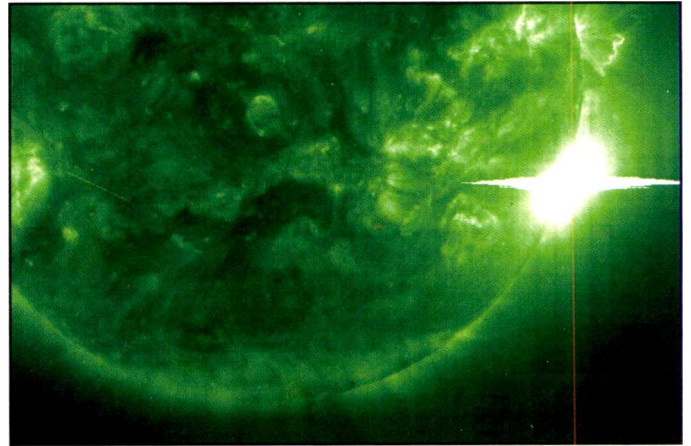
On November 4, 2003, the sun blasted earth with the most intense solar flare ever recorded in history. The flare emanated from Sunspot 486, itself the largest sunspot observed during this solar cycle, large enough to be observed by the naked eye. Estimated as an X28 flare, some observers indicated that it could have been as great as X40 or X50. Sensors onboard the NASA GOES weather satellite were saturated by the flare, preventing an accurate measurement. While the event was indeed more powerful than the solar eruption and X19 flare of 1989 that caused a widespread electricity blackout, the earth only received a glancing blow this time, sparing us from major blackouts and satellite communications failures.

### So What's Going On With The Sun?

Aren't we approaching solar minimum? While the latest round of flares is historic, it's *not* unusual for a brief burst of severe solar activity to occur on the down side of a solar cycle. Overall sunspot numbers have continued on a downward trend since a reversal in hemispherical polarity of the sun signified the peak of the present Solar Cycle 23 back in February 2001. Furthermore, modern technological records of solar activity only cover the last three cycles and scientists have much to learn about predicting the behavior of the sun. Cycle 23 is forecast to reach minimum in 2006. Short-term, based on the 27-day rotation of the sun, expect another round of solar activity in February as what remains of Sunspot 486 and others in the group come into view, although it will likely be of a much lesser magnitude.

When solar activity is high, mediumwave signals can be adversely affected. If visible Aurora Borealis or Northern Lights are observed overnight in your region, then a blackout of distant skywave signals can be expected due to the geomagnetic energy in the ionosphere. In this case nighttime mediumwave reception will be similar to daylight with enhanced signals from local stations, perhaps accompanied by an increase in noise levels. You might be surprised to find strong signals from 40-watt CBC relay stations in Canada, and clear reception of U.S. stations that reduce power to as low as 5 or 10 watts at night, with the AM band absent of 50-kilowatt clear channel signals subdued by the solar geomagnetic storm.

Outside the full blanket of the auroral dome to the south or as a solar geomagnetic storm weakens, expect enhanced reception of signals from southern latitudes. This is often signified



*Explosion on the Sun! The largest flare ever recorded as captured by the Solar and Heliospheric Observatory. (NASA photo)*

by the dominance of Latin American signals, especially from Cuba, Colombia, Mexico, and Venezuela, replacing Canadian and U.S. signals throughout the lower half of the AM broadcast band, except in the Pacific northwest where signals from down under may come alive.

Finally, after a major solar eruption is over and the storm has dissipated, there will often be what seems like an over-compensation with signals from northern latitudes rebounding to above normal levels. Sometimes the strongest signals from Alaska, the Canadian Maritimes, and Europe can be received after a major solar event subsides. Without a doubt, such extremes in solar activity create excitement among AM broadcast DXers.

To learn more about solar activity, visit [SpaceWeather.com](http://SpaceWeather.com) for the latest science news and information about the earth-sun environment. Listen to National Institute of Standards and Technology time stations WWV and WWVH for the latest solar conditions and forecast, broadcast hourly on WWV Boulder, Colorado, at 18 minutes past the hour and on WWVH Hawaii at 45 past. Frequencies are 2.5, 5, 10, 15, and 20 MHz short-wave. Go online at [www.sea.noaa.gov/Data/info/WWVdoc.html](http://www.sea.noaa.gov/Data/info/WWVdoc.html) for a detailed explanation of forecast terminology. Also, consult the Florida Space and Atmospheric Weather Institute website at [www.kn4lf.com/kn4lf5.htm](http://www.kn4lf.com/kn4lf5.htm) for a layman's explanation of theories and the propagation outlook presented by ionospheric expert Thomas F. Giella, KN4LF. Check out the 2004 *World Radio TV Handbook* for its always-excellent annual review of reception conditions.

Of course, stay tuned with Tomas Hood, NW7US, in his "Propagation Corner" right here in *Pop'Comm* for an ongoing discussion about radio propagation.

### Key Auroral DX Targets

Here's a target list of leading indicators for auroral reception conditions. As you learn to recognize these stations, dig

The Big One 700 WLW Cincinnati QSL card.

deeper to discover more Latin American signals. Use the *World Radio TV Handbook* MW frequency listings by regions as a quick reference.

### CUBA

- 570 Radio Reloj, Santa Clara (30 kW)
- 600 Radio Rebelde, Urbano Noris (150 kW)
- 640 Radio Progreso, Guanabacoa (50 kW)
- 670 Radio Rebelde, Arroyo Arenas (50 kW)
- 710 Radio Rebelde, La Julia (150 kW)
- 760 Radio Reloj, Las Mercedes (10 kW)
- 890 Radio Progreso, Chambas (80 kW)
- 1180 Radio Rebelde, Villa Maria (50 kW)

### COLOMBIA

- 650 RCN Antena Dos, Bogota (100 kW)
- 760 RCN, Barranquilla (30 kW)
- 770 RCN, Bogota (100 kW)
- 810 CARACOL, Bogota (250 kW)
- 1000 RCN, Cartagena (15 kW)
- 1100 CARACOL, Barranquilla (15 kW)
- 1170 CARACOL, Cartagena (10 kW)

### MEXICO

- 540 XEWA San Luis Potosi (150 kW)
- 730 XEX Mexico (100 kW)
- 900 XEW Mexico (250 kW)
- 940 XEQ Mexico (50 kW)
- 1000 XEOY Radio Mil, Mexico (50 kW)

### VENEZUELA

- 640 Union Radio, Puerto La Cruz (30 kW)
- 670 Radio Rumbos, Caracas (100 kW)
- 720 Radio Oriente, Porlamar (50 kW)
- 750 Radio Caracas Radio, Caracas (100 kW)
- 780 Radio Coro, Coro (10 kW)
- 1110 Radio Carupano, Carupano (10 kW)

## CHWO Signs On New Website

Brian Smith at radio station CHWO, Toronto, writes us,

Hello to all AM 740 listeners. It is with great pleasure I announce that the official CHWO-AM 740 website is now up and running. Although there will be a few tweaks during the coming weeks, it is now available to all to see. The website contains e-mail addresses to many of the station staff. The [am740@rogers.com](mailto:am740@rogers.com) e-mail address will

still be available for questions and comments and you can also use it as a backup (e.g., if you don't receive a reply by the direct route). We will be scaling back the other webpages you are familiar with now on the Ontario DX Association website [www.odxa.on.ca/chwo.html](http://www.odxa.on.ca/chwo.html) soon. So please enjoy CHWO-AM 740 (<http://www.am740.ca>). Thank you to all for your support during the past two plus years.

Brian Smith is the CHWO reception report manager and moderator of the AM 740 Yahoo group. CHWO is a technically superior AM radio station with outstanding sound, playing a wide selection of nostalgia and oldies music, and known for its support to the DX community. Listen Friday nights for the popular oldies request party with the Rockin' Robin, send them a reception report, and don't forget to mention that you read about it in *Pop'Comm*.

## QSL Information

**730 KBSU Boise, Idaho**, a new QSL card in 8 days for day-time reception. Letter and QSL card along with sticker, signed Steven B. Johnston, Dir of Eng. Address: KBSU-Boise State University, 1910 University Dr., Boise, ID 83725-1915. (Martin, OR)

**770 KKOB-AM1 Santa Fe, New Mexico**, full-data letter in 12 days for reception of the KKOB 230-watt synchro transmitter in Santa Fe. I was in Santa Fe at the time and received the synchro transmitter on my car radio with the antenna removed. The letter says "Since the inception of KKOB-AM1's operation decades ago your reception report is the first official reception report of the booster ever received here at KKOB(AM)," signed Mike Langner, CE. Address: 500 Fourth St. NW, Albuquerque, NM 87102-2102. (Griffith, CO)

**1690 WRLI Berwyn, Illinois**, a very nice full-data QSL card in 14 days, listing original lineup of announcers including the legendary Larry Lujack and Tommy Edwards. Says initial sign-on was October 7 at 2:27 PM CDT. Mentions website at [www.realoldies1690.com](http://www.realoldies1690.com). Signed Len O'Kelly, KB9ZCX, Overnite Announcer. Address: 233 N. Michigan Ave., #2800, Chicago. IL 60601. (Griffith, CO)

## Broadcast Loggings

Welcome to George Clement who sends a list of typical DX signals received in Florida along with these comments,

I use Drake SW8 and RadioShack DX-398 receivers and antennas consisting of one 100-foot wire, a 1000-foot longwire strung on a fence around my suburban lot, and two Ewe antennas pointed south and southwest. I hope you print a selected few of these loggings as I think more info on the possibilities of AM DXing from Florida is needed.

You got it, George!

- 700 WLW, Cincinnati, Ohio
- 730 XEX, Mexico City, Mexico
- 740 KTRH, San Antonio, Texas
- 810 XEFW, Radio Estrellas, Tampico, Mexico (1 kW)
- 820 WBAP, Dallas/Ft. Worth, Texas
- 1010 CFRB, Toronto, received on car radio
- 1020 KDKA, Pittsburgh, PA, received on car radio
- 1050 XEQOO, Radio Pirata, Mexico
- 1110 WBT, Charlotte, North Carolina
- 1120 KMOX, St. Louis, received on car radio
- 1160 WYRU, Red Springs, NC (350 watts)
- 1160 WYLL, Chicago (5 kW)



1160 VSB3, Hamilton, Bermuda (1 kW)  
 1160 KSL, Salt Lake City, Utah  
 1180 Radio Rebelde, Santa Maria, Cuba  
 1620 WDHP, Frederiksted, U.S. Virgin Islands

The volatile solar conditions resulted in some outstanding DX reception by Patrick Martin on the Oregon coast. He tells us,

I had one of the best South Pacific down-under openings in many years. I have not seen an opening like this since the heyday of the '80s when down-under signals were all over the dial on a nightly basis. Five-kW Aussies were everywhere. Unbelievable conditions. I even bagged a couple new ones which is hard to do, with some 350 Aussies and Zedders heard and QSLed through the years. The Hawaiians and South Pacific DX started showing up around 0530 UTC where Tahiti was holding its own next to KCBS very nicely. The S-meter readings were about equal at S9+30 dB. Tonga-1017 was a bit weaker but easily readable with a woman in Tongan. Hawaiians were dominating the frequencies like KSSK-590 and KUAI-720. By 0700 I found a very strong signal from Samoa-540

dominating the frequency at S9+20-25 dB! A gal with a British accent playing older U.S. pop tunes and IDs as "SBS" (Samoan Broadcasting System). I just could not get over the signal. I leaned back and listened to 2AP on 540 for at least half an hour. I did not want to change the frequency!

Here are some of the spectacular signals that Patrick logged using a Drake R8 receiver, an MFJ 1026 phasing unit, and Beverage and Ewe antennas. All times are UTC.

**540 2AP Apia, Samoa**, at S9+20 dB+ with older U.S. pop music and some Samoan pops, including songs like "Faith" by George Michael, then at 0730 a Samoan version of "The Tennessee Waltz," the song made famous by Patti Page in the '50s in the U.S. "SBS" (Samoan Broadcasting Service) IDs, and time checks, plus some dedications. Really an exciting station to listen to, it was fun. Later after 1100+ with soccer in Samoan and English. (Martin, OR)

**550 KMVI Wailuku, Hawaii**, at 0735 very strong and totally dominating the

frequency with ESPN sports talk. (Martin, OR)

**570 KQNG Lihue, Hawaii**, at 0730 very good and dominant with talk, over presumed KLAC adults standards, no sign of KVI Seattle. (Martin, OR)

**590 KSSK Honolulu, Hawaii**, at 0702 a great signal totally dominant over everything else with pops and ID, "Playing the music of yesterday and today, KSSK Honolulu." (Martin, OR)

**630 Matavera, Cook Islands**, a tentative logging, possibly the island music in the jumble at 0815, unneeded, but this is rare. First logged in the early '80s with 500 watts. (Martin, OR)

**702 1XP R. Pacific, Auckland, New Zealand**, good at 1007 with weather for the North and South Island, time checks, and Radio Pacific mention into a talk show. (Martin, OR)

**738 Papeete, Tahiti**, at 0645 good and about equal with 740 KCBS San Francisco, with island pops and a man in French. Not quite as strong as Samoa but still armchair copy. (Martin, OR)

**PENDING**

New Call	Location	Freq.	Old Call
WVAE	Biddeford, ME	1400	WIDE
WFRF-FM	Monticello, FL	105.7	WVHT
KBGX	Keaau, HI	105.1	KIHH
KLXA	Alexandria, LA	89.9	KOUZ
WYKL	Crestline, OH	98.7	WYXZ

**CHANGES**

New Call	Location	Freq.	Old Call
WIJD	Prichard, AL	1270	WKSJ
KHTS	Canyon Country, CA	1220	KIIS
KPMP	Modesto, CA	840	New
KZFX	Salinas, CA	1380	KTOM
KTIE	San Bernardino, CA	590	KRLH
KIIS	Thousand Oaks, CA	850	KACD
KZNT	Colorado Springs, CO	1460	KKCS
WGGT	Golden Gate, FL	960	New
WRDW	Augusta, GA	1630	WTEL
WTEL	Augusta, GA	1160	WRDW
WRTO	Chicago, IL	1200	WVIV
WBGX	Harvey, IL	1570	WBEE
WRLI	Johnston City, IL	1690	WHITE
WKJG	Fort Wayne, IN	1380	WONO
KOEL	Oelwein, IA	950	KKHQ
WKFN	Fort Campbell, KY	1370	WJMR
WTTT	Boston, MA	1150	WBPS
KHWG	Fallon, NV	750	New
KSXX	Las Vegas, NV	670	New
WSME	Camp Lejeune, NC	1120	WSMO
KEZX	Medford, OR	730	KLVB
KVVZ	Abilene, TX	1470	KEAN

WNGB	Green Bay, WI	1400	WDUZ
KYNF	Prairie Grove, AR	94.9	KDAB
KCEE	Grass Valley, CA	103.3	New
KTOM-FM	Marina, CA	92.7	KMJO
KPRC-FM	Salinas, CA	100.7	KTOM-FM
KRSX-FM	Yermo, CA	105.3	KJAT
KKDC	Dolores, CO	93.3	New
WPHH	Waterbury, CT	104.1	WMRQ
WRTO-FM	Goulds, FL	98.3	WRTO
WGAC-FM	Warrenton, GA	93.1	WRFN
WLHW	Casey, IL	91.5	New
WYCA	Crete, IL	102.3	WYBA
WYRB	Genoa, IL	106.3	WYCH
WVIX	Joliet, IL	93.5	WJTW
WSRB	Lansing, IL	106.3	New
WHNI	Rochester, IN	88.5	New
KOEL-FM	Cedar Falls, IA	98.5	KOEL
KKHQ-FM	Oelwein, IA	92.3	KOEL-FM
WLXX	Lexington, KY	92.9	WVLK-FM
WUML	Lowell, MA	91.5	WJUL
WEVS	Nashua, NH	88.3	New
WDTH	Wildwood Crest, NJ	93.1	WBNJ
KKCJ	Cannon AFB, NM	90.7	New
KKCC	Clovis, NM	90.3	New
KRLU	Roswell, NM	90.1	New
WKXP	Kingston, NY	94.3	WBPM
KJTH	Ponca City, OK	89.7	New
KXTH	Seminole, OK	89.1	KZXX
WHRP	Tullahoma, TN	93.3	WUSX
KTYS	Flower Mound, TX	96.7	KMEO
KJTV-FM	Plainview, TX	97.3	KHDY
WYAC-FM	Christiansted, VI	93.5	WYAC
WSUH	Crozet, VA	102.3	WFFX-FM
WDUZ	Brillion, WI	107.5	WXWX

# 7

# GREAT New Books from CQ

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by Chuck Penson, WA7ZZE



1

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2

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3

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**900 KNUI Kahului, Hawaii**, at 0530 very good with nice Hawaiian pops all night, many KNUI IDs. This is an easy one to ID, with local programming/music and all of the IDs. (Martin, OR)

**927 4CC Gladstone, Australia**, at 1009 with a good signal with a Fleetwood Mac song and ID, "On 4-Double-C, your kind of place." This one was good from 1000 to 1100+ every time I went by. (Martin, OR)

**1017 A3Z Nuku'alofa, Tonga**, at 0715 very strong with a man in Tongan, with

the IF filter set to 6 kHz still easily separable from 1020, which was very weak. Nice island music too. (Martin, OR)

**1098 V7AD Majuro, Marshall Islands**, at 0650 with request program, "This is dedicated to everyone in the Marshall Islands," and the song "Respect" by Aretha Franklin. (Martin, OR)

**1116 4BC Brisbane, Australia**, at 0814 as usual one of the strongest Aussies, "11-16 4BC" ID after a cluster of spots. (Martin, OR)

**1206 2CC Canberra, Australia**, at

0959 good on top for a bit with a spot for the water system and info on a city council meeting, followed by "...right here on 2-Double-C." I am really pleased with this, as I used to get 2GF all of the time in the past when 1206 was in. New! (Martin, OR)

**1386 1XOR R. Tarana, Auckland, New Zealand**, at 0715 presumed the source of the ethnic-type music and female announcer. I was amazed it came so strong for a while, holding its own with the 6-kHz IF filter engaged. Unneeded, but I have not heard this for some time. Later on it was only a het. (Martin, OR)

Last but not least, Bogdan Chiochiu reports some amazing auroral Latin American DX received in the Montreal, Quebec, area.

**530 R. Vision Cristiana, Turks & Caicos**, at 0041 announcements and "Radio Vision Cristiana Internacional" mention by a fairly young man between two ranchera songs with gospel lyrics. The third song heard was a pop-music-sounding Spanish gospel one, then more ranchera-sounding gospel music. An excellent signal, but sometimes with lots of interference. (Chiochiu, QC)

**570 R. Reloj, Santa Clara, Cuba**, at 0037 heard an RR Morse code ID. very good, totally topping the frequency. At two other times, it was noted at about even strength with another Latin American station that played Spanish tropical music, either previously logged YVLX R. Rumbos, Venezuela, or needed HIMS R.Cristal, Dominican Republic. WSYR Syracuse, the big pest on 570 here, was kicked out by the aurora! (Chiochiu, QC)

**580 HIAF Montecristi, Dominican Republic**, at 0033 talk followed by a bachata song with nice synthesizer, then ID with possible call letters and "Radio Monte Cristi" slogan and a more up-tempo merengue tune. Strong signal, just under WTAG. New for me, Dominican Republic #3. (Chiochiu, QC)

**640 R. Progreso, Cuba**, at 0018 fading over R. Guadeloupe for about four minutes with a program of Cuban music hosted by a male announcer, parallel 890 kHz. (Chiochiu, QC)

**760 RCN Barranquilla, Colombia**, at 0036 very poor with some WJR interference, but parallel RCN 770 which was a bit better. Wouldn't have been identifiable without the parallel. (Chiochiu, QC)

Thanks to Bogdan Chiochiu, George Clement, Patrick Griffith, NONNK, and Patrick Martin. 73 and Good DX! ■

## our readers speak out

letters to the editor

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

### Gordo Remembers Before Push-To-Talk

Dear Editor:

Good thing Nextel wasn't around in the late '50s during the start up of Class D Citizen's Band. They would have probably trademarked UP-TO-TALK. You see, youngsters, way back then when Class D CB radio got started with FCC call district numbers, letter, and numbers, the rig of choice was the International Crystal "ICEBOX." Two crystal-controlled channels, a receive Channels 1 through 23 sweep arm, power to glow a #47 lightbulb, and an up-and-down lever for talk and listen. CB pros like Bill Price would lean way back in their rocking chair and flip it with their big toe up-to-transmit and, with their little toe, down-to-receive. The rest of us just had to lean over to flip-up-to-talk.

The reason they called this first CB radio the "ICEBOX" was that it had a big silver front and it stood much taller than it was wide. The International Crystal "ICEBOX" was a favorite because the receiver was super-heterodyne for remarkable channel selectivity, as opposed to some of the kit CB radios that ran super-regenerative receivers. Dial to the middle of the band, and you could hear almost anyone, from Channel 1 through 23.

We were also in good shape back then, regularly working our abs pulling ourselves up regularly to flip-to-talk, and drop-to-listen.

Of course, newer rigs came out with TX/RX relay operation, and push-to-talk was here to stay. But those guys had to stick with the mic that came with the equipment, and those of us with the flip-to-talk could play around with all sorts of crystal microphone elements that you would never leave in the sun.

So I don't know what all the fuss is about on "push-to-talk." No one seems to nag us writers when we accidentally use the word "walkie talkie," but I will be sure to mind my manners and always abbreviate what I'm talking about as PTT.

They haven't trademarked this, have they?  
Gordon West, 11W2534

### Technology Slows For No Man (Or Woman)!

Dear Editor:

I just read your editorial in the magazine I received today. I also just had finished filling out the "Special Survey" the ARRL has commissioned to be done to try to figure out why our hobby is not growing. I must say, you hit the topic dead on! Old timers that have nothing better to do than find ways to make the new guys or the kids feel inferior and unable to even be "up to standard" are seriously sucking the life out of amateur radio. True, they came up through the ranks, and yes they "got theirs the hard way," but they should also remember it is 2003 and technology slows for no man.

I have been very active in amateur radio for several years (wish I had gotten my license years ago). The biggest single complaint I hear from old and new hams alike is why do we still have to live in the past and still put up with the notion that because we used to do it that way, there is no reason to change now. I hope your editorial gets read many times over for what it has to say is quite simply true and the hobby needs desperately to change—or it will continue to decay and die.

(Continued on page 79)

### KNX 1070 Ends Drama Hour, And Ceramic Capacitors In Vintage Radios

**W**e've learned that Los Angeles station KNX (50 kW, AM 1070) has announced the end of their 9 p.m. nightly "Drama Hour" broadcasts—sadly, just shy of reaching a 30-year run. The "Drama Hour's" repartee included a number of great, classic OTR (Old Time Radio) broadcasts, including "Gunsmoke," "Lux Radio Theater," "Jack Benny," "Bums and Allen," "The Lone Ranger," along with many other legendary early radio shows. The station has now decided to go "all news, all the time." Alas, "Traffic-On-The-8s" will spell the end of another choice for alternative AM radio fare for many listeners west of the Mississippi.

Although the "Drama Hour" will still be available on the Web, its presence on real radio will be missed. I'll show you how you can broadcast OTR throughout your home and local neighborhood in an upcoming "Wireless Connection." It's sad to own many vintage radios when there is so little programming worth listening to, and the trend seems to be worsening.

#### Ceramic Capacitors In Vintage Radios

There is no such thing as a good wax capacitor. From the day these devices were made, residual acids in the paper dielectric, combined with moisture and other impurities, lead to the inevitable failure mode. Alas, the wax impregnation used to "seal" these caps is also a very ineffective moisture barrier. Plastic dielectric and metal film capacitors are estimated to have life spans of at least 100 years—a concern few of us will have to worry about!

When I mention "plastic" or "mylar" capacitors, I'm also including polycarbonate, polyester, polystyrene, polypropylene, and various "metal film" dielectric materials; these are all well suited as replacements for wax capacitors. Polypropylenes are the capacitor of choice when temperature (105-degree C rating) is a concern, something to consider when recapping your favorite military R390 or similar high-tube count receiver.

I've often been asked about using ceramic disc capacitors instead of mylar capacitors to replace wax capacitors in vintage equipment. It's fairly tempting to do so when a large cache of .01-mFd @ 1000-vdc discs is uncovered! Ceramic caps are inexpensive and available in the high-voltage and large-capacitance values encountered in vintage radios. So, are they good substitutes? Unfortunately, there is no precise answer. The best I can offer is "it depends" on where in the radio the capacitor will be used.

Let me explain. Ceramic capacitors are built using different dielectric materials, depending on the capacitance, the working voltage, temperature stability, tolerances, etc. for the device. But, I'll offer some generalities to help guide you in making the best choice.

Larger value capacitors, of say .01 to 0.1 mFd for example, use dielectric materials with very poor temperature stability

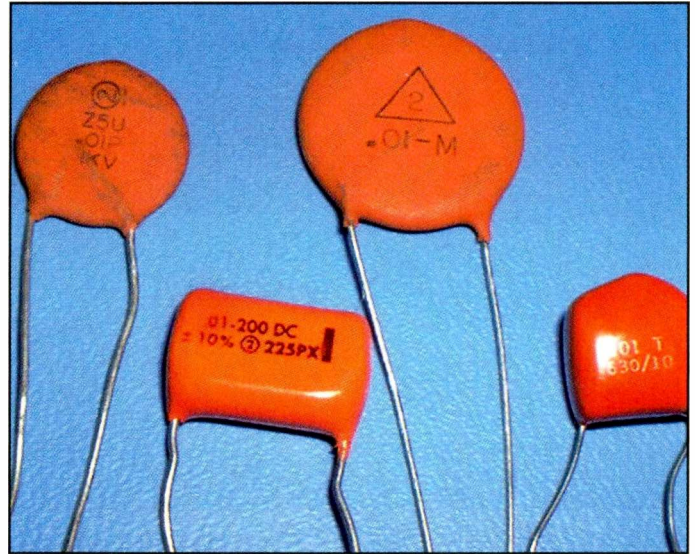


Photo A. Comparing disc ceramic capacitors with similar value mylar film capacitors.

(temperature coefficient), and they will also exhibit varying capacitance as the applied voltage changes. The common temperature coefficients for these value capacitors are X7R and Z5U. This means using a ceramic capacitor in a very critical audio application, such as plate to grid coupling, *might* invite distortion—the capacitance will change as the audio signal varies. Whether your ears are good enough to detect the distortion isn't something I can answer!

I should note here that many communications receivers have used ceramic capacitors for audio coupling, again apparently without ill effect. But, communications receivers are not intended to deliver high-fidelity audio, either. These caps can also cause harmonic distortion when used in low- and high-pass audio filters; so it's probably best to avoid using them in tone control circuits.

Another point: the principle cause of distortion in most vintage receivers will be the diode detector stage! In fact, many of the earlier diode detectors were never designed for today's AM transmitters, with heavily processed modulation that exceeds 100 percent on the positive peaks and full 100 percent modulation on the negative peaks. So, whether using ceramic capacitors will result in any *noticeable* audible artifacts in your vintage receiver is debatable.

I suspect the worst use for one is to replace the so-called *quality* capacitor, which is normally connected across the primary winding of the audio output transformer (or sometimes audio output tube plate to ground) to affect a gentle hi-frequency roll-off and mellow tone to the receiver. This cap is subjected to high



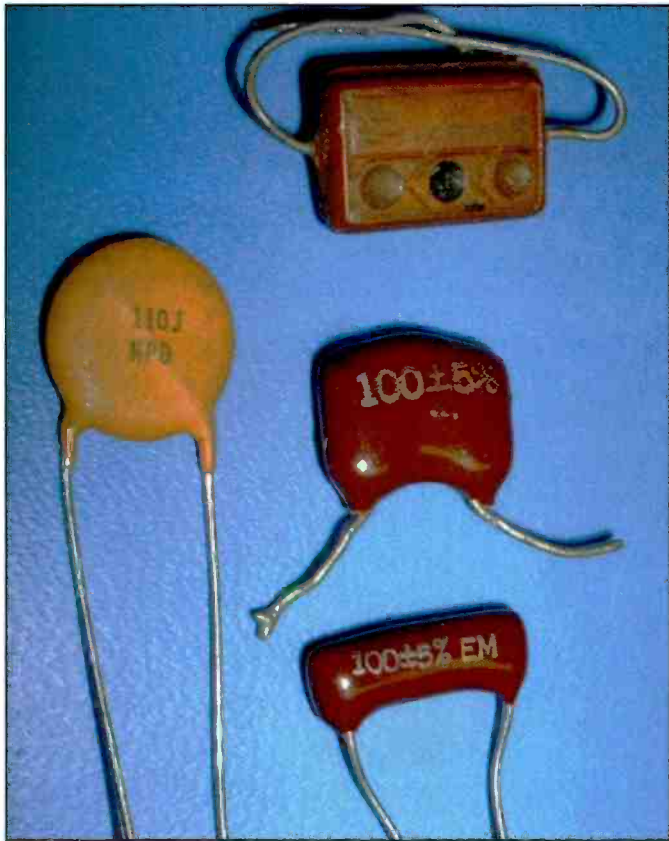


Photo B. Comparing small-value NPO ceramic capacitors with dipped silver mica types.

standing DC voltages, combined with high level AC signals! The original wax caps (with typical values of .001 to .0047 mFd) commonly had 1000-VDC ratings, making it tempting use an inexpensive high-voltage disc ceramic capacitor for a replacement. I prefer the look of mylar capacitors under chassis, and that's what I stick with.

The effects of different capacitor types in high-end audio equipment are another matter. **Photo A** shows some comparative larger-value ceramic and mylar capacitors. Despite their faults, ceramic disc capacitors are very reliable devices.

Another place to avoid using disc ceramics is in vintage tube era television deflection circuits, where they are subjected to high pulse voltages and AC currents. Ceramic capacitors are good for RF bypassing, however. Their construction yields low internal inductances, meaning they provide a low-impedance path to ground for undesired signals. For vintage radios, the best applications for disc ceramic capacitors will be for AC line-bypass and RF bypass applications.

### AC Line Rated

One class of ceramic capacitor that should be kept on hand is .01-mFd capacitors that are AC line rated and approved for line bypass and antenna coupling. These are UL-approved devices, and you should use them whenever a bypass capacitor is used between the AC line and a radio chassis, or between the antenna circuit and external antenna connector on a hot-chassis AC/DC chassis. A good source is the Vishay capacitor line car-

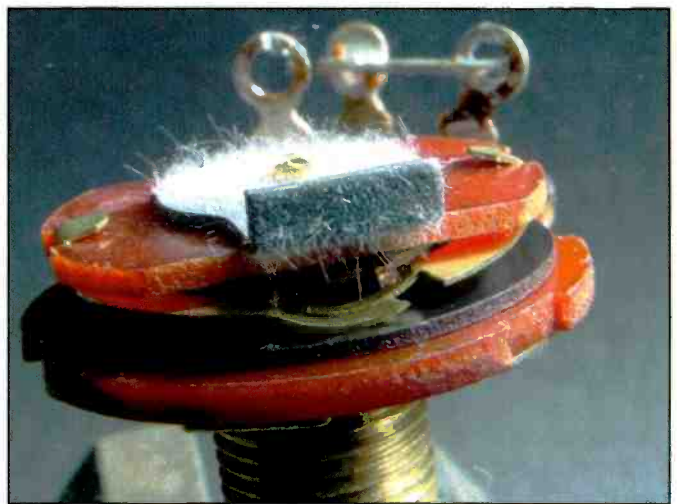


Photo C. This close-up clearly shows the whiskers that caused five of the potentiometers to fail in a vintage 1960 oscilloscope. (Photo courtesy of Alan Douglas)

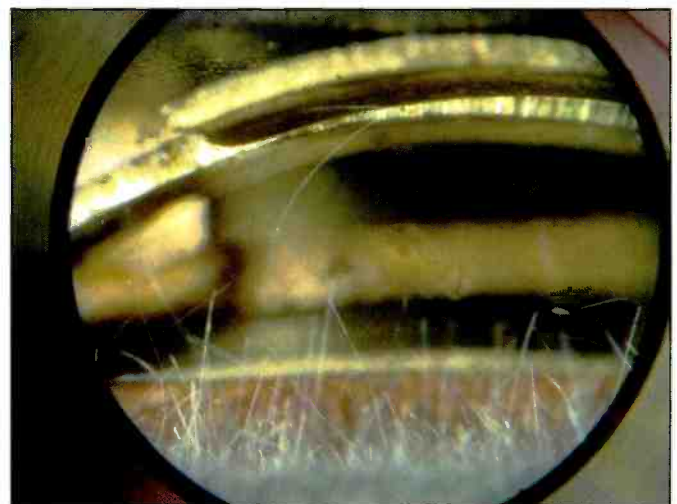


Photo D. This photo, taken through a microscope, shows the whiskers in greater detail. Note the fine, hair-like structure.

ried by Mouser Electronics<sup>1</sup>. They cost about 70 cents in small quantities—a small price for the piece of mind they provide.

### Replacing Silver Micas

The low-value capacitors found in IF transformers, tuned RF stages, or used for local oscillator coupling in vintage tube receivers are silver mica capacitors. These rarely go bad, but it does happen. One problem with silver mica capacitors is that DC standing voltages can cause silver migration across the mica dielectric, and eventual capacitor failure. It's best to replace them with a modern silver mica capacitor. These caps are very stable, well suited for these applications, and are readily available for most vintage radio restorations (Mouser carries the Cornell Dubilier line of dipped silver-mica capacitors).

Low-value ceramic disc capacitors will replace silver mica capacitors in most instances. The best choice is a ceramic capacitor with a NPO rating (NPO means the capacitor is stable over temperature variations); but capacitors with negative coeffi-

cients are also common. The negative coefficients are intended to compensate for the positive temperature coefficient of wire wound coils (the copper wire expands with temperature, increasing the inductance). This is of greatest concern in the tuned circuits for the local oscillator (padder capacitors, fixed trimmers, coupling capacitors) and is most critical in the most demanding communication-grade HF receivers with sharp IF filtering (where small amounts of drift will show!)

Again, every case is different, and for the novice restorer it's best to stick with the tried-and-true silver mica capacitors when possible. **Photo B** shows comparative value NPO ceramic disc and dipped silver mica capacitors.

### Tin Whiskers—An Odd Failure Mode!

Have you ever worked on a piece of electronics that had intermittent problems that mysteriously disappeared once you began probing or troubleshooting? Or a mysterious short on a variable capacitor or potentiometer that defied explanation? Well, here's some info on an odd phenomenon that's been noted since the 1940s—a problem that plagues vintage gear as readily as a modern earth-orbiting satellite!

I'm talking about the ability of certain metals to grow crystals, extending up to 10 mm in length! They occur most commonly on tin-plated surfaces, but zinc and cadmium are also prone to growing conductive metal whiskers! The problem appears to be growing (no pun intended) as environmentally friendly tin slowly replaces lead in electronics. The exact mechanism causing this failure isn't fully understood. It's not moisture related from what I've learned, but it seems to be caused by stresses in the metal coatings.

The list of affected equipment is extensive. Whiskers have caused cardiac pacemaker failures and recalls, and whiskers in sealed relays have disabled orbiting satellites; they have even caused rocket motor igniter problems! A Web search of "tin whiskers NASA" will bring back an amazing amount of information on this phenomenon. Silver plating will also whisker if sulfur is present in the atmosphere.

Lest you think antique radios are immune, guess again! **Photos C and D**, provided by reader Alan Douglas, show a potentiometer that had an unexplainable short to ground. The cause was traced to

crystal whiskers that had grown long enough to create shorts. Note how the whiskers almost look hair-like—pretty amazing stuff! Alan found a total of five potentiometers that had failed due to whisker growth in a 1960s vintage oscilloscope he had recently acquired. So, those gray whiskers on your old radio may not be just age related! Anyway, it's certainly something to check when a variable cap, potentiometer, or other component exhibits unexplained shorts or erratic operation.

### Special Offers For Readers

Readers interested in a nicely bound reprint of Alfred Morgan's "How to Build A One-Tube Regenerative Radio" can drop a note to Bob Ryan<sup>2</sup>; Bob will honor requests as long as his original supply holds out. The Morgan receiver, and vari-

ants, was the basis for several earlier "Wireless Connection" columns. If you missed our remake of this popular design, Bob's annotated version of the original material is worth the price of a stamp.

Our Beitman CD offer is still available<sup>3</sup>; the cost is \$15 dollars post-paid for U.S. and Canadian addresses. The CD contains the entire set of Beitman volumes in DejaVu format. The reader is included on the CD.

That's it for this time around, we'll see you again next month! ■

#### References

1. Mouser Electronics, [www.mouser.com](http://www.mouser.com); (800) 346-6873.
2. Bob Ryan, Apt. 132, 1000 South Gulbert St., Hemet, CA 92543-7065
3. "Wireless Connection" CD Offer, Peter Bertini, 20 Patsun Rd., Somers, CT 06071-1810.

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### FCC To Amend Wireless Spectrum Regs For Rural America

The Federal Communications Commission has adopted a Notice of Proposed Rulemaking (NPRM) proposing changes to its spectrum regulations and policies to better promote the continued rapid and efficient deployment of quality spectrum-based services in rural America. Back in 2002, the FCC asked for public input on the question of whether it should modify its policies to promote spectrum access in rural areas. In the adopted NPRM, the Commission is considering several issues regarding rural wireless services, including input on questions relating to clarification of rules, minimization of regulatory costs, and incentives for service in rural markets, modification of construction requirements, and changes to rules that impede rural services. For complete information, visit the FCC at [www.fcc.gov](http://www.fcc.gov) and search for FCC 03-222.

#### Southwest Airlines Changes Cell Phone Policy

Southwest Airlines has amended its cellular telephone and electronic devices policy, becoming one of several major airlines to make changes after conducting Federal Aviation Administration (FAA) mandated testing. Southwest now permits passengers to use their wireless devices once the aircraft has safely landed and is taxiing to the gate. Passengers will also continue to be able to use cell phones prior to departure, until the airplane's door is shut. Northwest, Continental, Southeast, and American Airlines have all enacted similar relaxed rules.

#### GMRS/MURS Frequency Sharing Proposal Denied

It was a nice try, but the FCC didn't go for it. Two Petitions for Rule Making filed in February, 2003, by Dale E. Reich were recently denied. In the first petition, Reich requested that the Commission amend its Rules to require the licensing of some radio programmers. In particular he asked that Part 13 rules be changed to require a commercial radio license for programmers in the hope that it would reduce the "epidemic of radios with unauthorized frequencies programmed into them." The Commission disagreed, saying,

We are not persuaded by the record before us that having the licensing requirements for commercial operators in Part 13 of the Commission's Rules changed to apply to radio equipment intended for the personal or business communications covered by the FRS or MURS rules is appropriate. For example, it would not be in the public interest to impose an exam requirement on a consumer purchasing a radio, enabled in the FRS or MURS, at his or her local electronics retailer.

In the second petition, Reich asked the Commission to change its rules to permit General Mobile Radio Service (GMRS), Family Radio Service (FRS), and Multi-Use Radio Service (MURS) users to share the Industrial/Business Radio Pool (I/B) frequencies. He wanted I/B frequencies 464.5375 MHz, 464.5125 MHz, 464.5725 MHz, 469.5375 MHz, 469.5125 MHz, 469.5725 MHz, 464.500 MHz, and 464.550 MHz opened up for FRS, MURS, and GMRS use on a secondary basis. The Commission shot down this

idea, saying "the proposals set forth by Reich are inconsistent with the intended uses of these services because Reich's proposals, if implemented, would require interoperability between services designed for personal use with services designed for business use." Better luck next time.

#### FCC/Michigan Avian Collision Study

The FCC has announced the signing of a Memorandum of Agreement with the State of Michigan regarding Michigan's 800-MHz public safety system. According to the agreement, Michigan will comply with National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA) rules regarding construction of its statewide Michigan Public Safety Communications System. The statewide system will have 180 towers and will support communications for state and local public safety agencies. Michigan has committed to participate in a two-year Avian Collision Study at selected towers. This agreement is in line with FCC Chairman Michael Powell's action plan to improve the Commission's ability to protect valuable historic and environmental resources, while at the same time accelerating the process of developing necessary communications infrastructure. If you're interested in the details, copies of the study and agreement can be found at <http://wireless.fcc.gov/siting/>.

#### E-911 Bill Approval

The House Energy and Commerce Committee recently approved a bill granting \$500 million in grants to public safety agencies to help them more accurately determine the location of wireless 911 callers. The bill would give matching grants to states over five years in order to improve E-911 services. Those states that have not appropriately allocated fees for E-911 would not be granted money. The U.S. Senate is looking at a similar bill.

#### E-911 For VoIP

Dialing 911 from a landline telephone and reaching an emergency operator is almost guaranteed these days. Even the problem of dialing for help on a cellular phone is nearing a solution. But what about those people who use the Internet for their phone calls? Voice over IP (VoIP) is a little known but growing method of making telephone calls using a broadband Internet connection. What happens when these people need to reach emergency services? For customers in fixed locations, service providers like Vonage are asking customers to pre-enter information about their location on a Web page. A 911 call from a customer can then be routed on the network to the appropriate local emergency service (unless a power failure or broadband connection outage occurs). Though this works for fixed location users, mobile users are another problem altogether. Calls for help from a laptop or PDA aren't as easily pinned down. The problem of designing E-911 services for VoIP users is next on the list of things to do, and you can be sure that the discussion on how to solve it is just beginning. ■

# 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, Tanjung Press in Serbia, Iraqi News in Iraq -- all on RTTY.

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

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

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

## Super Active Antenna

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

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

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

Switch two receivers and auxiliary or active antenna. MFJ-1024 \$139<sup>95</sup> 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."

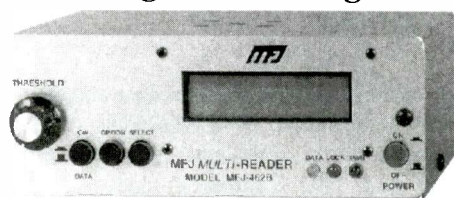
Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as a preselector with external antenna. Covers 0.3-30 MHz. Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$14.95.

## Compact Active Antenna

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

Detachable 20 inch telescoping antenna. 9 volt battery or 110 VAC MFJ-1312B, \$14.95. 3/4x1/4x4 in.

MFJ-1024 \$139<sup>95</sup> MFJ-1020B \$79<sup>95</sup> MFJ-1022 \$49<sup>95</sup>



MFJ-462B \$179<sup>95</sup>

-- all over the world -- Australia, Russia, Japan, etc. MFJ's exclusive TelePrinterPort™ lets you monitor any station 24 hours a day by printing transmissions on an Epson compatible printer.

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MFJ-1026 \$179<sup>95</sup> New! Completely eliminate power line noise, lightning crashes and interference before they get into your receiver! Works on all modes -- SSB, AM, CW, FM, data -- and on all shortwave bands. Plugs between main external antenna and receiver. Built-in active antenna picks up power line noise and cancels undesirable noise from main antenna. Also makes excellent active antenna.

## MFJ Antenna Matcher



MFJ-959B \$99<sup>95</sup> 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



MFJ-752C \$99<sup>95</sup> Two separately tunable filters let you peak desired signals and notch out interference at the same time. You can peak, notch, low or high pass signals to eliminate heterodynes and interference. Plugs between radio and speaker or phones. 10x2x6 in.

## High-Gain Preselector



MFJ-1045C \$99<sup>95</sup> 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 \$149<sup>95</sup> 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



MFJ-956 \$49<sup>95</sup> High-Q passive LC preselector boosts your favorite stations while rejecting images, intermod and phantom signals. 1.5-30 MHz. Preselector bypass and receiver grounded positions. Tiny 2x3x4 inches.

## Super Passive Preselector



MFJ-1046 \$99<sup>95</sup> 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 parts that'll bring signals in like you've never heard before. Antennas from 100 KHz to 1000 MHz. MFJ-38 \$16<sup>95</sup>

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. 5/8x2 1/2xHx5 1/4D inches.

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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.

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## 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! \$39<sup>95</sup>

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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	11570	IBC Tamil, via Russia	Tamil	0500	9590	Radio Netherlands via Bonaire, NWI	
0000	11780	Radio Nacional	PP	0500	11925	Deutsche Welle via Portugal	
0000	5010	Radio Cristal, Dominican Republic	SS	0500	11710	Channel Africa, South Africa	
0030	6536	Radiodifusora Ponderosa, Peru	SS	0530	9820	Radio Havana Cuba	
0030	7295	RFE/RL	unid	0600	4760	ELWA, Liberia	
0030	7160	Radio Tirana, Albania	unid	0600	4915	GBC/Radio Ghana	
0030	15395	Radio Thailand		0600	5995	Radio Mali	FF
0100	6958	Voz del Campesino, Peru	SS	0700	6185	Radio Educacion, Mexico	SS
0100	4810	XERTA, Mexico	SS	0730	6005	Deutschland Radio	GG
0100	15150	VOA Relay, Thailand	unid	0745	6045	Trans World Radio, Monaco, via Germany	
0130	17690	Voice of Russia		0800	6120	YLE/Radio Finland	Finnish
0130	9570	Radio Budapest, Hungary	HH	0800	6160	Radio Australia	
0130	11980	China Radio Intl		0800	6155	Radio Austria Intl	GG
0130	3320	Radio Sondergrense, South Africa	Afrikaans	0900	4915	Radio Nacional Macapa, Brazil	PP
0145	9605	Vatican Radio	SS	0900	6040	Radio Clube Paranaense, Brazil	PP
0200	6055	Radio Exterior de Espana, Spain	SS	0930	4885	Radio Clube do Para, Brazil	PP
0200	9590	VOIRI, Iran		0930	6135	Radio Santa Cruz, Bolivia	SS
0200	7210	Radio Minsk, Belarus		0945	4877	La Cruz del Sur, Bolivia	QQ
0200	9795	Radio Wales Intl, via England		1000	9740	BBC Relay, Singapore	
0230	9495	Radio Sweden, via Canada		1000	4960	Radio Federacion, Ecuador	QQ
0230	9665	Voice of Russia via Moldova		1000	4368	Radio Imperio, Peru	SS
0230	4960	Radio Cima Cien, Dominican Republic	SS	1000	4825	Radio Mam, Guatemala	SS
0300	4965	Christian Voice, Zambia		1000	4975	Radio del Pacifico, Peru	SS
0300	3250	Radio Luz y Vida, Honduras	SS	1000	4940	Radio Amazonas, Venezuela	SS
0300	9805	Radio Farda, USA, via Morocco	Farsi to Iran	1030	4919	Radio Quito, Ecuador	SS
0300	3291	Voice of Guyana		1030	9880	Radio Prague, Czech Republic	GG
0300	7285	Sudwestrundfunk, Germany	GG	1030	4996	Radio Andina, Peru	SS
0300	6120	Radio Rebelde, Cuba	SS	1030	4790	Radio Atlantida, Peru	SS
0300	4976	Radio Uganda		1030	6010	Radio Mil, Mexico	SS
0330	9650	Voice of Turkey		1030	6350	AFN/AFRTS, Hawaii	USB
0330	3240	Trans World Radio, Swaziland	Shona	1030	6160	CKZN, Canada	
0330	9460	Voice of Turkey	TT	1045	3280	La Voz del Napo/Radio Maria, Ecuador	SS
0330	7250	Vatican Radio		1100	4782	Radio Oriental, Ecuador	SS
0330	9780	Republic of Yemen Radio	AA	1100	9840	Voice of Vietnam	
0330	7100	Voice of the Broad Masses, Eritrea	Tigrigna	1100	3355	Radio Simbu, Papua New Guinea	Pidgin
0400	11665	Voice of Tartarstan, Russia	RR	1100	3905	Radio New Ireland, Papua New Guinea	
0400	9925	Voice of Croatia, via Germany	Croatian	1100	9900	Deutsche Welle, Germany	FF
0400	4950	Radio Nacional, Angola	PP	1100	4832	Radio Litoral, Honduras	SS
0400	7110	Radio Ethiopia	unid	1100	11935	Voz Cristiana, Chile	SS
0430	15320	Voice of Hope, via Madagascar		1100	5765	AFN/AFRTS, Guam	USB
0430	3340	Radio Misiones Intl./HRMI	SS	1100	4815	Radio El Buen Pastor, Ecuador	SS
0500	6250	Radio Nacional, Equatorial Guinea	SS	1100	2310	ABC Northern Territory Service, Australia	
0500	7160	BBC Relay, Ascension Is.					
0500	7255	Voice of Nigeria					

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
1100	4000	Nei Menggu PBS, China	CC	1830	9785	Voice of Turkey	
1100	4780	Radio Cultural Coatan, Guatemala	SS	1830	15280	VOA Relay, Morocco	
1100	11680	KCBS, North Korea	KK	1830	11990	Radio Kuwait	EE/AA
1130	4830	Radio Tachira, Venezuela	SS	1830	11605	Kol Israel	RR
1130	6120	Radio Japan/NHK, via Canada		1830	15395	UAE Radio, Dubai	AA
1130	7280	Voice of the Strait, China	CC	1900	15205	Radio Jamahiriya, Libya, via France	AA/EE
1130	4790	Radio Republik Indonesia, Fak Fak	II	1900	15545	Radio Ndeke Luka, Cent. Af. Rep, via England	FF
1130	4800	Radio Buenas Nuevas, Guatemala	SS	1900	17860	Deutsche Welle, Germany, via Rwanda	
1130	5020	SIBC, Solomon Islands	BBC	1930	9690	Radio Romania Intl	GG
1130	4870	Voz del Upano, Ecuador	SS	1930	15545	VT Merlin, England	Romanian test
1200	9865	Radio Vlaanderen Intl, Belgium, via Russia	DD	2000	15345	RTV Marocaine, Morocco	AA
1200	4890	NBC, Papua New Guinea		2000	12005	RTV Tunisienne, Tunisia	AA
1200	9885	Radio New Zealand		2000	11975	VOA Relay, Sao Tome	
1200	7155	Xinjang Peoples BS, China	CC	2015	13610	Radio Damascus, Syria	AA/EE
1200	7260	VOA Relay, Thailand	Indonesian	2030	15120	Voice of Nigeria	
1200	7285	Radio Tashkent, Uzbekistan		2030	15150	RRI/Voice of Indonesia	
1200	4753	RRI-Makassar, Indonesia	II	2030	9630	BBC via Seychelles	
1230	15455	VOA Relay, Philippines		2030	11905	Radio Tashkent, Uzbekistan	
1230	11580	KFBS, Northern Marianas	CC	2100	21540	RDP Intl, Portugal	PP
1230	17790	Radio Japan/NHK, via Ascension	FF	2100	15205	Deutsche Welle, Germany, via Rwanda	
1230	11740	Radio Japan/NHK, via Singapore	JJ	2100	9420	Voice of Greece	Greek
1230	11500	Voice of Russia via Tajikistan	Hindi	2130	11820	BSKSA, Saudi Arabia	AA
1300	12130	Trans World Radio/KTWR, Guam	CC	2130	15435	Radio Jamahiriya, Libya	AA
1300	9405	Far East Broadcasting Co., Philippines	CC	2130	11640	China Radio Intl, via Mali	
1300	15735	Norwegian Radio	NN	2130	11955	Radio France Intl, via Gabon	FF
1300	9930	KWHR, Hawaii		2130	9990	Radio Cairo	
1300	7295	Radio Malaysia		2130	5945	Radio Austria Intl	GG
1300	15545	VOIRI, Iran	AA	2200	11620	All India Radio	
1300	15795	All India Radio	CC	2200	5985	RTV Congolaise, Congo	FF
1300	11825	CPBS, China	CC	2200	9645	Radio Bandeirantes, Brazil	PP
1300	15700	Radio Bulgaria	unid	2200	9630	Radio Aparecida, Brazil	PP
1300	15435	Radio Free Asia, USA, via UAE	unid	2200	12000	Voice of Turkey	
1300	13770	Voice International, Australia	CC	2230	15565	Radio Vlaanderen Intl, Belgium, via Bonaire	
1330	11500	Voice of Russia	RR	2230	9580	Africa Number One, Gabon	FF
1330	5985	Radio Myanmar (Burma)	unid	2230	21740	Radio Australia	
1400	9580	Radio Australia		2230	15565	Radio Vlaanderen Intl, Belgium, via Neth. Antilles	
1430	15220	Radio Netherlands, via Canada		2230	9760	Cyprus Bc. Corp	Greek (wknds)
1430	21760	Channel Africa, South Africa		2300	9875	Radio Vilnius, Lithuania	
1500	6150	Mediacorp Radio, Singapore		2300	17835	Radio Canada Intl, via Japan	CC
1500	15760	Kol Israel		2300	5030	Radio Burkino, Burkina Faso	FF
1500	21660	BBC Relay, Cyprus		2300	15110	China Radio Intl	RR
1500	9770	SLBC, Sri Lanka		2300	15230	Radio Havana Cuba	SS
1530	12025	China Music Jammer		2300	5975	BBC Relay, Antigua	
1530	12140	VOA Relay, Sri Lanka	unid	2300	9885	Swiss Radio Intl	II
1530	9945	Trans World Radio, via Albania	Armenian	2300	5905	Radio Ukraine Intl	Ukrainian
1600	11570	Radio Pakistan		2300	5990	China Radio Intl, via Cuba	
1600	11690	Radio Jordan/96.3 FM		2300	7505	AFN/AFRTS, Puerto Rico	USB
1600	13630	UAE Radio		2330	4845	Radio Mauritainie, Mauritania	AA
1630	15160	Radio Algiers, Algeria	FF	2330	11800	RAI Intl, Italy	II
1630	11685	Voice of Armenia	Armenian	2330	11745	Voz Cristiana, Chile	SS
1730	11900	Radio Bulgaria		2330	7125	Radio Conakry, Guinea	FF
1800	11720	Radio Pilipinas, Philippines	Tagalog	2330	4410	Radio Eco, Bolivia	SS
1800	15065	Radio Pakistan	Urdu	2330	11905	Swiss Radio Intl, via French Guiana	
1800	15585	RTE, Ireland, via England		2330	15345	Radio Nacional, Argentina	SS
1800	11965	Radio France Int;	FF				
1800	15265	Channel Africa, via South Africa					
1800	1050	Radio Cairo/Egyptian Radio	AA				
1830	17680	RDP Intl, Portugal	PP				
1830	15450	BBC via South Africa					



## radios & high-tech gear

review of new, interesting and useful products

### New RadioShack PRO-96 Digital Trunking Scanner

RadioShack just announced the release of their new PRO-96 handheld scanner, stock number 20-526. This handheld scanner has an abundant memory capacity (5,500 channels), plus you can store up to 16,500 ID codes in one "working" 500-channel, 1,500-ID code scanner with 11 "virtual" scanner pages of memory! This scanner follows APCO25 digital and virtually all analog Motorola and GE/Ericsson EDACS trunked systems. More and more cities are using these trunked systems, allowing city services to share the same set of frequencies. Conversations on these systems start on one frequency, then shift to a different one with each transmission. This scanner can follow these systems.

The new PRO-96 is also preprogrammed with the most often requested systems; if you live in a major metro area your city's system is probably already loaded. Expanded frequency coverage picks up local marine, police/fire/ham, VHF-air, racing, CB, weather, FRS/GMRS/MURS and virtually every other popular scanner frequency as well. It also operates in the FM/AM mode, includes the SAME weather alert function, backlit display and keypad, channel scan, alpha display (which can show name of services), CTCSS and DCS decoding, PC interface and more. It operates on four "A" batteries, not included.

For more information on the new RadioShack PRO-96 scanner, which retails for \$499.99, contact your local RadioShack retail store or visit RadioShack online at [www.radioshack.com](http://www.radioshack.com).

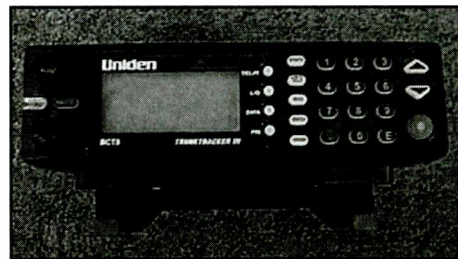
### Uniden's New BCT8 Trunk Tracking Scanner With BearTracker Technology

Uniden has announced their new BCT8 scanner that alerts you when the highway patrol is within approximately a three-mile radius. It can store 250 frequencies, such as police, fire/emergency, marine, railroad, air, amateur and other communications, into five banks of 50 channels for a total of 250 channels. The new BCT8 scanner can also monitor trunked systems using Motorola Type I, Type II, Type II (Hybrid), EDACS and LTR.

Features of this new Uniden scanner include pre-programmed frequencies specific to each state (except Hawaii), pre-programmed trunked and conventional highway patrol frequencies, and highway patrol Priority Alert (receive audible and visual alert when within three miles of many highway patrol/state units). Its pre-programmed frequencies cover the following categories: local police and county sheriffs, fire and emergency medical service, news media, weather, CB radio, aircraft, railroads, marine band, and Department of Transportation. You can also track more than one trunking system at a time and scan trunked and conventional systems at the same time. It offers 13 bands with aircraft and 800 MHz, coverage from 25 to 956 MHz (not continuous, and excludes cellular telephone band), five priority channels, data skip, direct channel access, turbo search (at speeds to 300 steps per second), PC programmability, and more.

Included in the BCT8 scanner package is an AC adapter, DX power cord, cigarette lighter adapter plug, telescopic antenna, operating guide, and trunk tracker frequency guide.

The BCT8 is Uniden's latest scanner, combining BearTracker technology with trunking.



The new Uniden BCT8 scanner has a suggested retail price of \$249.99. For more information contact Uniden Corporation at [www.uniden.com](http://www.uniden.com) or call 800-297-1023 or on the Web at [www.uniden.com](http://www.uniden.com). Be sure to tell them you read about it in *Popular Communications*.

### Magellan's New SporTrak Handheld GPS

Thales Navigation, a leading global provider of GPS solutions, including the Magellan line of consumer products and Thales Navigation professional GPS solutions, recently introduced the Magellan SporTrak Color, the only handheld GPS with a full-color display and a three-axis electronic compass. In November 2002, Thales Navigation broke the "color barrier" by introducing the Magellan Meridian Color, the world's first full-color handheld GPS navigator.

The Magellan SporTrak Color is the only handheld GPS to combine a vibrant, sunlight-viewable color display and three-axis electronic compass for easier navigation. Rugged, waterproof, and floatable, this latest Magellan breakthrough, with its lightweight, compact design, is as stylish as it is functional. The 16-color, high-resolution data display is as clear day or night as the 1/8 VGA 240 x 160 pixel display gives optimal visibility. The three-axis electronic compass assures outdoorsmen accurate orientation in any position, whether they're running, hiking, or standing still, while the receiver delivers positioning accuracy within three meters. A built-in barometer helps hikers track weather changes and predict conditions that could make them want to set up camp early.

The Magellan SporTrak Color features 32 MB of memory, with a 9 MB built-in database containing highways, interstates, major roads, waterways, parks, airports, and marine navigation aids. With 23 MB of available memory, sportsmen and outdoor enthusiasts can further customize their data by easily downloading additional map detail, 3D topographic data, points of interest, and marine charts with the most up-to-date, detailed seamless marine data available, all from the Magellan MapSend family of software products. The full line allows users to navigate with confidence, whether in challenging terrain, backwoods, major metropolitan areas, or even offshore.

The Magellan SporTrak Color retails for \$500 and is the latest addition in a series, which includes the SporTrak, SporTrak Map, SporTrak Pro, and the all-new SporTrak Pro Marine. The SporTrak Color is packaged with a user manual, "Quick Start" guide, PC cable, two AA batteries, and a wrist strap. Optional accessories include swivel mount,



The new Magellan SporTrak is the latest high-tech GPS unit that includes features to keep you on track anywhere!

bike mount, vehicle mount, carrying case, assorted power and data cables (including a 12-volt adapter), and Magellan MapSend software.

Thales Navigation is one of the world's leading developers and manufacturers of positioning, navigation and guidance equipment with global operations throughout the U.S. and Europe. Thales Navigation markets its Magellan brand GPS solutions in the consumer electronics, recreation, and automotive markets, and its Thales Navigation GPS and GNSS professional products in the survey, GIS/Mapping, and OEM markets. Thales Navigation's key innovations include the first U.S. commercial handheld GPS receiver for positioning and navigation, and the first handheld GPS with industry standard Secure Digital Memory Card capabilities.

Thales Navigation, headquartered in Santa Clara, Calif., is a subsidiary of Thales, a \$10 billion professional electronics company headquartered in Paris, France, with activities in aerospace, defense, and information technology and services. For more information, visit [www.thalesnavigation.com](http://www.thalesnavigation.com).

## Scancat-Lite PLUS For Windows

The folks at Computer Aided Technologies have been working overtime the past several months producing a brand new Scancat Product—Scancat-Lite PLUS for Windows. This new Scancat program supports the memory programming for RadioShack and Uniden Scanners and at a price that anyone can afford.

While the regular Scancat-GOLD supports both memory programming and scanning from the PC, the new Scancat-Lite PLUS is targeted to those radio owners that need to program the radio's memories, but do not want scanning control. In the tradition of other Scancat products, all radios supported are available in one software product. This means if you have any of the radios supported by Scancat-Lite PLUS, you only need to buy the one software program. If you have more than one radio that is supported, you can use the same databases from any of the radios (to the limits of their frequency coverage and features of course). Just pick the radio from the radio selection list and "plug it in".

The program supports both programming the radio's memories and (if supported by the radio) downloading from the radio the frequency information already programmed. So you can download from one radio and send the same frequency information to a second or third radio. If you do not have the frequencies for your area, the program supports the files created on the Mr. Scanner CD or downloads from the National Communications web site for both the Mr. Scanner Public Safety CD and Mr. Scanner CD ROM.

You can also cut and paste from Excel. Either way, there is little typing involved, and in a matter of a few minutes your radio will be up and running. Programmed with all your local frequencies. Remember, all radios can use the same database (to the limits of their frequency coverage and features).

The following radios are currently covered by the Scancat-Lite PLUS software:

Radio Shack Scanners		Uniden/Bearcat Scanners	
PRO-76	PRO-2019	BC-895XLT	BC-785D
PRO-79	PRO-93	BC-245XLT	BC-296D
PRO-82	PRO-95	BC-780XL	TBC-796D
PRO-89	PRO-96	BC-250D	
PRO-2017			

Coming soon will be support for other scanners, including the RadioShack 20-515 Race Scanner, Bearcat SC-200 Sportcat. From AOR, the AR-8000, AR-8200 and AR8600, and later will be support for the ICOM IC-R10. Scancat-Lite PLUS is supplied on CD ROM at a cost of \$29.95 plus \$5 shipping. It is available from Computer Aided Technologies by calling 888-722-6228. Or you can order on line by going to <http://www.scancat.com/software>. (Electronic download is available on request).

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### Scancat-Gold for Windows Version 8.2552

Supports all radios in ONE program - share files with all radios.

- Two Scanning modules:
  - A Simple Basic Module - for beginners
  - Plus**—An Advanced Scanning System for the "experts".
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<small>*\$79.95 AFTER 1 YEAR OF PURCHASE S&amp;H \$5 U.S. \$7.50 FOREIGN</small>	

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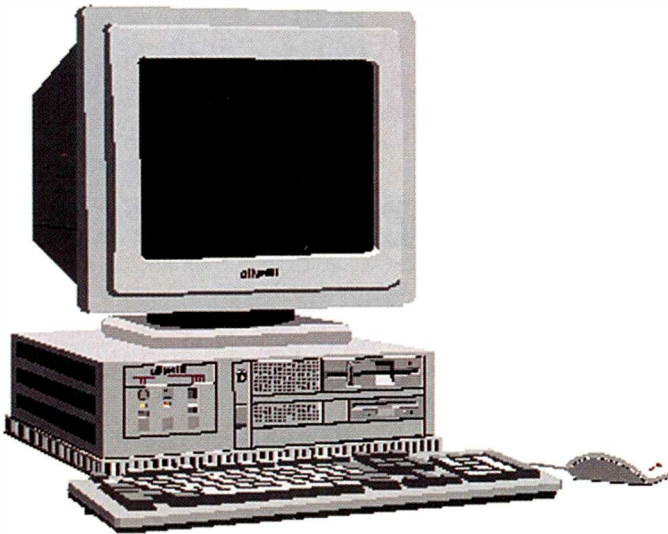
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# computer-assisted radio monitoring

by Joe Cooper, joe@provcomm.net

## An Index And Review Of The Past Two Years' Computer Columns



**T**his month marks the beginning of the third year that this column has been appearing in *Popular Communications*. During the past two years I've tried to present information on how to use today's microcomputers with compatible monitoring radios in an easy-to-understand way.

The way I've presented the column's material has been to start with the essential information you needed to know and then build upon that foundation in subsequent columns. If you've been following the column from the beginning, you're now at the point where you should be able to assemble a fairly sophisticated monitoring station—one that includes multiple computers connected across networks, computer software that controls the functions of monitoring radios, and software programs that can process and decode various modes of radio communication.

What I want to do this month is to provide you with an index and summary of the past two years worth of columns. This information may be of particular value for those of you who have just begun reading my column only recently and want to know what information came previously.

As policy, I do not provide previous material if requested to do so due to the fact that once it is published in the column it belongs to the magazine due to the copyright agreement I have with them. However, you can purchase back issues from *Popular Communications* at reasonable prices. I will provide you with the details on how to do that at the end of the column.

Just as a note here, my plan for the next year or so is to focus on the needs and requirements of specific types of radio monitoring (Scanning, Utility, Shortwave, etc.) rather than continuing to cover the basics as I have been doing. From time to time, I'll go back over a foundation topic in summary form, but not in the detail and to extent that I've been doing.

I'll try not to leave anyone behind, but at this point it's time

to raise the bar a bit and start applying the skill and knowledge I've been sharing with you. If you've been keeping up with the column I'm sure that will be no trouble at all.

So on to the index and summary.

### Index Of Computer-Assisted Radio Monitoring Columns, 2002

*February 2002*—"Introduction." An outline of what the column will provide in the way of information about computer-assisted radio monitoring, the type of monitoring tasks that will be reviewed, the kind of computer to be emphasized (Intel based CPU and Microsoft Windows operating systems).

*March 2002*—"Serial Ports Part I." Computer-controlled monitoring radios are connected via a serial port and cable. In this column I outlined what a serial port is, how it operates, and the way that serial information is passed between the computer and the radio. This is very important to know as most problems people encounter when trying to control their monitoring radios do not occur with the software or the radio itself, but the serial port settings.

*April 2002*—"Serial Ports Part II." Shows how to debug problems with your serial port by knowing how to properly configure them. I describe how to diagnose a serial port problem by using the software utilities provided in Microsoft Windows. Most of the time the problem can be traced to a conflict between the serial port and some other component in the computer—one of the major reasons why radio control software fails. The column showed you how to find out if this is happening and how to fix it.

*May 2002*—"Reader's Feedback." This column was devoted entirely to reader feedback. Many good points, suggestions, and criticisms were raised. They helped to define the direction the column was to take over the next year or so.

*June 2002*—"Sound Cards Part I." In addition to serial ports, you must also know how computer sound cards work if you are going to be serious about computer-assisted monitoring. The column outlines the theory and practice of sound cards, particularly the industry standard "Sound Blaster" cards. I also introduce you to some free Digital Signal Processing (DSP) software that you can download from the Internet and use with a sound card in order to create an audio filter of custom size.

*July 2002*—"Sound Cards Part II." Shows you how to install, configure, and operate a Sound Blaster card. This column will get you into the "innards" of the Microsoft Windows sound card utilities to show you how to use them properly. As with the serial port, most problems occur when sound cards are in conflict with other computer devices, and this column shows you how to keep that from happening.

*August 2002*—No Column. Things happen and I'm not immune from some of the ups and downs of life. Fortunately it only happened once during the past two years. One thing that I'll say is that while I did have some information on hand, I was not going to publish it until I was satisfied that it was of

use to you, the reader. At that point that column was simply was not ready to go to press, and so it didn't.

*September 2002*—"Using DSP Software Part I." The first "hands-on" column I provided, where I show you how to set up a low-cost Broadcast Band DX monitoring station using a computer's sound card to process the audio output of a radio. The column shows you how to design such a station from the ground up, outlining the free software you can download from the Internet along with how to literally build the monitoring station based upon GE's Super Radio III. To do that I provide you with the plans for a very powerful passive loop antenna that boosts the efficiency of the radio's built-in ferrite coil, and a "Lazy Susan" to place the radio and antenna on in order to turn it towards the strongest signal. You then use the DSP software to overcome noise, interference, and other sound problems to dig the weak signals out of the mud.

*October 2002*—"Using DSP Software Part II." Now that you've built your BCB-DX station, I show you how to get the most out of it by using your DSP software to reduce noise, static, and the interference of adjacent stations. I do this by outlining the six main types of interference you will encounter during BCB DX (noise, fading, low signal strength, flutter, splatter, and heterodynes) and how to deal with each using your DSP software. This is a very practical "hands-on" column with many suggestions provided that can be applied to other types of radio monitoring.

*November 2002*—"Computer-Assisted Tuning (CAT) Part I." Many computers today can be controlled directly by computer software. Some radios don't even have external controls any more, other than a power on/off switch. This column introduces you to four different software programs, designed to either control a different make or brand of radio, or a wide range of makes and models. The software packages reviewed are Ergo, ScanCat Gold, World Station, and Smart Control.

*December 2002*—"Computer-Assisted Tuning (CAT) Part II." Continuing from the previous month, this column checks out the performance of each CAT program in depth, examining how it works in the "real world" when you are operating a compatible radio. I show each software program has advantages and disadvantages for each of the different types of monitoring popular today. So the bottom line is that there is no "one size fits all" CAT software on the market today.

## Index Of Columns, 2003

*January 2003*—"Frequency Database and Logging Part I." Since starting the column I've often been asked how to create and use database files to log monitoring information (frequency, callsign, time/date, and so on). In this column I cover the basics of what a data table is and how it should be organized. I then put it all together to show you how to set up your own data file and how that knowledge can be applied to using "pre-made" lists of frequencies you can download from the Internet.

*February 2003*—"Frequency Database and Logging Part II." One of the reasons why databases are so important is that Computer-Assisted Tuning (CAT) programs can be used with them to tune a radio to a frequency with activity on it. This column outlines a number of information sources (government, commercial, and hobbyist) that you can use to build up your list of frequencies.

*March 2003*—"Planning a Computer-Assisted Monitoring Station." Over the previous year I had outlined the two main

hardware components (Serial Port and Sound Card) and three software components (Digital Signal Processing, Computer Assisted Tuning, and Radio Frequency Database Management) and how they are used individually. In this column I outline how they are used together to create a computer-assisted monitoring station. A plan is presented for different types of stations based upon individual monitoring needs.

*May 2003*—"Using Virtual Components Part I." I take a look at the next trend in Computer-Assisted Radio Monitoring (and transmitting) where you "build" virtual radio devices using software rather than hardware. I introduce this by using the "SkySweep" software program. This program allows you to select different components (input/output devices, filters, demodulators, oscilloscopes) that are represented in graphic forms and then link them by connecting them together on the computer screen. You can then specify how each of the components works by setting their parameters. The result is a fully customizable working environment.

*June 2003*—"Using Virtual Components Part II." Continuing with the "SkySweep" software program, I show you how you can build audio filters, demodulators, and other devices to your own specifications on your computer, then run them there. I provide some examples that you can try yourself. An evaluation version of the software package can be downloaded off the Internet for free.

*July 2003*—"An Intro to Computer Networks Part I." With the advent of inexpensive "plug and play" components, it's now very easy to set up a home computer network. What is more important is that you can control and listen to a monitoring radio over such a network. I introduce you to the main components (network cards, cables, routers, and the software built into Microsoft Windows that is used to set it up). It's all surprisingly easier than you may think.

*August 2003*—"An Intro to Computer Networks Part II." I continue to show you how to set up your home computer network and make it work. Then I show you how, using the NetMeeting utility in your Windows Operating System, you can listen to one radio over the entire network. This is done in a step-by-step manner, making sure you have all the information you need to do this successfully.

*September 2003*—"A Look at Charles Hinkle's Station." An excellent example of a well-designed computer-assisted monitoring station by Charles Hinkle. Charles outlines how he got started using computers, the types of radios he uses, and the types of stations he monitors. It's a model station that can provide you with a lot good examples to follow.

*October 2003*—"Digital Audio Recording Part I." This is the beginning of a four-part series that outlines just about everything you need to know about successful digital audio recording for radio monitoring. This month begins with an overview of the difference between analog and digital audio recording. The key point that is that digital audio recording is not the same as analog, and if you want to obtain the best results you must know some basic digital theory.

*November 2003*—"Digital Audio Recording Part II." This column looks at the technical side of digital recording, such as sample rates, bit depth and compression techniques. The issue is how to get the best audio reproduction with out losing parts of the information you are recording or creating huge files on your computer.

*December 2003*—"Digital Audio Recording Part III." Having covered the theory of digital recording, I look at some



practical applications. In this column I cover how to properly connect your radio's audio output to the computer and then begin recording. There are some important things to know, such as why the "line out" from your monitoring radio is a better source of sound for digital recording than your speaker output. I also look at the mechanical aspects of setting up your recording, complete with diagrams.

## Getting Back Issues

So there you have a summary of the total

output of the last two years of the column. Again, I think that the core topics for computer-assisted radio monitoring are the two key hardware components (serial port and sound card) and the three software components (Digital Signal Processing, Computer Assisted Tuning, and Radio Frequency Database Management).

If you understand the basics of each these five topics you will be well on your way to having full control over your computer and compatible radio. Topics such as networking, while a bit more advanced, are not that difficult to master either. So

in future columns I'm going to be expanding upon basic networking to include remote control of a compatible radio over the Internet.

So, having said all that, how do you get hold of the back issues you need to have a complete run? All you need to do is to send a check or money order (no cash please) made out to CQ Communications, Inc. (*Popular Communications* magazine's publisher) to their main office, located at 25 Newbridge Road, Hicksville, New York 11801.

The cost is \$4 per back issue and the postage is included in that price. Be certain to clearly specify which issues you want by cover month and year (not by the content of my column).

## Coming Next Month

I'm going to be taking a look once again at the issue of home networks and your monitoring radio. I want to take a second look at listening to your radio over a home network, and this time look at how you can also listen from a remote location. I also want to take a look at tuning and controlling your compatible radio over a home network. There are several new software packages out there that make this a fairly simple task.

So in the meantime, please e-mail or write to me with ideas, comments, and suggestions for the upcoming year. I want to know what topics you are interested in, particularly new areas of interest that are opening up (such as the new digital broadcast modes now being used on the AM and shortwave bands).

Likewise, I'd also like to publish more pictures and stories of your computer-assisted monitoring stations. I would particularly like to profile someone who is interested VHF/UHF scanning.

The e-mail is still [car\\_m\\_popcomm@hotmail.com](mailto:car_m_popcomm@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'll do my best for questions about the content of the columns or computer-assisted radio in general. Thanks again, and I hope that the information provided here helps you get more out of your computer and monitoring radio than you ever thought possible. ■

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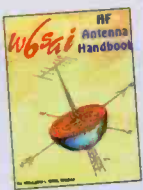
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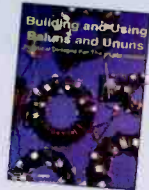


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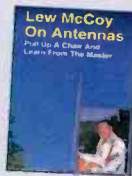


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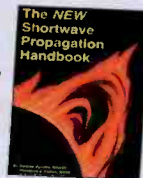


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### Some Mid-Winter Housekeeping, Restrictive Covenants, And Family GMRS On The Islands

After writing several *Pop'Comm* columns and a handful of feature articles in recent years, I felt compelled to pause and think about just how much I value our readers. So many of you are so loyal to this publication as a major source of reliable information about radio communications and broadcast radio.

To support my writing as well as my former radio engineering work, I have done an immense amount of research over the span of my career, particularly over the past 15 years, or so. Earlier on, the bulk of my research came from traditional channels: books and periodicals. But about seven years ago, however, the Internet suddenly became widely available to everyone. Consequently, everyone everywhere doing any sort of research shifted how they did business.

The Internet quickly became as much of a vicious jungle as it was ubiquitous, so to speak. Astute researchers in all quarters had to learn to sort fact from fiction as well as from so many outright and deliberate falsities populating the Information Superhighway. I know that quite a number of particularly conscientious researchers actually went back to school at that point, just to study state-of-the-art electronic research methods. And I was among them.

And it's a good thing, too. It was a period of learn, adapt, and overcome—or die—as far as anyone's career was concerned. During my past seven years of both database and Internet research, I kept arriving at the same conclusion, time and again. First though, let me state the obvious: There are endless sources of credible information on the Web from recognized, plausible, and often enough, unimpeachable sources.

Then there's the dark side. I'm not simply thinking about the obvious garbage on the Internet, but about all the speculation and misinformation proffered as fact in so many alleged technical forums and bulletin boards. To be sure, there are plenty of truly knowledgeable individuals participating in these forums and e-mail lists.

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*"It is precisely the Internet concept of absolute freedom coupled with zero censorship that hastens the demise of credibility in that medium."*

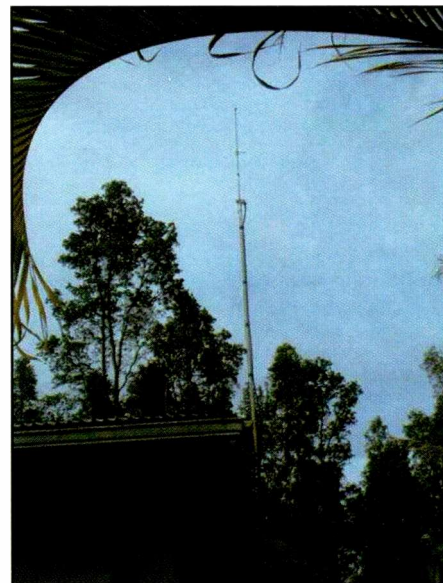
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However, I have come to the conclusion that for every proficient and honest participant, there are two or three "also-rans" who *pretend* to be perfectly knowledgeable and experienced. Beyond that, every forum has two or three total crackpots who will make sure that you and everyone else present know they are infallible experts in absolutely everything. You know the type.

My conclusion, then, is that the Internet is an infinite cesspool of conjecture and disinformation, and to pour salt onto the wound, a bastion of vastly over-inflated egos. So, you know this already? It runs far deeper than the casual Web surfer may realize. The real shame for radio hobbyists (and hobbyists of any interest, for that matter) is that while you may come to these forums for amusement and enlightenment as well as information, you will too often come away robbed of any joy that your hobby is intended to give you.

Your solution to this sorry situation is simple, although not at all glamorous: Turn to the print media. Books, journals, and newspapers are in no way immune from misinformation, ill will, and plagiarism, of course. But, the print media do tend to be more reliable than the Web, as I have found. Why? It is precisely the Internet concept of absolute freedom coupled with zero censorship that hastens the demise of credibility in that medium.

The print media have, at a minimum, an editorial review process, which in itself filters a lot of junk from even approaching the printed page, let alone being edited out later on in the process. This aspect points to the realization that print media writers are almost never anonymous and have at least been somewhat qualified by



A typical home base station GMRS antenna, in a land where winter never comes. (Photo courtesy of Chuck, KAE9122)

their publishers to produce the material they do.

All of which brings us to our next point: *Pop'Comm* readers have got to be among the savviest and most discerning radio communications people anywhere. This is especially true of our regular readers—those of you who either subscribe or who pick up a copy of this magazine every so often at the newsstand, and certainly those who make a habit of reading *Popular Communications* at their local library. We *Pop'Comm* writers have been saying for years that this is *your* magazine. Our readers write to us either directly or through Editor Harold, and we do our best to put what you want to see onto the printed page. You give us your comments, your questions, and your feelings. This is how we know just what you, our readers, are all about. And I can see that you folks are the greatest!

We know from our reader surveys that the vast majority of you are radio hobbyists, of course. Some of you, on the other hand, are electronics consumers keeping



The KAE9122 GMRS home base station operating position. (Photo courtesy of Chuck, KAE9122)

up with the latest in the world of wireless communications. And a substantial number of you actually work in either the telecommunications field or in broadcasting. Wherever you fit into this picture, I can clearly see that all of our regular readers in this entire broad cross-section are substantially technically knowledgeable. If a technical error appears in print, you let us know right away! If we make a factual error, you are quick to call us on it, as well you should.

Your *Pop'Comm* writers are special, too. Editor Harold, and his legendary predecessor, Tom Kneitel, have selected individuals with vast experience in radio communications, broadcasting, and closely related fields, often military or public safety-related. Some of us have quite *extensive* experience in particular aspects of these fields. I don't know that any of us were primarily professional writers when we came on board. And that's what sets us apart from so many other publications. You don't get a bunch of "journalists" trying to report on technical matters that they don't understand. What you do get is a group of dedicated radio hobbyists and professionals who, by the way, happen to be adept at relating useful information and conveying a story in print.

Despite the foregoing, I do get the occasional flaming letter or e-mail from some doofus who can't seem to correctly read what I have written. Now, I'm not refer-

ring to you regular and faithful readers! Nope. You see, in my occasional efforts to clear up misunderstandings, my follow-up communications on this sort of complaint almost invariably reveal that the individuals involved are not intimately familiar with our fine magazine. As it turns out, *some* of these individuals are not too technically proficient in the first place, although they would like us to believe otherwise. And many of them lack a fundamental understanding of the regulatory and legislative aspects of the hobby, personal or commercial radio communications in question.

This wouldn't be quite so bad if this sort of individual making a complaint happened to be pointing out an actual error on my part. (And I *do* make my share of mistakes!) But almost without exception, the alleged complaint arises as a result of individuals misconstruing what I have written. Some try to put words in my mouth that I never said!

Now this month, I want to discuss a particular matter of great concern to those of us who are homeowners and who are involved in the Personal Radio Services or in amateur radio. And I can assure you that this is one of those areas in which there is quite a bit of misunderstanding. Because this topic seems to be so complex to so many consumers and radio hobbyists alike, taking this opportunity to respond to concerns I've heard expressed from time to time may help forestall more of this very same sort of misunderstanding. So, please, pay attention and take notes; there will be a quiz. Well, there *ought* to be a quiz on this—not for you regular and dedicated readers, of course, just for those who remain clueless!

### Deed Restrictions And Your CB And GMRS Antennas And Towers

Those of us who are homeowners in housing developments constructed in the last three or four decades almost invariably have Covenants, Conditions, and Restrictions (CC&Rs) attached to our property deeds, whether we wanted them or not. CC&Rs can apply to individual homes, townhouses, and condominiums. Most of these contracts seek to entirely prohibit outdoor antennas and towers.

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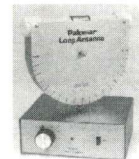
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But there is a common misunderstanding among many homeowners, and even among quite a few radio hobbyists, regarding antennas and towers. That misunderstanding is that the existence of amateur radio, CB, GMRS, and other wireless services' antennas and their supporting structures necessarily results in lower homeowners' property values. *They don't.* Any competent real estate agent knows this, whether or not they choose to disclose this fact.

Just a few years ago I bought a home in a newly constructed housing development and became active in our homeowners association from the beginning. During our Architectural Control Committee's earliest series of meetings, we deliberated on matters of enhancing property values and of maintaining and improving esthetics. As you might imagine, we discussed the customary questions about what sorts of things should or should not be permitted and which homeowner improvements should require prior Committee approval.

Pooling our collective knowledge and experiences—some of our committee's homeowners had recently traded several properties each, some for investment purposes—we came to the only logical conclusion: *An improvement to a property does NOT lower property value.*

If anything, it *raises* property value. This applies not only to the subject property, but to adjacent properties, and to the community as well. Given this simple reality, anyone can see that there is no reason why amateur radio and homeowner and community interests cannot coexist and, in fact, thrive. And that is excellent news!

### Common Sense Or Conventional Wisdom?

A number of radio hobbyists express total disbelief in this simple fact, however. I have been told that I couldn't possibly be right about property values. Admittedly, there has been some confusion regarding the salability of residential properties with amateur radio (and other radio hobbyists') towers. Some insist that a residential lot with a radio tower would result in fewer prospective buyers. Consequently, I have heard it said that a home with a tower, or situated adjacent to a tower, would be on the market for a longer time, thus driving down the price of the home. Would this not certainly lower property values?



Here is Chuck's well-worn but highly functional Motorola GM300 mobile unit. (Photo courtesy of Chuck, KAE9122)

Well, here is a lesson I had previously learned firsthand: Longer time on the market may induce a seller to lower the asking price of a home in hopes of a quick sale. I am told that this may lead to a lower *selling* price. Correct! This does not reduce that property's *value*, however. We need to be careful not to confuse selling price with *property value*.

Due to apparent disbelief, I have been asked whether I seriously think the typical consumer, if given the choice of buying a property with or without a radio tower—and all other factors being equal—would choose the home with the tower. It has been asserted that most homebuyers find antennas and towers to be unsightly rather than being *improvements*. Lesson previously learned: What I *think* doesn't matter here. Nor does it matter what any given prospective buyer in this example thinks. The property values in question will be based on certain figures including capital invested in any improvements, and *not* on "feelings."

From a slightly different angle, I have heard claims that a property's value is determined by its *appeal*, with the corollary that homes in communities permitting ham radio towers likely wouldn't have very much appeal at all. Lesson previously learned by experience: No, value is not determined by appeal—not directly, not solely, and not in each and every instance. Be careful not to confuse common sense with conventional wisdom. Conventional wisdom would have us think that if some parties find certain



Chuck's Maxon SM-2000 mobile installation. (Photo courtesy of Chuck, KAE9122)

property improvements to be undesirable, the value of such improved property would be diminished. Common sense however, tells us that funds invested in real estate are likely to remain vested. "Conventional wisdom" is often not wisdom at all.

I have said that, *if anything*, an improvement to a property *raises* its value and that this applies not only to the subject property, but also to adjacent properties, and to the community. Now pay attention. This does *not* mean that a typical consumer would pay *more* to buy a home adjacent to the same style home *with* a tower, all remaining factors being equal. Uh-uh. Didn't say that. Lesson previously learned: Property values sometimes have an upward domino effect in communities where improvements to properties are made. An improvement made to a home will generally increase its property value, even if only slightly. The dollar amount invested in the improvement will not *necessarily* raise the property's value by that same amount, however.

Communities in which multiple properties are improved will sometimes see an increase in the collective value of that community's properties. When this occurs, even properties in the community without additional improvements can sometimes benefit by seeing an increase in their own values. However, the main point here is, once again, that improvements to a property do not *lower* property value. This is what I have observed.

Nevertheless, some radio hobbyists seem convinced that a radio tower on a residential lot may be seen as a detriment, rather than an improvement. And this brings us to the most significant lesson I had previously learned in this matter: *An improvement is not detrimental.* When a homeowner invests funds in making a

capital improvement to a property, that's just what it is, an *improvement*. This, of course, presumes that materials and workmanship are to code requirements; that is to say, the job is done properly and would meet standards of acceptability for the type of product (or structure, or landscaping, etc.).

Notice carefully that I do not confuse the mere existence of a radio tower with a property *improvement*. An improvement to a property is something that is added (or repaired or upgraded) and that is maintained as such. The simple existence of a tower or any other out-structure is not in itself an indication of its state of maintenance or condition of safety. The bottom line remains, therefore, that in nearly every case an *improvement* to a property does NOT lower property value.

Now, real estate is not my *qualified* area of expertise. So if you are contemplating buying, selling, or otherwise transacting deals for homes or any other properties, use the services of a licensed real estate agent and have an attorney review all proposed contracts before settlement. As for myself, though, I have traded a number of properties in my time, and those experiences have taught me a number of useful lessons.

Bear in mind also, that I deal in fact, to the extent possible. Anyone can question subjective matters, such as esthetics and curb appeal, of course. But fact is fact, and not necessarily what anyone simply imagines or believes to be so. Therefore, one must be careful not to confuse a simple statement of fact with opinion or conjecture. That said, I will concede that truth can indeed be stranger than fiction, something else I have observed time and again.

## Greetings From The Five-O State

Chuck, KAE9122, of Hawaii says, "Aloha" and sends along a couple of photos of his family's GMRS home base setup for use with their two mobile units and a handheld radio. Their fairly short base antenna gives them a usable range of between five and 20 miles, depending upon terrain in the direction of travel.

Chuck reports that his household has been using GMRS for several years on their island with much success. He does report some interference from unlicensed stations, but says that it has never been a major problem to their own oper-

ations. Most of the 2-watt hybrid FRS/GMRS walkie-talkies can become a bit of a headache, Chuck says, but eventually the batteries go dead, the novelty wears off, or the radios die for one reason or another. He says that after the kids toss them around for a while they end up in the garbage.

That seems to be the case here on the mainland, too, Chuck, at least in my locality. After a very active past summer of kids playing on various FRS/GMRS channels day in and day out, the channels eventually cleared almost completely of the kiddie chatter. When Halloween night came, I anxiously scanned the GMRS and shared-FRS channels all evening. And, on what was otherwise a very busy night on the streets of my neighborhood, I heard absolutely no activity on any of these channels—except of course for licensed high-power REACT units on the local repeaters. There wasn't even the distant, choppy comms from adjacent communities that I had sometimes heard in the past. I must say that I really was surprised by this rather sudden lack of activity.

Chuck concludes by adding that he doesn't worry too much about unlicensed users in his predominantly rural area, though he can see how it's a problem in more populated areas.

I thank you for your report, Chuck. We always enjoy seeing how different GMRS licensees use that service for whatever their needs happen to be. And everyone likes to see pictures, naturally!

For the majority of our readers living in colder climates, if winter storms keep you more or less housebound, then head straight for the operating position of your home base monitoring or SWL station, and connect with the outside world by giving a listen to the many things you're sure to catch. This always cured me of any mid-winter "cabin fever." Maybe it's the middle of the night, and nothing much is happening on local channels on the scanner. Then turn on the CB set. If that turns out to be quiet at the moment, then it's time for some shortwave listening. With the rarest exceptions toward the polar latitudes, shortwave listening always yields several interesting catches any day or night.

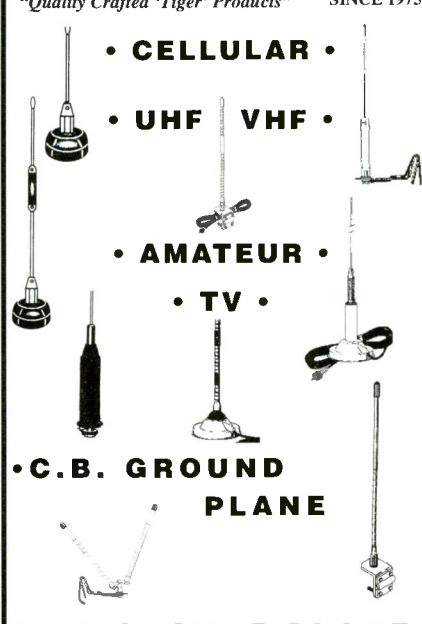
And those are just some of the reasons I keep several modes of radio communications active and ready at my own home base station. See you next month—and keep the letters and e-mails coming! ■

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# discoveries connecting as a radio amateur

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**W**ould you rather drive a Toyota Prius instead of that looming SUV? Are you fan of David instead of Goliath? Do you favor skill and ingenuity over brute force? Do you prefer wristwatches to grandfather clocks? Want me to stop with the vague questions? Okay.

If you've identified with anything I've written so far, you're a natural for exploring one of ham radio's most enjoyable pursuits. Of course, I'm talking about QRP, the "official" pursuit of low-power ham radio. Yes, running low power for the *fun* of it (and sometimes because you want to be sneaky or just a good neighbor)!

Countless millions of HF transceivers put out 100 W of healthy RF, which is about 20 times more power than the 5-W CW output (10-W PEP output) that commonly defines QRP power levels. But many QRPers don't stop there. Some veteran low-power operators run 1 W, 500 mW, 10 mW or even 1 mW of output power. "Microwatters," a polite term for the masochists who run less than 1 mW of output power, are a breed unto themselves!

Worldwide, part- and full-time QRPers number in the hundreds of thousands (probably not in the millions, but there are a lot of us lurking out there), and you're more than welcome to join the ranks. Your comrades in spirit like nothing better than the challenge of working fellow hams while running just enough power to get through. Your 1-W signal won't dominate the band, but with the right conditions, you can easily work all 50 states and a lot of DX, even with a fairly cruddy antenna.

### A Day In The Life

Here's a real math problem: A 1-W signal is only a little more than three S-units weaker than a 100-W signal. Yes, it's true. So, if your 100-W signal is S-9, your 1-W signal will be about S-6. And that's plenty of signal! You'll listen more and call CQ less, perhaps, and persistence pays off, as does using the right approach. Beginning QRPers often call only the loudest stations. That's not necessary, although it's a good idea to have decent copy on the stations you do call.



*Speaking of QRP and small packages, Elecraft's new KX1 Ultra-Portable CW Transceiver for 40, 30, and 20 meters (30-meter coverage is an option) is optimized for backpacking, weighs practically nothing, runs for hours on four AA batteries, features full break-in and advanced keying options, and has a host of other features you'd expect to find only on much larger platforms. Measuring only about 1 x 3 x 5 inches, the KX1 has a digital display, direct-digital-synthesis VFOs, an optional built-in autotuner, and comes in kit form so you can build it yourself. The options and goodies incorporated in the KX1 could fill a couple of magazine pages, so check this ground-breaking little rig out for yourself at [www.elecraft.com](http://www.elecraft.com).*

QRP frequencies? When the sunspot cycle is high (as it was a few years ago!), 20, 15, and 10 meters are awesome, and stations with just about any kind of antennas can work the world. If you don't believe me now, you'll see during the next solar cycle run-up.

Twenty meters, of course, is the all-time bread-and-butter band—with lots of high-power competition. Forty and 30 meters are excellent bands for stateside QRPing, especially when sunspots aren't cooperating (generally, today's conditions). They can even deliver a fair amount of DX in evening and overnight hours, especially if you live near one coast or another. Thirty meters is favored by many QRP ops because it's quiet, uncrowded, and "open for business" nearly 24 hours a day. Eighty meters is another good stateside QRP band, but it's not as popular as 40 meters because propagation is usually not as good (except for close-in contacts). Eighty also has DX poten-

tial, but competition is fierce and the physics of propagation are working against you. On MF (160 meters) QRP contacts are possible, especially when the band is quiet, but because the other HF bands offer much easier hunting, 160 can be a pretty lonely band for casual QRPers.

When it's time to get on the air, forget that you're running low power. After all, your signal is only a few S-units down from the big guns, but do let the other ops know that you're running low power. If you're tuning an uncrowded band, don't be afraid to call CQ. But do it like this: CQ CQ CQ DE QRP NTOZ NTOZ K. When replying to a CQ, try W1XYZ DE QRP NTOZ NTOZ. If you get that "QRP" out there *right away* your response rate will soar.

## QRP Gear

Nowadays, finding a rig for QRP work is extremely easy. There are many QRP-only rigs available, new and used. If you're a bit nostalgic, look for Heathkit's long-popular HW series, Ten-Tec's Argonaut line-up, or a Wilderness Radio Sierra. MFJ makes several single-band QRP CW transceivers, and if you're into kit building, check out the transceivers offered by Elecraft ([www.elecraft.com](http://www.elecraft.com)), which pretty much define the state-of-the-art in low-power radios. Collectively, ham magazines have published hundreds of home-brew QRP construction projects in the past 10 years, so if you want to delve into homemade radio, QRP is a good place to start.

If you don't want to invest in a dedicated QRP rig, it's relatively easy to reduce the power output of most modern solid-state rigs. The drive control can usually be used to trim the RF output to within acceptable QRP limits. Your rig's instruction manual will probably have more information. You can also build a resistive attenuator that will purposely "waste" enough power to put you into "QRP country." (Unless you provide for T/R switching, however, the resistors will also similarly attenuate received signals, which may or may not be a real problem.)

## Clubs and Awards

Many clubs exist to serve the interests of QRPers, and new ones seem to sprout weekly! One of the oldest and most prominent is the QRP Amateur Radio Club International (QRP ARCI, at [www.qrparci.org](http://www.qrparci.org)). Its members-only

magazine, *QRP Quarterly*, has been around forever and is still definitive. Other clubs include the Michigan QRP Club, online at [www.qsl.net/miqrclub](http://www.qsl.net/miqrclub), and the G-QRP Club, at [www.g4wif.fsnet.co.uk](http://www.g4wif.fsnet.co.uk), based in England. (Its publication, *Sprat*, can be hard to find here in the States, but is a nice read if you can subscribe.)

Awards are very popular among QRP clubs and QRP operators. QRP ARCI issues QRP versions of many popular awards and several exclusive awards such as the 1,000-mile-per-watt award. Contests are also popular among low-power enthusiasts. About a dozen QRP-only contests are held throughout the year, and many mainstream contests have QRP entry classifications.

As for books on the subject, you need look no further than your favorite amateur radio products dealer. Look for titles on QRP operating and QRP gear/construction. Check out the ARRL's *Low-Power Communication: The Art and Science of QRP*, written by veteran QRP'er Rich Arland, K7SZ (he's forgotten more about QRP operation than most of us will ever know), *QRP Power*, and *QRP Basics* for starters.

## Catch You Now Or Catch You Later

If you want to experience one of amateur radio's greatest thrills, crank down the power, friend! If I don't see you on the 30- or 40-meter calling frequencies (see "QRP Calling Frequencies"), I'll see you next month.

Send your QSL cards, questions, and letters to me at *Popular Communications*, "Ham Discoveries," 25 Newbridge Rd., Hicksville, NY 11801. Why not send along your photo while you're at it? ■

### QRP Calling Frequencies (MHz)

Band	CW	SSB
160	1.810	1.910
80	3.560	3.985
40	7.040	7.285
30	10.106	NA
20	14.060	14.285
17	18.096	NA
15	21.060	21.385
12	24.906	NA
10	28.060	28.885

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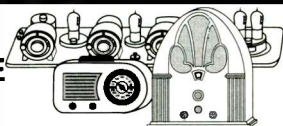
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## Antennas: The Key To Everything...Almost

I've gotten several letters over the past months asking about antennas. It seems like we just did antennas, but looking back, I found it's really been a couple of years! Time flies whether you're having fun or not, so here's another look at signal catchers.

The general idea with an antenna is to get as much metal as you can as high in the air as you can and hope for good reception. There's an old saying that if you're in the northern states, and your antenna is still standing after the cold, snow, and ice it means that it wasn't big enough or high enough to be effective as an antenna. Well, maybe not. There are a few things we can do to help the situation, and it turns out that the most metal might not be the most effective method for your radio.

Before you go out and spend a large chunk of change for a tower to put your scanner antenna at 2,000 feet, you should be aware of a potential problem. Antennas are a double-edged sword. The idea of an antenna is to hear more stuff, right? And if everything were perfect, and in a perfect world, raising the height of the antenna, or increasing its effective gain would result in hearing more signals. In the perfect world, that's true, but ours is not quite perfect. For the ultimate proof of that, I remind you that we have to share the planet with Harold, so you just know we're gonna be in trouble!

The problem is that increasing the height or gain of the antenna increases the amount of signal gathered at the antenna. Two things can happen to that signal to cause reception to actually deteriorate, rather than increase, when compared with a factory mounted back-of-the-radio type antenna. The first is that we can experience signal losses in transmission lines (usually coax) that can be severe enough to defeat any gain that you might have gotten from the better antenna. This is especially true above 400 MHz, and acute over 800 MHz. This can be largely overcome, or at least greatly reduced, by using very high-quality and very expensive transmission lines. Unfortunately, for those of us in the real world neither the high-quality transmission line nor the 2,000-foot tower is an option.

The other problem that may occur is that the antenna can actually deliver more signal to the radio, but the radio can't process it correctly. This effect is technically called many things, depending on where in the radio the breakdown occurs, but we'll call it overload for brevity. I won't go into a lengthy discussion here, but I did want to point it out so that if you do make antenna changes and then believe you're not hearing as much as you did before, you could be quite right. Don't panic—you can always put things back the way they were, if you take small steps and make modifications progressively, rather than all at once.

### Understanding Wavelength

First off, let's make the point that anything that will conduct electricity (or more specifically, radio frequency signals) will work as an antenna. The old coat hanger bent in some funny shape and connected to your radio will receive. Likewise, a spool of wire from RadioShack with one end stripped and stuffed into the antenna connector will work, too, but the question is always "how well?" Sometimes you can be surprised. If you're in a situation where outside antennas are not possible, you might do some experimenting with these two methods (neither one costs much!) and see what you get.

It's difficult to talk about antennas for any length of time without understanding wavelength. So we'll take a few minutes here and get that out of the way. If you're already comfortable with this stuff, you can skip to the next section and save some time. See how accommodating we are here at *Pop'Comm*?

We're all familiar with frequency that is how many times per second the signal that we're interested in is oscillating. Radio waves travel at a constant speed of 300,000 kilometers per second (or 186,000 miles per second, if you prefer, but all the calculations are done based on the metric system). If it has to oscillate more times per second, then there's less time and, therefore, space or distance between waves. The distance between waves, or more specifically between a



*This telescopic whip from RadioShack has been an old standby for many years. A broadband receiver needs an antenna that can adjust to a wide range of frequencies.*

point on one wave and the same point on the next, is the wavelength. You can measure from peak to peak or from start to start. It really makes no difference as long as you pick the same spot on both waves.

If you're familiar with amateur radio at all, you'll know that hams refer to particular bands by meter. The 40-meter band, for instance, is just over 7 MHz, which makes the wave just over 40 meters long. There is a considerable rounding that occurs when naming the band, but when we get to antennas, we'll want to be a bit closer.



*If you're only interested in one band, you'll find that you do better with an antenna made for that band. This Active Hunter from Maldol does a good job in the VHF-Hi band, although performance is somewhat reduced because it's a small and compact antenna. It's just perfect, however, for when you are mainly interested in what's happening right around you. If you can find one, an 800-MHz-only antenna will help tremendously with a trunking system on 800 MHz.*

To calculate this, you can divide the frequency in MHz into 300. The result will be the length of the frequency in meters. It was common in the 1930s and '40s for shortwave broadcasters to give their broadcasting schedule in meters. I remember one Radio Moscow announcement stating that they were transmitting on 11, 13, 16, 19, 25, 31, 41, 49, and 50 meters. That's a lot of transmitters! You might have heard a BBC announcement that they were transmitting at 50.209 meters. That's 5.975 MHz. In reality, it was rounded to 50.2 or just 50 meters. Sometimes, it's just "the 49-meter band"—happy hunting!

Most of the tuners were pretty coarse in those days, so some fiddling with the dials was common. Once you got in the right meter band, you had to dig a bit to find the exact station you were interested in. In these days of digital readout receivers

and synthesized tuners, the exact frequency is preferred, and much easier to find. There is, however, no reason that a receiver's readout couldn't be in meters rather than megahertz.

The 2-meter band is at 144 to 148 MHz. This is that rounding we were referring to earlier. According to our formula, 150 MHz is 2 meters. So, 146 MHz, the center of the band, is actually 2.05479 meters. That might be interesting if you were calculating the exact frequency, or if you wanted to build a transmitting antenna, but for our purposes, it's more information than we need.

Notice that as we've gone from 7 MHz to 150 MHz, the wavelength has gone from 40 meters to 2 meters (about half of a football field to slightly longer than a couch or bed). As we go higher and higher into the range of scanner frequencies, the waves continue to get shorter. At 850 MHz, we're down to 35 centimeters—just a little longer than the length of a letter size piece of paper.

So how does this figure into antenna design? The efficiency of the antenna is directly related to the wavelength of the frequency versus the physical length of the antenna. An antenna cut to exactly one-half the wavelength (a half-wave dipole) is one of the references for antenna performance and a relatively simple one to build. So our 146-MHz antenna should be 38 inches long, or 19 inches per side of the dipole.

As a shortcut, you can use a formula that will convert the length of the antenna elements directly into inches. Depending on which book you read, 2800 to 2808 divided by the frequency in MHz will give you the length per side for a dipole. Specifically, 2800/146 gives us 19.17 inches, while 2808/146 gives us 19.23. Not much difference, but my philosophy was to start longer and trim as necessary. Remember that none of this is *critical* for receiving antennas, and in practice either one would probably be just fine.

A dipole is a kind of T-shaped antenna, so if you had one 19.23-inch piece of wire coming out of the center connector and another coming from the outside of the antenna connector, you'd have a dipole that would work fairly well at that frequency. Try it!

This brings us to another critical point: bandwidth. Many antennas are frequency specific. Some of them drop off considerably the further you move away from that optimum frequency, while others are fairly "broad banded." If you stop and

think about it for a second, we're asking the scanner and the antenna to perform across many hundreds of MHz, while many antennas were designed for *one* frequency. Yikes!

The good news is that for receive applications, this is not nearly as critical as it is for those who are transmitting through these things. While a transmitter will require adjustment every few hundred kHz of frequency change, even on a dipole, a receiver will work several MHz away just fine. Sure, it won't be quite as efficient as an antenna just for the new frequency, but it's a lot easier than trying to put up an antenna for every frequency you want to listen to!

## Starting Simple

The simplest antenna is a half-wave dipole. In English, this is a wire one-half wavelength (the length of the radio wave from peak to peak) that is split at the center. This antenna has to be cut for a particular wavelength, although it will perform reasonably well for 20 to 30 MHz on either side of center. Remember that we're talking entirely about *receive* antennas here. If you're licensed to transmit, all the rules change!

The half-wave dipole comes in many variations; the most common for scanner users is the one-quarter wave ground plane. What? You just said it was one-half, now it's one-quarter? Yep. The active or main element of the antenna is one-half of the half-wave, or one-quarter. Each leg of a dipole is quarter-wave too.

What makes the ground plane-type antenna different is that the active element is vertical in the center of a "plane," or number of elements that form the other leg. The ultimate ground plane is a metal disk with a radius equal to one-quarter wavelength. However, you can get almost as much performance, and save a lot of wind resistance, with just a few metal elements (three or four are common). By having the elements spread out over 360 degrees, you'll get a very omni-directional pattern, meaning it will receive signals from any direction.

If you think about a typical base station antenna, this is exactly the effect they're creating. The center single element stands straight up, and there's usually three or four radials sticking out at more or less a right angle to it, which form a circle around the bottom of the single center piece. Those elements sticking out form the ground plane.



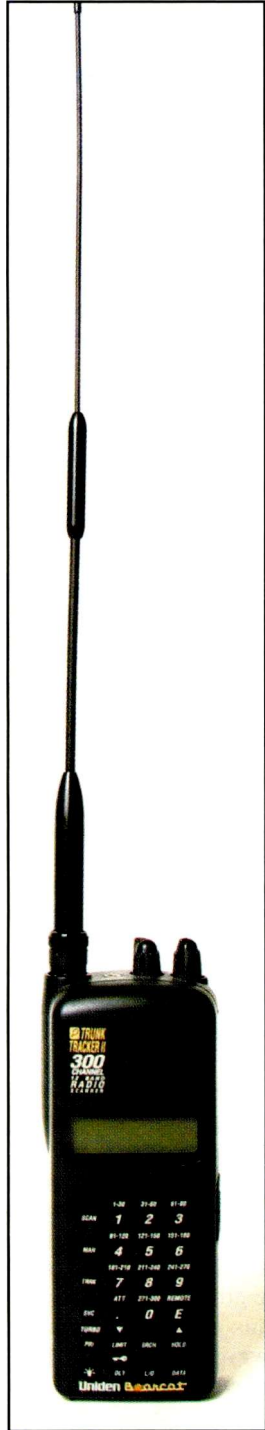
*This 2-meter/440-MHz whip is made by many ham antenna manufacturers. Its long length gives it great signal pulling power on those frequencies it's optimized for, but it's not a good choice for a broadband receiver!*

The antenna that comes with your radio is probably based on this principle. By winding coils or other tricks, they are sometimes shorter than the quarter-wave normally required for the vertical element. Handheld antennas are based on this idea. And where are the other elements for the ground plane? It uses your radio itself. It's not exactly the right size, and not quite as efficient as it could be, but it's much cheaper to manufacture, and probably easier to fit in the box or carry than a quarter-wave ground plane disk for 40 MHz, or even 150 MHz.

## Back To Scanning

The antenna that comes with your scanner is a good place to start. It's easy, costs nothing, and was probably tested by the manufacturer to provide good performance (sometimes just good, but not great) over the range of the receiver. Once you've established the performance of the radio with this antenna, you can start to experiment and see what improves performance and what doesn't. You don't need sophisticated test equipment to do this, although that helps if you know how to use it. Otherwise, use your ears and listen to what you're hearing!

Remember that the length of the antenna directly affects its best frequency. If you listen primarily to frequencies in the 800-MHz range, you may get better performance with the antenna collapsed to its shortest length (assuming that it has that



capability). If you listen mostly to 150-MHz traffic, you'll want it fully extended in most cases.

Notice that I said you *may* get better performance with the antenna shorter. Often, particularly in the higher frequencies, it works out that a fully extended antenna works out to another ratio of the wavelength, and more metal to catch the signal. Experimentation is necessary here—you won't hurt anything.

The next thing to try is a half-wave dipole, or quarter-wave ground plane-type antenna. Both are easy to build or relatively cheap to purchase. RadioShack makes a ground plane antenna (No. 20-176) that actually works on two bands. From the factory, it's set for about 140 MHz and 440 MHz. Cutting a bit off the ends might help fine tune those frequencies, but in practice,

most people find they work pretty well right out of the box. The most notable exception is when trying to use this antenna in the military air band (220 to 400 MHz), which means that the elements do need to be cut for those bands. Our 2808/300 formula gives us about 9.3 inches for the longer elements.

A lot of scanner listeners find this simple arrangement, placed outside or even in an attic, works just fine for all the signals they care to hear. However, this antenna isn't particularly broad banded, so if you wander too far away from those frequencies that it's cut for, you'll find reduced performance, possibly to the point of unacceptable.

Here's where the scannist's favorite—the discone—comes into play. Most of us want to be able to listen to signals over the full range of the receiver, and for scanners that's roughly 30 MHz to something around 1000 MHz—maybe higher. If you go much above 1000 MHz, however, all sorts of things start to change and you really need a different antenna. The same thing applies *below* 30 MHz; there just isn't one antenna that will go the whole distance. The discone, however, does do a decent job throughout most of the range. Not a great job, mind you. It, like all antennas, is a compromise.

To get great performance in one spot, you give up bandwidth (performance across a wide range of frequencies). To get bandwidth, you give up performance, or gain, on any particular frequency. The discone is probably about equal to, or maybe slightly worse than, a dipole on any given frequency. But a discone will maintain that performance for a few hundred MHz on either side of center.

The discone does have a center frequency, just like the ground plane. Many military monitors cut discones to center around 300 MHz, but still get acceptable performance on most of the public safety bands. The disk radials should be  $2008/\text{frequency}$  and the longer "cone" radials should be  $2953/\text{frequency}$ .

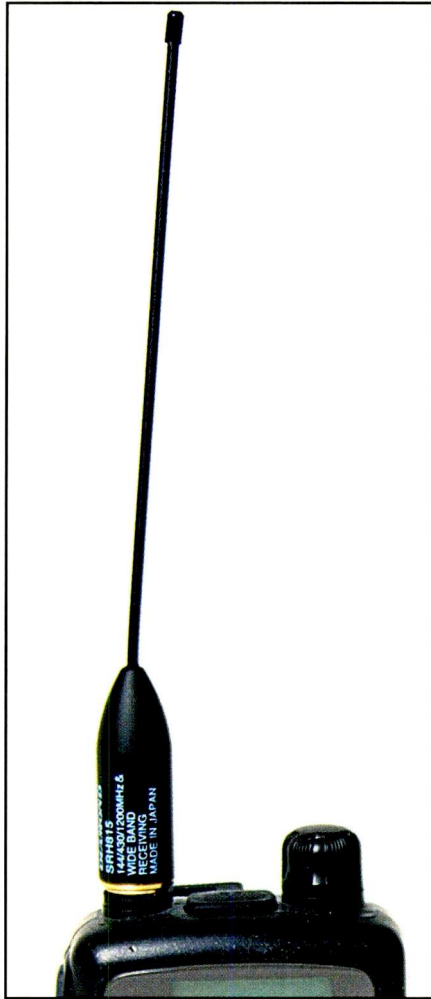
Most discones are manufactured for the VHF-Hi and UHF ranges, so you'll have to modify your own if you choose to do this. A standard discone will receive signals in the VHF-Lo range, although it is helped tremendously by the addition of a whip on top of the disc. The new RadioShack discone (No. 20-043) has this addition, as do many discones by Diamond and Comet. Remember that any antenna built for ham applications will work reasonably well for your scanner.

By the same token, the standard discone will receive some signals at 800 MHz, but not perform very well. Max Systems makes an 800-MHz discone (as well as the quarter-wave ground plane shown), or you might be better off with a dedicated antenna if 800-MHz performance is a factor for you. Experimentation, as always, is the key here.

## Looking For Direction?

Up until now, we've been discussing omni-directional antennas, that is those antennas that receive equally well (or poorly) from all directions. Under most circumstances, that's exactly what you're looking for with a scanner antenna—you probably want to hear things all around you. There are times, however, when you'd like to concentrate on a particular signal, or perhaps you're looking for maximum distance. For that, there are antennas which are directional.

Directional antennas, or beams, come in all shapes and sizes, too. And they all have one major factor in common that separates them from the omni crowd. They give up bandwidth and omni-directional performance for high performance (gain) in



The newer radios come equipped with an SMA connector, rather than the standard BNC. There are commercial and ham antennas made with this connector as well.

one direction. Often these antennas are mounted on a rotor so they can be turned towards the source of whatever signal is of interest. Many transmitting operations use beam antennas for all sorts of reasons, but for receive applications, they're somewhat specialized.

One feature of beam antennas is that, by their nature, they emphasize performance in one direction while de-emphasizing performance in another (sometimes many others). This can be useful, however, in helping to eliminate an interfering signal in favor of the one you're after. If you're located in an outlying area and want to hear signals from a particular transmitter or city, a beam antenna mounted high might be your only option.

Beams come in many shapes and sizes, but they tend to be a bit larger than omnidirectional antennas. The higher the frequency of the beam, the smaller physi-

cally it will be, but even 800-MHz antennas with many elements can become quite large. In addition, they may need to be mounted on a mast with a rotor so that you can change the direction.

### So Try Something!

Experimentation, as we've already mentioned, is the key. What works great in one situation may fall apart in another. One of the great things about antennas is that you can build many of them out of relatively low-cost materials, and it doesn't take too much to experiment. That's the thing to do. Keep careful notes so you can put things back if something doesn't work.

When you're working outdoors be careful to stay a safe distance from power lines and other structures, and always wear

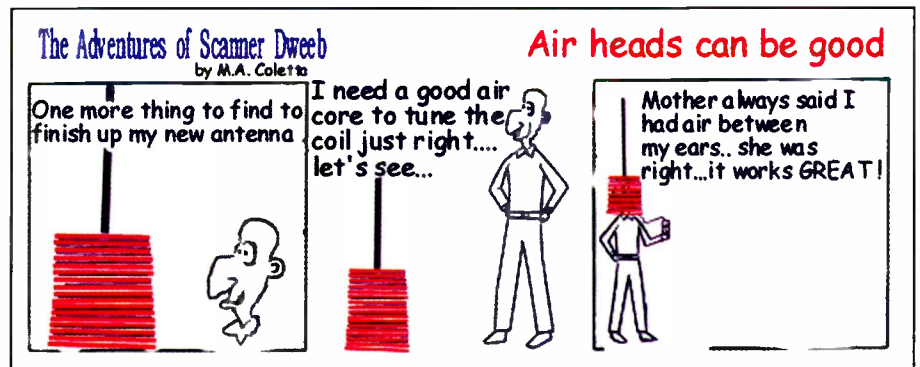
a safety belt if you're climbing a tower or other structure. Never work alone.

Remember this is a hobby, and you'll want to be around for next month's exciting issue of *Popular Communications*! Write in and let me know what's working in your situation.

### Frequency Of The Month!

Let's give 157.000 a listen this month and see what we hear! Send your results in to me and we'll enter you into the drawing for a one-year subscription to *Popular Communications*! Please mark your e-mail or envelope with the frequency so it can be entered correctly!

You can reach me via e-mail at [radio-ken@earthlink.net](mailto:radio-ken@earthlink.net), or regular mail at 9051 Watson Rd. #309, St. Louis, MO 63126. Until next month, Good listening! ■



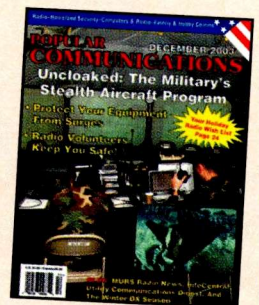
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### The 100th Anniversary Of The Wright Brothers Flight

“I’m back! One of the things that happen in the world of writing and magazines is that sometimes a column or promised article gets dropped once or twice, but magically reappears. Such is the case with our Plane Sense column in December, the 100th Anniversary of the Wright Brothers flight. But this month, we’re presenting a special Wright Brothers commemorative column you’ll want to keep with all your other “special” magazine clippings and photos.”

*“The ‘Flyer’ was completely hand-built. The frame was made of spruce and ash and covered with muslin.”*

#### The Flying Machine

The first flight, with Orville at the controls, is commemorated by a 60-foot granite monument. It lasted a grand total of 12 seconds and covered a whopping 120 feet, just over the length of a DC-9 passenger jet. On that same December 17, the “Flyer” flew a total of four times. With Wilbur at the controls, that fourth flight flew for 59 seconds and went over 850 feet, almost the length of three football fields. This was the culmination of over four years of flight testing, from gliders in 1899 to the “Flyer” in 1903. It took another two years to produce a practical airplane.



*The Wright Flyer on display at the Smithsonian.*

The “Flyer” was completely hand-built. The frame was made of spruce and ash and covered with muslin. (Cloth was the primary covering for virtually all aircraft for decades following this flight.) The simple four-cylinder engine that powered the counter-rotating propellers was not built by the Wright brothers, but it was designed by them. It produced a whopping 12 horsepower, one-third the power of a late 1950’s VW Beetle. As seen in the photos in the September issue of *Popular*

*Communications*, the aircraft’s pitch was controlled by the stick in Orville’s left hand, and the roll and yaw were controlled by the shifting of the pilot’s hips, which warped the upper wing tips.

The wings were 40 feet, 4 inches tip-to-tip. It was 21 feet long and 9 feet, 3 inches tall. The empty weight (no gas or pilot) was 605 pounds. Since the beach is not made of concrete or asphalt, it was determined they had to use a rail system to launch the aircraft. The “Flyer” had skids, but no wheels, and thus no brakes. Stopping was by simple friction against the beach sand.

The brothers developed the first heavier-than-air machine that could sustain flight



*A photo of the actual Wright Brother’s flight in North Carolina.*

*“The Wright Flyer was “restored” twice; the first time in 1927 in England and the final refurbishing in 1985—or I should say it was a completely rebuilt.”*

and their techniques are still in use today. Some of their design tools included not only actual test flights, but even use of a wind tunnel to examine flight characteristics.

### All In The Family

As youths they had a passing interest in flying. Their father gave them a toy helicopter which used rubber bands to make it fly. They played with it and built larger reproductions of it. But they really had no desire to experiment with building airplanes until the much publicized fatal crash of glider Otto Lilienthal in 1896. It was then that they actively pursued the idea of heavier-than-air flight. And just seven years later at Kill Devil Hills it happened.

The flight almost occurred three days earlier. Wilbur won a coin toss and attempted a flight on December 14 but crashed. The repairs were minor. Then at 10:35 a.m. on the 17th Orville took his historic flight. The aircraft reached a top speed of just under seven mph. Wilbur's final flight of the day was just under 10 mph. Following the final flight of the day, a gust of wind caught the plane and tumbled it over the sands, damaging it beyond repair. It never flew again.

By early October 1905, the Wrights had perfected their design and the first “practical” airplane was in flight. This third design flew for nearly 40 minutes and covered 24.5 miles, with an aggregate speed of just over 37 mph.

### History Preserved

The wreckage of the first flyer was shipped back to the Wright's bicycle shop in Dayton, Ohio. It remained in crates for nearly 10 years, and was almost destroyed by a flood in March, 1913, when it was submerged in water and mud for a week and a half. It was finally uncrated, restored, and placed on display at the Massachusetts Institute of Technology in 1916. After a few more showings it was on display in London starting in 1926, then placed in underground storage near the village of Corsham, about 100 miles from London. It was not, as many stories say, stored in the London subway system.

The Wright Flyer was “restored” twice: the first time in 1927 in England and the final refurbishing in 1985—or I should say it was a completely rebuilt. The plane was completely disassembled and restored to its original form, accurate down to the proper seam placement on the canvas. Since its final reassembly, it's been suspended from the ceiling of the Smithsonian Air and Space Museum in Washington, D.C. Its company includes the “Spirit of St. Louis” and the Apollo 11 command module.

The commemorative anniversary flight provided no frequencies to monitor, but if you were lucky enough to be there, I'm sure you got a great view! Please e-mail me some photos that I'll use in this column.

See you again next month!

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# utility communications

## digest

news, information, and events in the utility radio service from 30 kHz and beyond

## Year-End Odds and Ends, And The Final Installment Of Monitoring The Military And Black Aircraft Programs

First of all, let me thank everyone for the groundswell of support you have shown of late. It's great to see everyone getting interested again in Utility monitoring! Keep those loggings, clippings, and stories coming in folks!

Before we get on to the third and *final* installment of our series on military monitoring and black aircraft programs, let me get to some items that have been piling up on my desk.

### Solar Troubles

An unexpected series of solar storms and flares wrecked havoc with the HF bands recently. Major disruptions to HF aviation communications were reported. In particular, aircraft flying north of the 57th parallel (in Canada) reported severe problems.

Flights that flew north of latitude 57 degrees, which runs from northern Scotland across Hudson Bay to the lower tip of Alaska and across Russia, were required to stay on specific routes and to keep in contact with ground stations using VHF and UHF channels and use GPS navigation modes which were not affected by the storm. By prohibiting route changes, such as altitude shifts to deal with high winds, air traffic controllers could pinpoint a specific plane's location even if it was out of radar range.

Richard Wright, a spokesman for Britain's national air traffic services, said British controllers were keeping trans-Atlantic jets on more southerly routes than usual to avoid solar flare interference with communications. He said the flare had not affected planes over Britain itself.

### Semper FM

Despite poor experiences with previous attempts to equip Marine Corps infantry platoons with inter-squad radio communications (early units didn't work well and were hard to understand), the Pentagon rushed into trial service in Iraq a new headset radio that has proved it to be reliable and a big hit with war fighters.

Consisting of a lightweight, better-sounding headset and a VOX microphone coupled to a 1.2-pound transceiver (with longer battery life) squad situational awareness improved dramatically with platoon and squad leaders having to *not* shout their orders over noisy warfare conditions. Because of the initial success, an order was placed with the manufacturer for 5,000 more units to be rushed to Iraq.

The trial UHF FM (duplex) units are not secure, so infantry using them use specific code-words and authentication procedures to ensure security if their calls are intercepted, which so far has not proved to be a problem in a technology-impaired Iraq.

Squad leaders' radios are linked via secure satellite radios to marine commanders. The units are rigged so when a platoon leader calls a squad leader his is signaled with a specific tone.



Artist's rendering based on actual sighting of the mysterious Switchblade aircraft sighted near Cannon AFB, New Mexico.

Squad leaders can also put riflemen on hold to receive orders from platoon leaders. Follow-on units will enable squad members to distinguish who is talking by their individual assigned tone sent out after they have un-keyed their microphones. Because the early units do not handle data exchanges (such as GPS coordinates) they are still considered experimental and not network-centric.

Future radios will be digital and secure. One interesting technological avenue that is being explored is surround-sound, involving advanced processing software to enable squad members to have a better idea of where fellow squad members are by where their communications are placed spatially in their surround-sound headphones.

If a squad member is communicating from up field and to the left, that is where his fellow squad members will hear his communications emanating from in their headsets! Computer games such as the very popular "Medal of Honor" have been using this very method to enhance game play. Seems military think-tankers must be spending a lot of time playing computer games!

### Dear WiNRADiO

Speaking of computers, I have a request for WiNRADiO. I am one of the few, the proud, and the stubborn, who swear by their Macintosh computers. I have enjoyed greatly my WiNRADiO WR-1550e communications receiver. It's a very versatile receiver/scanner that is easy to use, has great advanced features (like a spectrum scope), and has become a powerful

tool in my HF monitoring arsenal. But every time I visit your Internet site ([www.winradio.com](http://www.winradio.com)) I see all kinds of cool downloads for PC's but nothing forthcoming for Macintosh users!

Recently WinRADiO announced they have developed a low-cost DRM (Digital Radio Mondiale) Demodulator/Decoder, fully integrated with the user interface of the WinRADiO G303i receiver. This enables reception of DRM, the new broadcasting system designed to introduce digital broadcasting to medium and shortwaves. Very cool indeed.

Hey, WinRADiO, how about us Mac addicts? Yes, I know most PC users think anyone who uses a Mac is either touched in the head or is just un-informed slob who hasn't been brought into the PC fold, but we love our Macintoshes and wouldn't consider using anything else. So please consider developing some new software and add-ons for Mac users? Okay?

That goes for you too Uniden, AOR, Kenwood, etc. I'd love to try computer control of my BC 780 XLT on my Mac. I'd also consider buying other manufacturer's receivers if they were Mac compatible. I know PC users outnumber us 10 to one, but at last count over two million people use Macs.

Mac users unite. Write these receiver manufacturers and tell them you want Mac software, too! And if there are any third-party or homebrew programmers working on radio control software for Macintosh, please let me know!

## Give Your Kids A Hug— And An HF Radio!

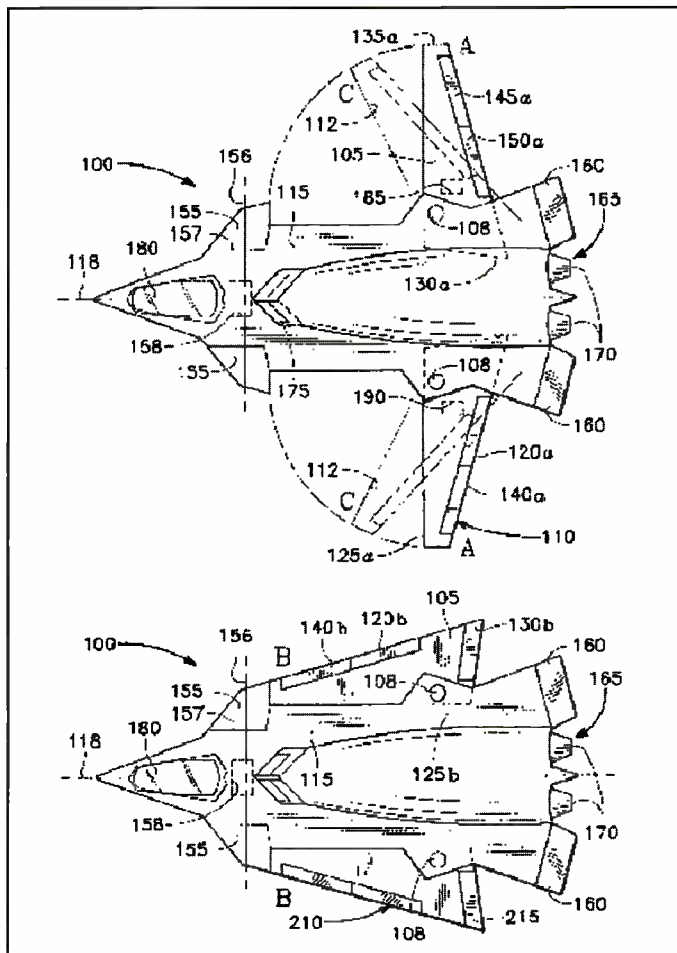
Being a proud grandfather, I take every opportunity to play with my wonderful granddaughter, Caysi. Luckily she lives in town and I see her very often. When she visits she naturally gravitates towards my radio room. The blinking flashing read-outs and exotic sounds coming from the receivers are natural kid magnets. Although she is only four, she has come to understand that "Grand-da-dad's" radio room is a special place, and instead of making it a no-touch zone, I encourage her to spin the dials, flick the switches, and punch the buttons.

Sure, I have to spend a few minutes getting things back in order after she has left, but I think it's more important to let her indulge her natural urge to touch, push, prod, pull, and spin the dials. I hope (when she's older) this will develop into a passion to explore our world through radio monitoring.

Don't think I just let her go crazy in my radio shack. I always supervise her closely, making sure she doesn't touch anything that could harm her. I also put out of reach anything I don't want her to touch. I'm very careful to secure electrical cords and hide small electronics parts that could be swallowed. If she does something destructive, I firmly tell her it was wrong without scolding her.

Sometimes when she is in a rambunctious mood (too much candy?) I find a way to either calm her down or just get her out of the radio room by distracting her with something else she likes to do. All the time I make sure she knows that the radio room is a special place must to be treated with respect. Sure, she doesn't quite understand what all the gizmos do, but someday she will.

When she gets older, I will buy her first radio. I'll start her like I did, with an inexpensive AM/FM radio and gradually get her interested in the other bands. I will try to instill in her the same sense of awe and wonder I feel whenever I scan the bands and pull out of the static a military station transmitting in the blind from the other side of the world, or that mysterious num-



Actual Northrop patent art portraying an FSW stealth aircraft, much like the Switchblade.

bers station broadcasting coded numbers to a clandestine operator behind enemy lines.

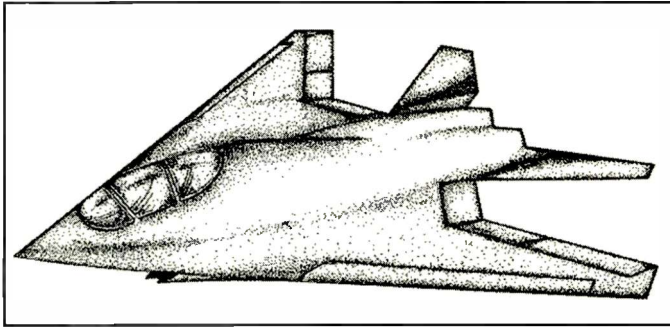
If you have kids or grandkids I suggest you let them explore your radios as well. Don't be afraid to let them touch. Supervise them closely but don't breathe down their necks and stifle their natural curiosity. Give them a little room to be curious, while at the same time teaching them that electronic devices are special things that need to be treated with respect. Above all, be patient.

Consider buying them an inexpensive shortwave radio that you can keep in your shack until they're ready to take it home. Don't spend lots of dough and try and impress them by buying the latest state-of-the-art model. Buy a good, used entry-level model, like a vintage Realistic DX-100. When you purchase a receiver, consider something both rugged and simple. Then when they visit, spend quality time showing them how it works. Open it up (making sure it is unplugged first) and show them the electronic components inside. Above all, don't force the radio on them. If you sense they are bored, do something else. Most importantly, try to get them to see how special and exciting radio monitoring is!

## In the Black—Final Part, UFOs Versus IFOs

Whenever I meet someone who discovers my intense interest in black project aircraft, they inevitably ask, "In all your trips out into the desert have you ever seen a UFO?" My reply is, "As an investigative reporter specializing on the topic of secret mil-





*Is this The Flying Artichoke? Actual patent illustration of a stealth aircraft sighted on a radar cross-section test pylon in the White Sands Missile Range and seen flying near China Lake, California.*

itary aviation technology I have seen many strange objects crossing the night sky. I have witnessed craft demonstrating amazing flying capabilities. Some flash through the sky at unbelievable speeds. Others seem to crawl through the skies and are incredibly slow, silent, stealthy, and almost sinister. Some seemingly appear to defy the classical laws of physics, are capable of stopping on a dime, and make impossible ninety-degree turns before streaking off into the heavens at unbelievable speeds. However, I have never seen anything I could without a doubt classify as *extraterrestrial*."

These "unidentified" flying objects are more than likely man-made prototypes of advanced aviation technology. Although they may look as though they are defying physical laws, advanced computer-controlled UAVs can logically perform aerobatics that would make the best fighter-jock cry "uncle"!

Still others defy explanation and can only be classified as true unidentified flying objects. Keep in mind the term "UFO" means they are *unidentified*. Too many people believe anything called a UFO is a flying disc from another planet.

On many occasions I have found myself in some isolated spot of desert near a military test base staring into the night sky and searching the airwaves for aviation excitement. On these field trips I've bumped into fellow military aviation enthusiasts (stealth chasers) and UFO believers, all mysteriously drawn to the same piece of remote real estate in search of the extraordinary.

Although stealth chasers and UFO buffs have different agendas, they are both on personal and almost religious quests for the source of intelligence behind those funny lights prowling the desert night skies.

Stealth chasers have had better luck getting the government to admit to the secret stealth aircraft being developed by the Pentagon. In stealth watching circles, saucer chasers are seen as an undisciplined group basing their observations on what they *want* to see and not on the available facts.

One example that many stealth chasers often cite is an incident that happened near the infamous secret test base at Area 51, Nevada. Now an open secret, Area 51 is where many of the military's super-secret black projects are under development.

UFO believers are drawn to "Area 51" in search of Bob Lazar's S-4 saucer claims and evidence that reverse-engineered UFOs (captured alien technology) are being flown out of this military testing facility, located in the middle of the vast Nellis Air Force Base range complex.

On the night in question, stealth chasers camped out on a hill overlooking the Groom Lake base while the UFO chasers gathered at the now famous "black mailbox," a popular viewpoint on Highway 375 leading to the small town of Rachel. Shortly

after 4 a.m., a bright white light appeared hovering motionless over the restricted airspace surrounding Groom Lake. The UFO chasers were awakened from their fitful slumber to witness "Old Faithful," a bright light that makes regularly scheduled appearances in the area.

The black mailbox sky watchers were ecstatic, jumping up and down and cheering. To them the lights were the proof they sought, confirming their long-held-beliefs that the military has in their possession advanced alien technology. To UFO chasers it was nothing less than the mother ship from *Close Encounters of the Third Kind!*

However, the stealthies camped up on Freedom Ridge had no such illusions. The appearance of Old Faithful did not come as any surprise. They knew that this was not the return of E.T. but just another one of the many JANET flights tasked with ferrying the thousands of ordinary human workers to Groom Lake and the Nevada Test Site.

They knew what to expect because they were equipped with good investigative tools. The stealth chaser's scanning radios were tuned to the local military aviation frequencies, alerting them of the aircraft's approach. They began tracking the aircraft soon after takeoff from McCarran airport in Las Vegas. Their night-vision gear picked up the faint anti-collision strobes of the airliner when it was still 50 miles away. They monitored the captain of the JANET radioing Dreamland's military air traffic controllers for approach instructions.

Amazingly, both groups witnessed the same event. Both saw what they expected to see. Only one group saw what was really out there. No matter how you slice it, airliners are not extraterrestrial, even if you want them to be.

If the UFO buffs had done their homework, been better researchers, and used the right investigative tools, they would not have been not been fooled into thinking that an airliner was an extraterrestrial spacecraft. Because they are such uninformed sky watchers, their claims are easy to dismiss.

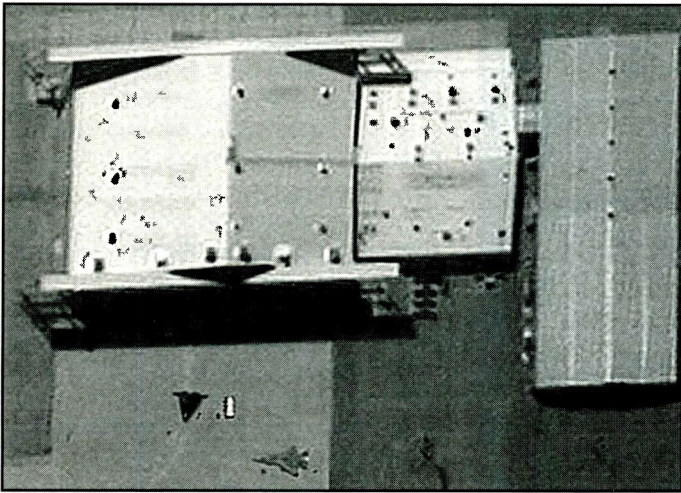
As any X-Files buff will tell you, *the truth is out there*, but unfortunately for UFOies, it is not the truth they believe in. So until the president appears on national TV holding hands with an alien, *my* guess is that those things that go whoosh in the night are indeed manufactured by and piloted by *little green men*. And by that I mean humans wearing olive green flight suits!

## So What Is Out There?

Here's a quick list of possible black aircraft programs that military radio monitors have had personal encounters with, based on sightings and communications interceptions. Keep in mind there are many new UAV and UCAV programs that are not listed here. Also, some of these projects may have only been "proof of concept" vehicles and never led to operational front-line aircraft. And even still, these are only the projects they *want* you to know about!

### *The Flying Artichoke*

First seen as a full-scale model mounted on a pylon at the RATSCAT facility inside the White Sands Missile Range and by stealth chasers near China Lake, California. This frill-tailed aircraft dubbed "The Flying Artichoke" may in reality be the a Northrop design for a super-stealthy reconnaissance platform, as seen in this U.S. patent illustration # USD00D342717S. You can view this and many other "secret" black project aircraft patents at Steve Hauser's Desert Secrets website at [www.desert-secrets.com](http://www.desert-secrets.com).



*Author anonymously received this supposed satellite photo of a stealth aircraft (possibly the Advanced Manned Concept) outside a hangar inside Area 51. Although this is an actual (commercially available) satellite photo of an actual hangar at the base, experts who have analyzed the photos say it shows tell-tale signs of heavy Photoshop manipulation and is suspect. It's just a small example of the disinformation being spread by questionable sources concerning black projects.*

#### *The Advanced Manned Concept*

Many "stealthies" have seen another flying triangle near Area 51 and over the White Sands Missile Range. Possibly another Northrop design. Could this be the real TR-3A Black Manta?

#### *The Switchblade*

As far back as 1989, the buzz inside aviation circles was that the Pentagon was developing a variable swing-wing aircraft to replace the aging fleet of F-111s, which was retired for good in 1995. The F-111 was a medium-size bomber also capable of defending itself as a fighter and then speeding away at over 1,600 miles per hour.

Reports surfaced of a new swing-wing aircraft sighted near Cannon Air Force Base, New Mexico, and at Langley Air Force Base, Virginia. High-ranking officials are said to have gathered in secure hangars at both air bases to be given a sneak peek at the new aircraft. In September of 1994, I observed such an aircraft dumping fuel while circling high over Amarillo, Texas, for several minutes at midday after I intercepted communications concerning an in-flight-emergency on 9.014 MHz (USB).

The Switchblade is possibly based on the X-29 project developed by Grumman (in conjunction with DARPA, NASA, and the USAF) during the 1980s. The purpose of the X-29 project was to explore the super maneuverability of an aircraft designed with a forward-swept wing (FSW).

An aircraft with an FSW is very unstable and thus highly maneuverable but, as pre-computer age designers found out, also almost impossible to control, at least by humans. However, when a digital fly-by-wire flight-control system is paired with onboard high-speed computers, a fly-by-wire digital control system, super-responsive wing actuators, and flexible composite material wings, the result is an FSW aircraft can fly rings around anything in the sky, including most modern fighters.

The X-29 flew successfully for many years, proving that not only was an FSW aircraft feasible but that the design could also lead to future fighters with outstanding dog-fighting and missile-avoiding capabilities, limited only by the pilot's tolerance to high G forces.

It is interesting to note that as much of a success the Grumman X-29 program was, no currently acknowledged U.S. fighter is designed with an FSW, including current advanced designs like the F-22 or the Joint Strike Fighter. Other countries, however, have realized the potential of the design and have built FSW aircraft, such as Russia's SU-37.

Officially the Air Force does not have a replacement for the F-111 medium fighter/bomber, but it is also a fact that in the Air Force's 50-plus year history, it has never abandoned an aircraft mission type, such as that of the medium bomber.

Currently the USAF has three heavy bombers (the B-1B, B2, and B-52) and also has one small bomber (the F-117A), which can only carry two conventional bombs. There is also the F-15E, which is a 1970s era fighter adapted to fill a tactical bombing role. There is no white-world aircraft that comes close to duplicating the versatility and medium-sized bomb load of the retired F-111 Aardvark.

Multi-mission aircraft of the past have invariably had to make design sacrifices in one area or another, never really coming close to becoming true flying Swiss Army knives. A Northrop design (U.S. Patent # 5,984231) looks incredibly like the Switchblade sightings and meets all the design criteria for an advanced multi-regime tactical bomber/fighter aircraft.

A swing-wing FSW aircraft can do it all. With the wings fully swept aft the aircraft can slow to drop precision weapons or land on short, unimproved runways.

Sweep wings forward 20 degrees and the aircraft becomes a highly agile air combat platform. Sweep them fully forward and they become flush with the aircraft with the trailing edge becoming the leading edge, forming a highly swept 75-degree stealthy delta, perfect for high speed getaways!

Check out Northrop's U.S. Patent # 5,984231 abstract detailing the advantages of just such an aircraft. Quoting the designers, "The aforementioned apparatus may be used in a method to configure the aircraft for the desired flight regime," thus becoming the aircraft for every mission.

Northrop and Grumman have considerable expertise in designing advanced aircraft. Northrop was the chief contractor on the B-2 stealth bomber, the YF-23, and the recently declassified Tacit Blue. Grumman has considerable experience in FSW aircraft design and has built and designed the Navy's premier variable-swept winged aircraft, the F-14 Tomcat.

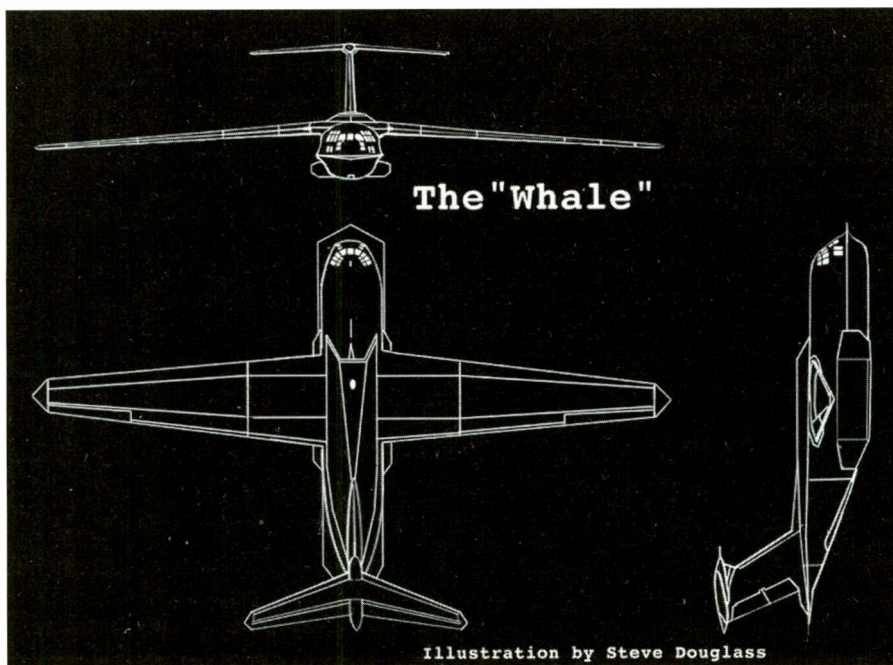
The two companies are now one and, in hindsight, the merger of each company's unique design expertise into one advanced aircraft now seems as though it was inevitable. Could both of the dead-end YF-23 (ATF stealth) and X-29 technology research projects been morphed into the ultimate black world aircraft? Officially the YF-23 and X-29 projects led to nothing, but together they may have yielded a military aircraft of exceptional capabilities.

#### *The Whale*

With the number of times I've been out in desert skulking around "non-existent" air bases, you'd think I'd have a pretty good track record on seeing secret aircraft. The truth is I have seen more secret aircraft flying over my hometown of Amarillo, Texas, than I have ever seen in all of my travels. Sightings usually happen when you least expect them, and especially when you are unprepared to document the sighting.

Well, it happened again. On Saturday, September 22, 2001, I saw what I believe is a new black stealth aircraft. I'm calling it "The Whale" because that's what it looked like—a big, black flying whale.





Author's artist conception of "The Whale" based on a daytime encounter as it flew low over Amarillo, Texas, just prior to invasion of Iraq.

It happened as I was coming out of a nearby strip-mall. I had just rummaged through the local RadioShack, looking for parts for an antenna I was building for a friend. It was a beautiful early-fall day, just after 6 p.m. The sky was clear except for a very high and thin layer of clouds.

I looked up into the sky, instinctively looking for the source of a low-pitched jet engine rumble. I caught site of the aircraft immediately. It was big, black, and only three or so miles away, I'd guess.

You couldn't help but see it. At first I thought it must have been a conventional aircraft, like a C-130, seen from an unusual angle. When I reached my car, I tossed my packages into the back seat and grabbed my 7X 50 binoculars (that I always carry with me), popped off the lens covers, and quickly trained them on the aircraft in question.

The aircraft flew very slowly, seemingly not in any hurry to hide. It was fairly low, maybe 3,000 feet or so. It was painted overall black with no markings or numbers showing of any kind.

What struck me as being very unusual was how long the wings were. It reminded me of the wings on U-2/TR-1. The wingspan was probably some 10 percent longer than the aircraft itself. It had a long T-shaped tail, like that on a C-5 Galaxy.

On top of the fuselage were a large split-style (B-2) engine inlet (behind the cockpit) and a bulge that ran three quarters of the length of the plane. The cock-

pit was rounded and reminded me for the world of the stealthy Tacit Blue.

Also, like Tacit Blue, the aircraft nose ended in an odd shovel-like pointed shelf. When the aircraft turned away I could see the same type of shelf on the back side, protruding behind what looked like a round (half-moon-shaped) engine exhaust nozzle.

The aircraft lingered a bit in the area. It flew a couple of slow and lazy circles around the west side of Amarillo, ascending higher with each turn. I kicked myself for not having my camera in the car. I could have shot some exquisite photos. Instead, I grabbed a pen and began sketching what I saw, trying to make it as detailed as possible. I had plenty of time to do so. The sighting lasted for almost 20 minutes.

I turned on the military band scanner that I had in the car and listened intently for the aircraft's callsign. I was sure it had to be communicating with someone, possibly Albuquerque Center on 351.700 MHz. I was right. I heard "Diamond 23" saying "We would like a few more orbits west of Amarillo...while we straighten out an equipment problem."

After a few more minutes of circling and climbing higher from 5,000 to 15,000 feet, Diamond 23 radioed center that they would like a flight following to Tinker. As they headed east, Albuquerque Center handed them off to Ft. Worth Center. The mystery aircraft disappeared into the high thin overcast to the east.

If function follows form, The Whale is a stealth transport, capable of flying at very high altitude and perfect for delivering special forces paratroopers behind enemy lines virtually undetected. Employing special HALO (High Altitude Low Opening) parachutes and equipment, Seals, Rangers, or other specialized commandos could be inserted without an enemy being any the wiser.

The arm-chair engineer in me deduced that the long wings and T-tail could pose radar signature problems unless they were made from radar absorbing composite materials. Since The Whale has such long wings, my guess is that it needs very long (and paved) runways to take off and land from. I do not believe The Whale is designed for rough or austere operations and is probably only based at air bases that meet its specialized needs. Cross a U-2 with Tacit Blue and a C-130 and you have The Whale!

## Reader's Logs

Many thanks to our ever-faithful UTE monitors who dutifully submit their logs every month. These guys are the real UTE monitoring experts, and you'd do well to read their interception reports and strive to be as good as they are at pulling signals out of the thin air. However, we want to hear from the beginning utility monitors as well. Don't be shy, even if you only have a few stations to report, send them in!

**0000** (frequency kHz): STATION, Anytown, USA, summary of traffic heard in MODE at 0000Z. (monitor, location)

**4009.5**: NNN0AEY (also identifying as NN0GBN4) NCS for the 5N7C 5th Region Ohio Marine Corps Training Net MARS. NNN0FLT was alternate NCS. USB heard at 0100Z. (CG)

**4024**: AAM5IL NCS for a MARS net in USB at 0121Z. (CG)

**4035.8**: AAV5DL NCS for a MARS net in USB at 0132Z. (CG)

**4500**: AFA2EM NCS for a MARS net. AFF2T alternate NCS. Most stations checking in were in the southeastern U.S. USB at 0130Z. (CG)

**5696**: CAMSLANT Chesapeake rqsting CG Rescue 1503 to relay to CG Helo 6001 to contact D5 for further tasking. (DS2)

**5696**: CG Rescue 1701 rqsting guard for 1701 and Helo 6570 from CAMSPAC Pt. Reyes. Enroute medivac mission. (DS2)

**5696**: CAMSLANT Chesapeake wrking CG Auxiliary BPR w/radio check. Auxiliary radio will call on telephone after CAMSLANT questions whether they should be operating on this frequency. (DS2)

**6590.9:** UNID EE fishermen with salty language. Talked for over an hour. USB at 0100Z. (CG)

**7001.2:** UNID EE fishermen operating illegally in amateur band. USB at 0004Z. (CG)

**7720.0:** O/M (SS-dispatcher): 0251 USB w/several stations using single numbers as identifiers. (RP)

**7777.0:** ABC (possibly Mexican Army): 0711 USB/ALE TO DEF (possibly Mexican Army). (RP)

**8047.0:** GUSNGB (Indiana NG, Grissom ARB IN): 1322 USB/ALE w/HQ3NGB (NG Readiness Ctr, Crystal City VA). (RP)

**8047.0:** HQ1NGB (NG HQs, Arlington VA): 1310 USB/ALE w/GUSNGB (Indiana NG, Grissom ARB IN). (RP)

**8047.0:** HQ1 (NG HQs, Arlington VA): 1429 USB/ALE TO BNANGB (Tennessee NG, Nashville TN). (RP)

**8047.0:** HQ1NGB (NG HQs, Arlington VA): 1455 USB/ALE TO CON (unidentified NG unit). (RP)

**8047.0:** HQ1NGB (NG HQs, Arlington, VA): 1528 USB/ALE TO FFTNGB (Kentucky NG, Frankfort KY). (RP)

**8047.0:** HQ1NGB (NG HQs, Arlington, VA): 1510 USB/ALE TO CUBNGB (South Carolina NG, Columbia SC)—[AMD] TEST MESSAGE OVER. (RP)

**8122.0:** Canberra Control (Australian Navy): 0936 USB w/TEF (not heard) in radio checks. (RP)

**8161.5:** PKBNG (Army National Guard, Parkersburg, WV): 1409 USB/ALE sounding. Also noted sounding on both 6911.5 and 9295.0. (RP)

**8340.0:** O/M (IT): 2300 USB w/O/M (IT). (RP)

**8862.0:** O/M (SS): 0030 USB w/O/M (SS). (RP)

**8870.0:** O/M (SS): 0245 USB w/O/M (SS) in non-official conversation. (RP)

**8992:** 4EL calling Andrews with no joy. USB at 0200Z. (CG)

**8992:** TOPCAT 38 calling MAINSAIL with no joy. USB at 0150Z. (CG)

**8992:** NEON SIGN with 28-character EAM in USB at 0055Z. (CG)

**9006.8:** O/M (SS): 0249 USB w/O/M (SS). (RP)

**9092.5:** O/M (SS): 0258 USB w/O/M (SS). (RP)

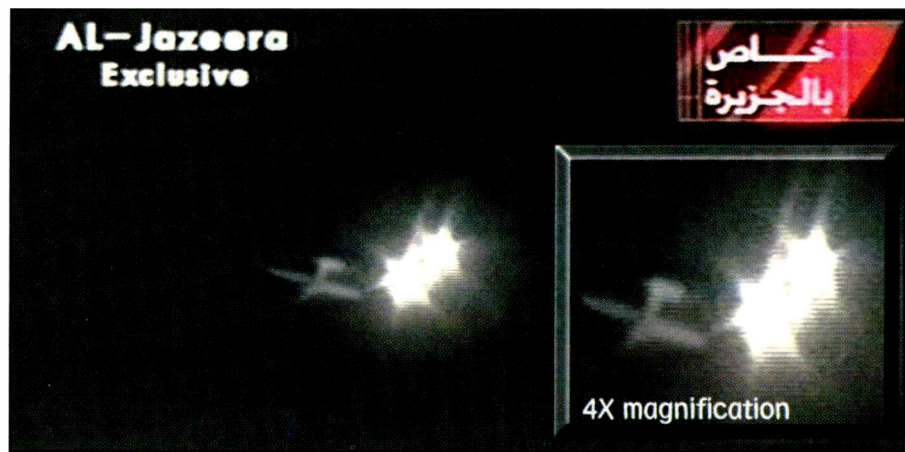
**9025.0:** 272A (unidentified): 0516 USB/ALE sounding. (RP)

**9060.0:** RM1 (Military Region 1, Mexican Army): 0508 USB/ALE TO JADE (probably Mexican Army HQs). (RP)

**9145.0:** CLS (101st Airborne Div., Ft. Campbell KY): 1522 USB/ALE sounding. Also noted sounding on 0856.0. (RP)

**10047.0:** O/M (EE): 0254 USB w/O/M (EE) discussing fishing conditions and trawling lines. Both speakers with heavy U.S. southern accents. (RP)

**10156.0:** CLC23 (Communications Logistics Center, 23rd Special Security Brigade, Venezuelan Army): 2341 USB/ALE



*Actual video still from Al Jazeera TV, showing what might be "The Whale" flying over Baghdad a few weeks before the war started. It is well documented that Special Forces troops were dropped into Iraq well in advance of the shooting war. Could this be how they did it?*

TO CLM23 Maintenance Logistics Center, 23rd Special Security Brigade). (RP)

**10024.0:** CENAMER (MWARA) (O/M SS): 0051 USB w/unidentified ATC (O/M SS) passing flight route for undisclosed aircraft. (RP)

**10680.0:** KYAASF (Kentucky NG Aviation Support Facility, Capital City Airport, Frankfort, KY): 1317 USB/ALE sounding. (RP)

**10816.5:** UMPNGB (Umpire, National Guard Hqs): 1314 USB/ALE TO HQ1NGB (Army National Guard HQs, Crystal City, VA)—[AMD] HQ1 UMP RADIO CHECK OVER. (RP)

**10937.0:** Y/L (SS-operator): 0059 LSB places call from O/M (SS) to another O/M (SS) in informal conversation. Possibly part of the Colombian telephone network noted in ALE. (RP)

**10373.6:** CGD9 (CG District 9, Cleveland, OH): 1908 USB/ALE TO NHHF (USCGC Hollyhock, WLM-214, Port Huron, MI). (RP)

**11175:** REACH 6027 (tail 860027) with p/p to Travis Command Post via McClellan. Reported maintenance code A1, had 2 ACMs aboard and 48,000 pounds of cargo consisting of empty pallets. USB at 0132Z. (CG)

**11232.0:** Trenton Military: 2041 USB w/DeHavilland 13 w/radio & SELCAL checks (BJ-GM). (RP)

**11306.3:** O/M (SS): 0044 USB w/O/M (SS). (RP)

**11610.0:** SCLC222 (Communications Logistics Center, 22nd Motorized Infantry Battalion, Venezuelan Army): 2146 USB/ALE TO CLC22 (Communications Logistics Center, 22nd Infantry Brigade). (RP)

**12216.0:** FCSFEM (unidentified FEMA unit): 1759 USB/ALE TO FC8FEM (FEMA Region 8, Denver CO-Communications Manager). (RP)

**12191.0:** CLC51 (Communications Logistics Center, 51st Jungle Infantry Brigade, Venezuelan Army): 2144 USB/ALE TO SCLC501 (Communications Logistics Center, 501st HQs Battalion). (RP)

**12191.0:** CLC51 (Communications Logistics Center, 51st Jungle Infantry Brigade, Venezuelan Army): 2141 in USB/ALE TO SCLC514 (Communications Logistics Center, 514th Jungle Infantry Battalion). (RP)

**12197.0:** O/M (African language w/FF): 2249 LSB w/O/M (African language w/FF). (RP)

**13506.0:** PCRC3 (Regional Command Post-Communications, Military Region 3, Venezuelan Army): 2337 USB/ALE TO CLC32 (Communications Logistics Center, 32nd Infantry Brigade). These units also noted on 10150.0. (RP)

**12270:** NIGHTHAWK 71 with p/p via McClellan to his child. Did not hear NIGHTHAWK 71, may have been operating split-frequency since this is actually in the maritime band where split operation is common. USB at 0100Z. (CG)

**14569.0:** SCLC513 (Communications Logistics Center, 513th Jungle Infantry Battalion, Venezuelan Army): 2350 USB/ALE TO CLC51 (Communications Logistics Center, 51st Jungle Infantry Brigade). (RP)

**1610.0:** SCLC222 (Communications Logistics Center, 22nd Motorized Infantry Battalion, Venezuelan Army): 2356 USB/ALE TO CLC22 (Communications Logistics Center, 22nd Infantry Brigade). (RP)

**17988.0:** TISCOM (U.S. Coast Guard Telecommunications & Information Systems Command, Alexandria, VA): 1136 USB/ALE sounding. (RP)

**21223.4:** NMC, USCG San Francisco with CW/SITOR beacon in the 15-meter ham band. Went off the air quickly, apparently error or transmitter problem was discovered. CW at 0125Z. (CG)

This month's UTE log contributors are Ron Perron (RP), Dwight Simpson (DS2), and Chris Gay (CG).

Thanks to all for your submissions. Each and every one of your contributions is appreciated. ■



### Digital, Analog, And More!


Chances are you haven't yet heard of, much less *heard*, the "Voice of the N.A.S.B." N.A.S.B. is the U.S. National Association of Shortwave Broadcasters, to which most of the SW stations in the country belong. These broadcasts are in the digital (DRM) mode and continue through the end of the B03 broadcasting period at the end of March.

On Saturday nights (Sunday UTC) the analog (regular AM) version of the broadcast will air over WRMI, Miami, on 7385 from 0330 to 0400. DRM mode broadcasts will be on Sundays from 1330 to 1400 over VT Merlin Communications at Rampisham, England. Member stations will handle production of the broadcasts on a rotating basis. Members include AWR, WMLK, WEWN, WYFR, FEBC, WTCJ/WBOH, WSHB, WJIE/KVOH, WRMI, KNLS, KAIJ, WINB, HCJB, the U.S. government's International Broadcast Bureau, TDP, LeSea Broadcasting (WHRI, etc.), and VT Merlin Communications. A special QSL is being issued for these broadcasts, and reports should go to P.O. Box 526852, Miami, FL 33152.

Information Radio, the U.S. army's "Psyops" station aimed at Afghanistan, has changed frequency and, if the wind is in the right direction, can now be found on **9000**. The station isn't running a lot of power and is often subject to pretty heavy interference. It also seems they've changed the name to Peace Radio. The nominal schedule runs from 0030 to 1830. The broadcasts come from an army installation at Kandahar, so if you can hear this it's countable as Afghanistan.

Beginning next month (March) occasional test broadcasts should be on from the Junglinster transmitter in Luxembourg, beamed to Europe with 250 kW. These broadcasts are supposed to occur on **5990** between 2000 and 0100 and/or **6095** between 0600 and 0000. Some or all of the broadcasts may be in DRM mode. Wouldn't it be wonderful to have this one back on a full schedule with regular programming in regular AM?

The frequency **6105** has long been home to **Radio Cultura** in Brazil. It still is for that matter. But now there are times



"L E M O S" <lemos@center-net.com.br>  
10/08/2003 11:31 PM

To: <Rdangelo@aol.com>  
cc: <Rdangelo@gpu.com>  
Subject: RÁDIO CAIARI - PORTO VELHO RONDÔNIA

**Prezado Senhor RICHARD A. D'ANGELO,**

**Meu nome é Francisco Lemos,**

**Sou assessor do Diretor Geral da Rádio Caiari, Sr. JOÃO VALTER.**

**Recebemos a sua carta e ficamos muito alegres com a sua manifestação.**

**Brevemente estaremos enviando lembranças.**

**Sobre Rondonia, veja alguns sites na WEB.**

<http://www.guiaro.com/cartoes/categoria.asp?category=10>

<http://www.ronet.com.br/asp/imagens1.asp>

Abraço Fraterno de toda familia CAIARI

*Radio Caiari in Brazil (4785) e-mailed their QSL to Rich D'Angelo (PA).*

(Sundays, at least) when the programming you'll hear is that of Radio Primero de Marzo, a mediumwave station in Asuncion, Paraguay.

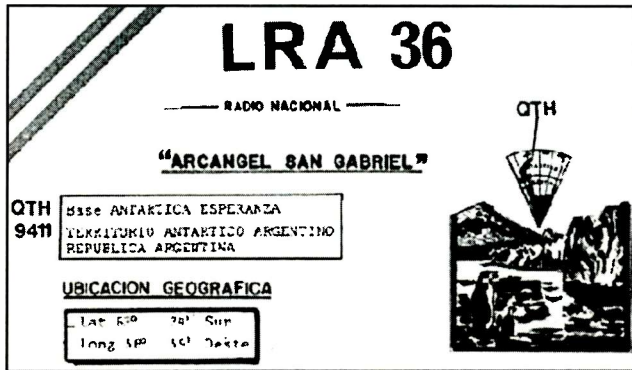
No more barnyard sound effects? **Radio Botswana** is now using their **4820** frequency 24 hours a day. But you can still catch that unique farm animal interval signal now and then when they sign on around 0250 on **7255**.

**Radio Tampa**, Japan's only private shortwave station, will undergo some radical changes come April 1. It will take on a new name—Radio Nikkei, reflecting its new owner, the Nikkei Media Group. Although we may not notice it, the programming format will also change, focusing on health and medical news, as well as information for investors. As far as we

know there won't be any change on the technical side of things so our reception should not be affected.

A small update on **Radio Ndeke Luka**: the FM station in the Central African Republic is now being aired via Wooferton from 1900 to 2000 on **15545**. This is being made possible by the Swiss-based Hironelle Foundation, which has supported other African shortwave stations, particularly in troubled areas.

Another closing is on the way. The International Broadcasting Bureau (IBB), which oversees U.S. international broadcasting, has plans to close down the Holzkirchen (Germany) transmitting site long used by RFE/RL, in particular. The other German sites are apparently more than filling IBB's needs these days.



LRA36 from Argentine Antarctica is a tough catch on 15475v). Rich D'Angelo got them, though, and has an email QSL to prove it.

At least until the next crisis hits and suddenly more capacity is needed.

The **Namibian Broadcasting Corporation** has been off shortwave for some time, but has now come at least part of the way back. **6060** and **6175** have been reactivated. **3270** and **3290**, the two 90-meter band frequencies, which are most often heard in North America, should be back on the air before long.

And the relay arrangements keep on coming. Now **Radio Netherlands** is being relayed by Sweden's Horby site on **5955** from 0600 to 0700. And Radio Sweden is relayed by Radio Netherlands **Madagascar** site on **12160** from 0100 to 0130.

Also, **Adventist World Radio** is now using Radio Netherlands' Bonaire site for Spanish to the Americas from 2300 to 0100 on **6165**.

**Laser Radio**, based in Britain, has become Euronet Radio and is brokering time on the Latvian transmitter site at Ulbroka. It has lined up the Dutch-based Internet station Radio Seagull for broadcasts on Saturdays from 1000 to 1500. Also aired from this site are the Brother Stair broadcasts, which run until 1900.

Mike Miller of Washington is our book winner this month. Mike's going to receive a package from Universal Radio containing a copy of the 2004 edition of *Passport to World Band Radio* which is about as essential a reference as it's possible to find in the world of shortwave. Universal's catalog has a full library's worth of books, plus receivers, antennas, accessories, and even classic radios from the past. You can get a copy by writing to them at 6830 Americana Parkway, Reynoldsburg, OH 43068, calling (614) 866-4267, or dropping them an e-mail at dx@universal-radio.com.

Now here's the usual request for your logs, shack photos, station pictures, copies of QSL cards (actual cards are preferred if you don't need them returned), schedules, pennants, and anything else you care to submit. Logs should be by country, double-spaced (at a minimum), and have your last name and state after each one. That's because these things get cut up and sorted, and without your name on each slip we cannot give you the credit you deserve!

All right. Let's see what we've been dealt this time. All times are in UTC (GMT), which is 7 hours ahead of EST, 6 hours ahead of CST, etc. 0000 UTC equals 7 p.m. EST, 6 p.m. CST, 5 p.m. MST and 4 p.m. PST. Broadcast languages are abbreviated with a double capital (SS = Spanish, FF = French, AA = Arabic and so on). If no language is specified, you may assume the language was English.

**ALBANIA**—Radio Tirana, **7270** heard at 0030 in unid language. (Paradis, ME)

### Abbreviations Used In This Month's Column

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

**ALGERIA**—Radio Algiers, **15160** with rock, FF talk, ID, and abrupt off at 1700. (Brossell, WI)

**ANGOLA**—Radio Nacional, **4950** in PP heard at 0410. (Paszkievicz, WI)

**ANGUILLA**—Caribbean Beacon, **6090** with talk at 0723. (Newbury, NE) 0753. (DeGennaro, NY)

**ANTIGUA**—BBC Relay, **5975** with news at 2259. (DeGennaro, NY) **11675** with "Caribbean Report" at 2115. (Paradis, ME)

**ARGENTINA**—Radio Nacional, **15345** with several IDs at 2344, lots of SS talks, and occasional music interludes. (Montgomery, PA)

**ARMENIA**—Voice of Armenia, **4810** at 0310 with local music, talks in unid language. Better on parallel **9965**, which went off abruptly at 0330. 4810 continued. (Alexander, PA) **9960** at 1940 with IS, anthem, ID, schedule, and news. (Burrow, WA) **11685** in presumed Armenian at 1630. (Brossell, WI)

**ASCENSION ISLAND**—BBC Relay, **12095** at 2212 with heavy RTTY QRM. (Brossell, WI) **15400** to Africa at 1800. (Paradis, ME) **17830** to Africa at 1858. (Jeffery, NY)

**AUSTRALIA**—ABC Northern Territory Service, Alice Springs, **2310** very weak with news items at 1032. (Montgomery, PA) 1145 with news. (Strawman, IA) 1238 with sports, weather, news. (Miller, WA) Voice International (Christian Voice), **11650** at 1235. (Brossell, WI) **13770** in CC with EE ID, website, talk. (Paszkievicz, WI) **17560** in Mandarin at 1535. (Strawman, IA) Radio Australia, **6020** at 1131, **6160** at 0809, **9710** at 1015 and **11680** at 1328. (DeGennaro, NY) **9475** at 1120 and **15415** at 1230. (Northrup, MO) **9580** at 1421. (Newbury, NE) **21740** at 2230. (Paradis, ME)

**AUSTRIA**—Radio Austria Int., **5945** in GG heard at 2157 and **6155** in GG at 0805. (DeGennaro, NY) **13730** in GG at 1743. (Foss, Philippines)

**BELARUS**—Radio Minsk, **7210** at 0200 with EE news, comment, ID, local music and off at 0230 with schedule and address. Parallel was **5970** very weak with co-channel QRM. (Alexander, PA)

**BELGIUM**—Radio Vlaanderen Int., **9865** via Petropavlovsk, Russia, in DD at 1200 to 1225 close. (Paszkievicz, WI) **15565** via



Bonaire at 2230 sign on. (Newbury, NE, Paradis, ME)

**BOLIVIA**—Radio Pio Doce, (t) **5952.5** in SS at 2246 but difficult due to splatter from Taiwan via Florida on **5950**. (Alexander, PA) (*One of the domestic channels of this station was destroyed by a bomb late last year.—gld*) Radio La Cruz del Sur, La Paz, **4877** with religious talks in SS at 0944. (DeGennaro, NY) Radio Santa Cruz, Santa Cruz, **6135** in SS or local at 0940. (DeGennaro, NY) Radio Eco, Reyes, **4409.8** with long SS talk at 2340. (Wilkner, FL)

**BRAZIL**—(all in PP) Radio Guaruja, Paulista, **5045** with talks, ads, and songs at 2342. (D'Angelo, PA) Radio Educadora, Braganca, **4825** at 0854 with religious talk. (DeGennaro, NY) Radio Educacao Rural, Campo Grande, with music at 0222. (Miller, WA) Emissora Rural, Petrolina, **4945** with music, commercials, ID at 2347. (D'Angelo, PA) Radio Aparecida, **5035** at 2352 after Voice of Vietnam closed with romantic tunes, ID at 2359. (Montgomery, PA) **6135/9630.7** at 2145 with pops, talks, ads. (Alexander, PA) Radio Difusora Roraima, Boa Vista, **4875** at 0233 with live sports coverage. (Jeffery, NY) 0239 with PP pops, IDs. Off at 0353. (D'Angelo, PA) 0954 with news, vocals, ID. (DeGennaro, NY) Radio Brazil Central, Goiania, **4985** at 0228 with music. (Miller, WA) 0719 with commercials and music. (DeGennaro, NY)

Radio Senado, Brasilia, **5990** at 0940. (Miller, WA) 1004 with music and anmts. (DeGennaro, NY) Radio Difusora, Taubate, **4925** with news at 2244. (DeGennaro, NY) Radio Nacional, **6180** with call-in talk show at 0842. Also **11780** with pops, ID at 2346. (DeGennaro, NY) 11780 with sports coverage at 2145. (Brossell, WI) Radio Cultural/Ondas Tropical, Manaus, **4845** at 0959 with anthem, ID at 1000. (DeGennaro, NY) Radio Brazil, Campinas, **4785** at 0941 with vocals. (DeGennaro, NY) Radio Difusora, Macapa, **4915** under Radio Anhanguera at 0115 tune but soon dominating the channel with live sports coverage and post-game from studio. (D'Angelo, PA) 0920 with PSA about nutrition. (DeGennaro, NY) Radio Difusora do Amazonas, Manaus, **4805** with sign on at 0930. (DeGennaro, NY) Radio Rural, Santarem, **4765** with music and commercials; ID at 0931. (DeGennaro, NY) Radio Universo/Radio Tupi, Curitiba, **11765** at 2342 with religious program. (DeGennaro, NY) Radio Nacional, San Gabriel Cachoeira, **3375** at 0917 with music and commercials. (DeGennaro, NY) Radio Clube do Para, Belem, **4885** at 0951 with music and anmts. (DeGennaro, NY) Radio Bandeirantes, Sao Paulo, **9465** at 2210 with three-man discussion. (DeGennaro, NY)

**BULGARIA**—Radio Bulgaria, **11900** at 1734 with news, ID, more news. (Burrow, WA) **15700** at 1303 with IS, ID and talk in unid language. (Brossell, WI)

**BURKINA FASO**—Radio Burkina, **5030** with FF discussion at 2252. (DeGennaro, NY)

**CANADA**—Radio Canada Int., **15325** at 2005. (DeGennaro, NY) **17835** via Japan at 2300 sign on. (Paszkiwicz, WI) CKZN, St. John's, **6160** with rap at 1028, ID 1030. (DeGennaro, NY)

**CENTRAL AFRICAN REPUBLIC**—Radio Ndeke Luka, via Wooferton, England, **15545** from 1859:30 opening in mid-sentence with woman in FF, then highlife vocals, ID and frequency. Mostly news/talk. The half hour program repeats at 1930. (D'Angelo, PA) 1900 with FF choir, frequency, ID, TC, news, vocals, and talks. (Paszkiwicz, WI)

**CHILE**—Voz Cristiana, Santiago, **11745** with religious talks in PP at 2339 and **11935** in SS at 1108. (DeGennaro, NY) **17680** at 2333 with ID, pops, and long SS talks. Most of the music was Christian EE vocals. (Montgomery, PA)

**CHINA**—China Radio Int., **11640** via Mali to Africa at 2126 with letters program. Also **11875** via Kunming in CC at 1102. (DeGennaro, NY) 11640 via Mali at 2115. (Brossell, WI) **11980** at 0134 with talk feature. (Newbury, NE) **15110** at 2310. (Jeffery, NY) Music Jammer, **7150** at 2241 probably against VOA in Mandarin. Off at 2300. (Montgomery, PA) **9355** at 1810 and parallels on **9455**, **11520**, **11945**, **11995**, **13680**, and **15510**. (MacKenzie, CA) **12025** at 1555 apparently jamming BBC via Russia. Also noted on 11945 against RFA via No. Marianas. (Brossell, WI) Voice of the Strait, **7280** in CC at 1140. (Paszkiwicz, WI) Xinjang People's BS, Urumqi, **7155** in CC at 1225. (Newbury, NE) CPBS, **11825** in CC at 1305. (Brossell, WI)



*This lonely fellow is being entertained by Swiss Radio International.*

**CONGO (Republic)**—Radio Congo, **5985** in FF monitores at 2200. (Paradis, ME)

**CROATIA**—Voice of Croatia, **9925** via Germany at 0203 with news. (Miller, WA) 0403 in CC. (DeGennaro, NY)

**CUBA**—Radio Havana Cuba, **6000** in SS at 1125 and **11760** in SS at 1230. (Northrup, MO) **9820** at 0533. (Newbury, NE) **15230** in SS at 2316. (Jeffery, NY) Radio Rebelde, **6120** with news in SS at 0303. (Miller, WA)

**CYPRUS**—Cyprus Broadcasting Corp., via BBC Cyprus relay, **9760** in Greek at 2243. Off at 2245. (DeGennaro, NY) BBC Cyprus Relay, **21660** at 1520 with "Focus on Africa." (Foss, Philippines)

**CZECH REPUBLIC**—Radio Prague, **9650** at 1220 with ID by woman. (Northrup, MO) **9880** in GG at 1025 with classical music, into EE at 1030. (DeGennaro, NY)

**DENMARK**—Danish Radio, **11635** via Norway at 0132. (Miller, WA) **15735** in DD at 1250. (Brossell, WI)

**DOMINICAN REPUBLIC**—Radio Cima Cien, Santo Domingo, **4960** at 1022 with continuous lively music. (Montgomery, PA) Radio Cristal, Santo Domingo, **5009.8** at 0000 with SS religious program, call-in program, IDs. Off at 0101. (Alexander, PA)

**ECUADOR**—HCJB, **6010** in GG at 1011. Also **6050** in SS at 1029 and into QQ at 1030. (DeGennaro, NY) La Voz del Napo/Radio Maria, Tena, **3279** in QQ at 1035. (DeGennaro, NY) Radio Federacion, Sucua, **4960** in SS with music at 1009. (DeGennaro, NY) La Voz de Saquisili, Saquisili, **4902** in SS at 1009. (DeGennaro, NY) Radio Oriental, Tena, **4782** with music at 1020 with SS talks, Ecuadorian music. (Alexander, PA) 1116. (Miller, WA) Voz del Upano, Macas, (t) **4870** with very nice music program at 1116. (Montgomery, PA) Radio El Buen Pastor, Saraguro, **4814** in SS at 1025 with Ecuadorian music, SS anmts, talks in QQ. (Alexander, PA) 1026. (DeGennaro, NY) Radio Quito, **4919** in SS at 1013 with instrumental music. (DeGennaro, NY)

**EGYPT**—Egyptian Radio/Radio Cairo, **9900** in FF at 2044. (DeGennaro, NY) 2126 with music, ID, anthem at 2130, then news. (Burrow, WA) 2224 with modern AA and US jazz. (Newbury, NE) **11540** with Koran at 2140 and **12050** in AA at 1820. (Brossell, WI)

**ENGLAND**—BBC, **7120** via South Africa at 0957 (Miller, WA) **7160** via Ascension at 0516 and **11835** via USA at 0244. (Newbury, NE) **13745** in RR/EE at 1838 and **15310** at 1847, // **17830**—Ascension. (MacKenzie, CA) **17585** in AA at 1839. (Jeffery, NY) VT Merlin Communications, **15545** with test loops including instl. Music and website URL at 1940. (Paszkiwicz, WI)



Another in the endless variety of Vatican Radio QSLs.

**EQUATORIAL GUINEA**—Radio Nacional, (p) **6250** at 2151 with African music, unid language. Very weak in horrific noise. Also tentatively at 1048 with female vocal, man in SS, ID on the hour not copied. (Montgomery, PA)

**ERITREA**—Voice of the Broad Masses, **7100** at 0327 sign on with IS, ID, and anmts in presumed Tigrigna, another man with news and numerous mentions of Asmara. (D'Angelo, PA) **7175** in AA at 0400. (Paradis, ME)

**ETHIOPIA**—Radio Ethiopia, **9560.9** with local music and AA anmts at 1440. (Strawman, IA)

**FINLAND**—YLE/Radio Finland, **6120** in Finnish at 0759 with ID, into news. (DeGennaro, NY) **15400** at 1200 in Finnish. (Northrup, MO)

**FRANCE**—Radio France Int., **5990** in FF at 1120, **15300** in FF at 1225. (Northrup, MO) **7430** via Novosibirsk in AA at 2252. And **11845** direct in FF at 1058, multi-lingual ID at 1100. (DeGennaro, NY) **11965** in FF at 1817. (Brossell, WI)

**FRENCH GUIANA**—RFI, **15515** in FF at 1230. (Northrup, MO)

**GABON**—Africa No. One, **9580** with music and FF at 2031. (DeGennaro, NY) 2248 with FF news. (Miller, WA)

**GHANA**—GBC/Radio Ghana, **4915** with two men in unid language at 2150. (DeGennaro, NY) 2212 with EE news and into Hausa talk. (D'Angelo, PA)

**GERMANY**—Deutsche Welle, **9900** via Russia in FF at 1120. (Northrup, MO) **11925** via Portugal with news at 0509. // **12045** (Newbury, NE) Deutschland Radio, Berlin, **6005** in GG at 0737. (DeGennaro, NY) Bayerischer Rundfunk, Ismaning, **6085** in GG at 2031. (DeGennaro, NY) Sudwestrundfunk, Rohrdorf, **7265** with news in GG at 0323. (Miller, WA)

**GREECE**—Voice of Greece, **9420** in Greek monitored at 2039. (DeGennaro, NY)

**GUAM**—KTWR/Trans World Radio, **12130** in CC at 1315. (Brossell, WI) Armed Forces Network/AFRTS, **5765 USB** at 1116. (Paszkiwicz, WI)

**GUATEMALA**—Radio Mam, Cabrican, **4825** in SS with anmts at 1027. (DeGennaro, NY) Radio Buenas Nuevas, **4799.8** at 0233 with religious vocals, SS ID, time check, program preview, and off at 0234. (D'Angelo, PA) 1133 with QQ Bible program. (Miller, WA)

**GUINEA**—RTV Guineenne/Radio Conakry, **7125** with African pops, man anncr in FF from 2336. Deutsche Welle splatter from 2358. Guinea off at 0000. (Montgomery, PA)

**GUYANA**—Voice of Guyana, **3291** heard at 0324 with program from Pacific Garden Missions, local ID, and time check at 0330 and into more religion. (D'Angelo, PA)

**HAWAII**—AFN/AFRTS, **6350 USB** with programming from Public Radio International at 1043. (DeGennaro, NY) KWHR, **9930** at 1310 with Jack and Rexella Van Impe and Bible discussion. (Brossell, WI)

**HONDURAS**—Radio Luz y Vida, San Luis, **3249.5** with SS vocals, ID, and long religious talk to 0330. ID and sign off anmts at 0344 f/by orchestral national anthem. (D'Angelo, PA) Radio Litoral, La Ceiba, **4832** with SS talks and religious music at 1100. (Alexander, PA) HRMI/Radio Misiones Int., **3340** at 0440 with SS religious programming to 0502 close. (Alexander, PA)

**HUNGARY**—Radio Budapest, **9570** with discussion in HH heard at 0149. (Miller, WA) 0227 with multi-lingual ID at 0230 sign on and into EE to 0300. (DeGennaro, NY)

**INDIA**—All India Radio, **4840** Mumbai, with Hindi vocals at 1237. Also **11740** Panaji with EE news at 1530. (Strawman, IA) **4860** New Delhi, Indian music, time signal, and man talking. Also **10330** at 0130 in Hindi. (Montgomery, PA) **9425** Bangalore, in Hindi at 2041; **9445** Aligarh, in EE at 2044. Also 10330 in Hindi at 0408 and **11620** at 1048. (DeGennaro, NY) **11620** Bangalore, at 2212. (Miller, WA) 11620 at 2218 and **13710/9690** at 1430. (Newbury, NE) **15795** in CC at 1307. (Brossell, WI)

**INDONESIA**—Voice of Indonesia, **9525** at 1200 sign on in II with anmts and ID by woman and into local music. (Montgomery, PA) **15150** at 2000 with news, "Getting to Know Indonesia." (Paradis, ME) 2040 with EE news, local music, RRI ID, news at 2057. Appears to be irregular. (Alexander, PA) RRI: Sorong, **4870** in II at 1108, // **4753**. (Paszkiwicz, WI) Palangkaraya, **3325** in II at 1326. (Miller, WA) Fak Fak, **4790** at 1300 in II. (Miller, WA) Bukittinggi, **3232** in II at 1554. (Foss, Philippines)

**IRAN**—VOIRI, **9590** at 0225 with talk on human rights, sign off with "God bless." (Newbury, NE) **9635/11775** at 1528 signing on with classical music IS and ID at 1530. (Burrow, WA) **15545** in AA at 1315. (Brossell, WI)

**IRELAND**—Radio Telefis Eireann, **15585** to Middle East via Bonaire at 1800. (Paradis, ME)

**ISRAEL**—Kol Israel, **11585** in HH at 2112. (Brossell, WI) **11605** in HH at 1801, 15640 in HH at 1805, 17535 in HH at 1843. (Miller, WA) 15760 in HH at 1524. (Foss, Philippines)

**ITALY**—RAI, **6060** in II at 2236 and **11800** with opera at 2349. (DeGennaro, NY) **9690** with IS and news at 1540. (Miller, WA)

**JAPAN**—Radio Japan/NHK, **6120** via Canada at 1139 with talk on Japanese culture. (DeGennaro, NY) **9505** at 1423, **9835** in JJ at 1817, **11970** in JJ and SS at 1830 and **17825** at 0349. (MacKenzie, CA) 11855 at 2133 and 17790 via Ascension in FF at 1254. (Brossell, WI)

**JORDAN**—Radio Jordan, **11690** carrying local 96.3 FM at 1538, news at 1600 and ID again at 1611. (Burrow, WA)

**KUWAIT**—Radio Kuwait, **11990** with "Mohammad the Messenger" at 1820. (Brossell, WI)

**LAOS**—Radio Laos (p) **7145** at 1250. Very weak with Asian vocals under ham radio code operator. (Strawman, IA)

**LIBERIA**—ELWA, **4760** at 0557 with vibraharp IS, opening anmts at 0558 and into religious programming at 0600. (Alexander, PA)

**LIBYA**—Radio Jamahiriya, **11635** via France in AA at 2123, and **15205** via France in AA at 1956. (DeGennaro, NY) 15205 at 1920 in heavily accented EE. (Miller, WA) **15435** in AA at 1850. (Jeffery, NY) 2150. (Brossell, WI)

**LITHUANIA**—Radio Vilnius, **9875** with news heard at 2309. (Miller, WA)

**MALI**—RTV Malienne, **4783** in FF with news at 2234. (DeGennaro, NY) **4835** in FF at 2330. (Paradis, ME)

**MADAGASCAR**—Voice of Hope, via RN relay, **15320** at 0427 with ID, choir, talk on development in Sudan. (Paszkiwicz, WI)

**MALAYSIA**—Radio Malaysia, **7295** with pops hosted by woman and "Radio four" IDs. (Burrow, WA)

**MAURITANIA**—Radio Mauritanie, **4845** in AA at 2239. (DeGennaro, NY) 2339 in AA. (Jeffery, NY) 0032 with phone conversation in AA. (Miller, WA)


**MEXICO**—XERTA, **4810** at 0050 with Mexican vocals, EE rap with ID at 0100, in parallel with their website at xertaradio.com. Fair signal; of course the website was much better but not nearly as much fun! (D'Angelo, PA) (*Absolutely!*—*gld*) 0302 and 1115 with several types of music. Good signal but very noisy and required sideband tuning. (Paszkiwicz, WI) 0730 with local pops, ID, rooster crows. Strong





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Time UTC Frequency Output Power

*James L. ...*

This 1977 Radio Australia QSL features some nasty-looking flowers.

but with distortion and hum. (Alexander, PA) Radio Educacion, **6185** with traditional Mexican music at 0726. (Newbury, NE) Chamber music at 0950. (DeGennaro, NY) Radio Mil, **6010** in SS at 1040 with vocals, ID. (DeGennaro, NY)

**MOLDOVA**—Voice of Russia via Moldova, **9665** with RR folk music at 0247. (Newbury, NE)

**MONACO**—Trans World Radio via Germany, **6045** with religious programming at 0748. (DeGennaro, NY)

**MOROCCO**—RTV Marocaine, **15335** and **15345** in AA at 1220. (Northrup, MO) 15345 in AA at 1904. (Miller, WA) 2010. (DeGennaro, NY) VOA Relay, **15280** at 1834 with jingle ID and into unid language. (Brossell, WI)

**MYANMAR** (Burma)—Radio Myanmar (p) **5040.6** at 1244 with local vocals. Fair at best. (Strawman, IA) **5985** at 1347 in Burmese. (Miller, WA)

**NETHERLANDS**—Radio Netherlands, **9885** in DD to Southern Europe at 1032 and **9895** in SS at 2306. (DeGennaro, NY) **15220** via Canada at 1439. (Newbury, NE)

**NETHERLANDS ANTILLES**—Radio Netherlands Relay, Bonaire, **9590** at 0525. (Newbury, NE)

**NEW ZEALAND**—Radio New Zealand, 9885 at 1225 with "Sportsworld" and ID for "Radio National." (Brossell, WI)

**NIGERIA**—Radio Nigeria, Kaduna, **4770** with local music and EE talks at 2228. (DeGennaro, NY) Voice of Nigeria, **7255** at 0457 opening with IDs in several languages. (Burrow, WA) **15120** at 2030. (Paradis, ME)

**NORTHERN MARIANAS**—KFBS, Saipan, **11580** in CC monitored at 1235. (Brossell, WI)

**NORWAY**—Norwegian Radio, **15735** in NN at 1300. (Paradis, ME) U.S. country songs at 1305. (Brossell, WI)

**NORTH KOREA**—KCBS, **2850** with vocals at 1156. (Strawman, IA) Voice of Korea, **9335** at 1543 on "the vitality of the

Pyongyang Declaration." (Foss, Philippines) 9335//**11710** monitored at 1532 with music honoring heroes and heroines of the DPRK. (Burrow, WA)

**PAKISTAN**—Radio Pakistan, **11570//15065** at 1600 with news; ID at 1603. (Burrow, WA) 11570 with AA music at 1752 and 15065 in Urdu at 1818. (Miller, WA) 15065 in Urdu at 1755, 3 time pips at 1800. ID and news. //11570. (D'Angelo, PA)

**PAPUA NEW GUINEA**—Radio East Sepik, Wewak, **3335** in Pidgin at 1341 with music and anmts. (Miller, WA) Radio Simbu, Kundiawa, **3355** in Pidgin at 1052. (Miller, WA) Radio Milne Bay, Alotau, **3365** in Pidgin with theme from "Never Ending Story" at 1056. (Miller, WA) Radio New Ireland, Kavieng, **3905** at 1011 with local music and anncr in Pidgin. Suffering from long fades and poor modulation. Better by 1045. (Montgomery, PA) NBC, Port Moresby, **4890** with political speech in Pidgin at 0928. Also at 1255 (Miller, WA) 1224 with EE news. (Brossell, WI)

**PERU**—Radio Huanta 2000, Huanta, **4747** in SS at 1021. (DeGennaro, NY) Radio San Antonio (t), Vila Atalaya, **4939.7** at 1034 with SS anncr, possible at 1039. (Montgomery, PA) Radio Atlantida, Iquitos, **4790** at 0218 with SS talks, siren sound effects, ID at 0229. Sign off anmts at 0258. (D'Angelo, PA) 0943 with commercials, music. (DeGennaro, NY) Blasting in at 1000. (Wilkner, FL) Radio La Hora, Cusco, **4855.6** with woman in QQ at 1018. (DeGennaro, NY) Radio Andina, Huancayo, **4955.5** in SS at 1006 with clear ID, OA music. (Montgomery, PA) 1022. (DeGennaro, NY) Radio Imperio, Chiclayo, (p) **4386** at 0950 with "aqui estemados oyentes—madre de dios—senor—" (Wilkner, FL) Radio del Pacifico, Lima, **4974.8** at 1007 with OA music, female anncr in SS, ID at 1013. (Montgomery, PA) 1018 with children singing. (DeGennaro, NY) Voz del Campesino, Huarmaca, (p) **6958.1**, excellent at 0108 with great OA tunes, man anncr

in SS. (Montgomery, PA) Radiodifusora La Ponderosa, Huancabamba, **6536** at 0025 with OA folk music, TCs, SS talk. Off abruptly at 0108. They were on until 0204 the next night. (Alexander, PA) La Voz de la Selva, Iquitos, **4825** at 0946 sign on with anthem, vocals. (DeGennaro, NY) Radio Cultural Amauta, Huanta, **4955** in SS at 1006. (DeGennaro, NY)

**PHILIPPINES**—Radio Pilipinas, **11720//15190//17720** in Tagalog at 1801. (Burrow, WA) 15190 at 1842 in EE/TT with stock market. //17720. (MacKenzie, CA) **17820** in TT at 1849. (Miller, WA) FEBC, **9405** with talks in Mandarin at 1321. (Strawman, IA) VOA Relay, **6160** with "American Gold" oldies show at 1345. (Foss, Philippines) 9760 at 1222. (Brossell, WI) **11760** at 1230, **15360** in SS at 1210 and **15455** at 1230. (Northrup, MO) **15160** in CC at 0120. (Jeffery, NY)

**PORTUGAL**—RDP Int., **15295** in PP at 2321. (Jeffery, NY) **17610** with play-by-play in PP at 1847. (Brossell, WI) **17680** in PP at 1847. (Miller, WA) **21540** in PP at 2113. (DeGennaro, NY)

**RUSSIA**—IBC-Tamil, via Russia, **11570** at 0000 in presumed Tamil with tones, anmts, news. (Paszkievicz, WI) Magadan Radio, **9530** in RR at 2023 discussing the Ukraine. (DeGennaro, NY) Voice of Tatarstan, via Samara, **11665** in RR at 0421. (DeGennaro, NY) Voice of Russia, **5905** via Irkutsk in JJ at 1213 and **17690** via Petropavlovsk in EE at 0155. (Strawman, IA) **7320** in possible RR at 1150. (Northrup, MO) **11500** via Tajikistan in RR at 1358 with IS and off. (Miller, WA)

**RWANDA**—Deutsche Welle Relay, **15205** to Africa in EE at 2100. (Paradis, ME) **15275** in GG at 0130. (Jeffery, NY) **17860** in GG at 1852. (Brossell, WI)

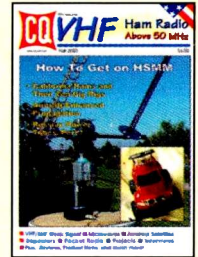
**SAO TOME**—VOA relay, **11975**, to Africa at 2015. (Brossell, WI)

**SAUDI ARABIA**—BSKSA, **11820** with Koran at 2147. (Brossell, WI)

**SEYCHELLES**—BBC relay, **9630** to East Africa at 2035. (DeGennaro, NY)

# Good News for the VHF/UHF Enthusiast

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**SINGAPORE**—Mediacorp Radio, **6150** at 1538 with music, ads, "Classic 95 FM, Mediacorp Radio" ID at 1556. (Burrow, WA) BBC Relay, **9740** at 1008. (DeGennaro, NY) with ID at 1300. (Brossell, WI) 1434. (Newbury, NE) **11955** at 2250. (Paradis, ME) **15360** poor at 0141. (Jeffery, NY)

**SOLOMON ISLANDS**—SIBC, **5020** with BBC programming heard at 1149. (Miller, WA)

**SOUTH AFRICA**—Channel Africa, **11710** at 0503 with African news. (Newbury, NE) **15265** at 1809 with news, ID at 1813. (Burrow, WA) **21760** at 1430 with news. Off at 1455. (Montgomery, PA) BBC via Meyerton, **15420** at 1830. (Paradis, ME) 1842 with politics in Ghana. (Brossell, WI)

**SPAIN**—REE, **9555** in SS at 0222 with news about a contest for SS speakers. (DeGennaro, NY)

**SRI LANKA**—SLBC, **4870** in Sinhala with music and bad het prior to 1145. (Miller, WA) **9770** at 1500 with news, local music, to 1529 when ID, frequencies, anthem and off at 1534. (Burrow, WA) VOA relay, **12140** in unid Asian language at 1549. (Brossell, WI)

**SWAZILAND**—Trans World Radio, **3240**, at 0316 with long religious talk in listed Shona language, light instl music at 0328 and ID at 0330. Off at 0345. (D'Angelo, PA)

**SWEDEN**—Radio Sweden, **9495** via Canada at 0148. (Miller, WA) 0240. (Newbury, NE)

**SWITZERLAND**—Swiss Radio Int., **9885** at 2300 in II with European news. (DeGennaro, NY) **11905** via French Guiana with news at 2330. (Paradis, ME)

**SYRIA**—Radio Damascus, **13610** in AA at 2004; into EE at 2007, news at 2009. (Burrow, WA)

**TAIWAN**—Radio Taiwan Int., **5950** via WYFR at 0708. (Newbury, NE) **7130** (direct) at 1220 and **9680** via WYFR at 0345. (Newbury, NE) **11605** in CC at 1238. (Brossell, WI)

**THAILAND**—Radio Thailand, **15395** at 0030 with news, sports, weather. (Paradis, ME) 0321 with political history, ID, IS, schedule. Into Thai at 0330. (Burrow, WA) VOA Relay, **7260** in Indonesian at 1212. (Strawman, IA) **11785** in CC at 1245. (Brossell, WI) **15150** heard at 0112 in unid language. Also **17670** in unid language at 0200. (Jeffery, NY)

**TUNISIA**—RTT Tunisienne, **12005** in AA at 2017. (Brossell, WI) **15450** in AA at 1400. (Paradis, ME)

**TURKEY**—Voice of Turkey, **5980** in TT at 2127; **9460** in TT at 0334; **9650** in EE at 0344 and **9830** in EE at 2248. (DeGennaro, NY) **9525** ending EE at 2120. (Alexander, PA) 9650 in EE at 0342 and **12000** at 2225. (Newbury, NE) 9785 in EE at 1830. (Burrow, WA) **12000** in EE at 2209. (Brossell, WI) 2200 with news. (Paradis, ME)

**UKRAINE**—Radio Ukraine Int., **5905** in Ukrainian heard at 2314. (DeGennaro, NY)

**UNITED ARAB EMIRATES**—UAE

Radio, Dubai, **13630//13675//15395** in EE at 1614 with "Beautiful Arabia" series. Into AA at 1633. (Burrow, WA) 15395 in AA at 1840. (Brossell, WI)

**UZBEKISTAN**—Radio Tashkent, **7285** at 1200 sign on with IS, EE anmts, IDs, news, comment, folk music, //9715 which was under Radio Netherlands. (Alexander, PA) **9545** in GG at 1943. (DeGennaro, NY) **11905** at 2029 opening. (Burrow, WA) 2030 with news. (Paradis, ME) 2138 with instrumental music. (Strawman, IA)

**VATICAN**—Vatican Radio, **7250** in GG at 0330. (Miller, WA) **9600** in CC at 2205 and **11625** in Swahili at 0412. (DeGennaro, NY) **9605** with news at 1546. (Miller, WA) 0145 in SS, //11910. (MacKenzie, CA)

**VENEZUELA**—Radio Tachira, San Cristobal, **4830** at 0200 with SS IDs, anmts, talks, ballads, jingles, EE ID and frequency anmts at 0202, 0302, 0359. Off with anthem at 0404. Also at 1050. (Alexander, PA) 0358 with SS ID at 0402, vocals, numerous mentions of Tachira and off at 0403 with instl. Anthem. (D'Angelo, PA) 1021 with music and SS commercials. (DeGennaro, NY) 1137 with SS news. (Miller, WA) Radiodifusora Amazonas, Puerto Ayacucho, **4940** in SS at 1013. (DeGennaro, NY)

**VIETNAM**—Voice of Vietnam, **5035** in unid Asian language at 2341. A Sudden increase in signal level at 2352, then it disappeared and Radio Aparecida appeared. (Strawman, IA) **5955** via Austria at 1350. (Miller, WA) **9840** in EE at 1015. (DeGennaro, NY) **11630** in VV at 1804. (Burrow, WA) **12020** in JJ at 1415. (Strawman, IA)

**YEMEN**—Republic of Yemen Radio, **9780** with AA talk and music at 0355. (DeGennaro, NY)

**ZAMBIA**—Christian Voice, **4965** at 0113 with talk about marriage counseling. (Montgomery, PA) 0247 with preaching, conversations, and music snippets. Address in England given for letters. 0300 ID and into a drama. (D'Angelo, PA)

And so, order is restored! A mighty roar of thanks to the following reporters this month: Sheryl Paszkiewicz, Manitowoc, WI; Robert Wilkner, Pompano Beach, FL; Mike Miller, Issaquah, WA; Stewart MacKenzie, Huntington Beach, CA; Ed Newbury, Kimball, NE; Marty Foss, Guinayangan, Philippines; Bruce R. Burrow, Snoqualmie, WA; Jerry Strawman, Des Moines, IA; Robert Brossell, Pewaukee, WI; Rich D'Angelo, Wyomissing, PA; David Jeffery, Niagara falls, NY; Ray Paradis, Pittsfield, ME; Mark Northrup, Gladstone, MO; Ciro DeGennaro, Feura Bush, NY; Brian Alexander, Mechanicsburg, PA; and Robert Montgomery, Levittown, PA. Thanks to each one of you.

Until next month, good listening! ■



### Is The Sun Out Of Control?

The news and talkshow media outlets love a good story. When NASA released a press release on October 23, 2003 (see [http://science.msfc.nasa.gov/headlines/y2003/23oct\\_superstorm.htm](http://science.msfc.nasa.gov/headlines/y2003/23oct_superstorm.htm)), many reporters and talkshow hosts ran with the idea that we were about to experience the mother of all solar storms.

This was a result of bad timing. NASA's press release came out just when solar forecasters were talking about some rather active solar activity. The story included a mention of NOAA's forecast that a coronal hole mass ejection (CME) was expected to reach earth possibly by October 24. Most newscasters and on-air personalities never got past the initial idea that we were about to witness an historical moment in solar history. One talkshow, typically heard from one coast to the other, late at night, featured an individual who believes that the sun is about to go hyperactive and possibly wipe out life on earth, at least as we know it.

Let's get a perspective on all the hype. When the news broadcasts began to announce a major solar storm capable of taking out satellites and knocking out power grids all over the world,

I decided to call NOAA's Bill Murtagh, the solar forecaster on duty at the time. We discussed the solar activity and the possibility that something severe was about to happen.

Bill confirmed for me that the initial shock from the expected CME that held the public's attention was not going to be historic, but would only result in geomagnetic storms with a planetary K index no higher than about 8. Then, the geomagnetic activity would subside back to active, to maybe minor storm levels. We talked about other CME activity, none of which warranted the media attention that came after NASA's press release. The idea that there was going to be a massive solar storm was itself inaccurate. A CME more typically is related to a geomagnetic storm, not a solar storm.

After the moment came and went without incident, I began to hear a number of public comments expressing disappointment that the end of the world did not come, or at least expressing the perspective that scientists were about as accurate as the local weather forecaster. Of course, this was unfair, since it was the media making such claims. And, if solar forecasters do make

### 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 February 2004 - Flux = 99, SSN = 44 - 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	21	19	16	12	12	11	11	10	10	10	10	10	9	9	16	19	21	22	23	23	24	24	23	22
NORTHERN SOUTH AMERICA	29	27	24	18	17	16	15	15	14	14	13	13	13	13	18	25	27	29	30	31	32	32	31	31
CENTRAL SOUTH AMERICA	29	27	23	17	16	15	15	14	14	13	13	13	13	21	26	27	29	30	30	31	31	31	31	31
SOUTHERN SOUTH AMERICA	31	29	27	23	19	18	17	16	15	15	14	14	13	13	13	23	27	28	29	30	31	32	32	32
WESTERN EUROPE	10	9	9	9	9	9	9	9	9	9	9	9	9	9	12	15	16	17	16	16	14	11	10	10
EASTERN EUROPE	9	9	9	8	8	8	8	9	9	9	9	9	9	9	9	11	11	11	10	10	9	9	9	9
EASTERN NORTH AMERICA	23	21	18	14	13	12	12	12	11	11	11	11	11	11	18	21	23	25	25	26	26	26	25	25
CENTRAL NORTH AMERICA	13	13	12	9	8	7	7	7	6	6	6	6	6	6	6	10	12	13	14	14	14	14	14	14
WESTERN NORTH AMERICA	7	7	6	6	4	4	3	3	3	3	3	3	3	3	3	4	6	6	7	7	7	8	8	7
SOUTHERN NORTH AMERICA	23	21	19	15	12	12	11	11	11	10	10	10	10	10	10	18	21	22	23	24	24	24	24	23
NORTHERN AFRICA	10	10	9	9	9	9	9	9	9	9	9	9	9	9	13	16	17	18	19	17	12	11	11	10
CENTRAL AFRICA	12	12	11	11	10	10	10	9	9	9	9	9	9	9	12	15	17	18	18	16	15	14	13	13
SOUTH AFRICA	21	19	15	13	12	12	11	11	11	11	11	10	10	10	10	18	21	22	23	24	24	24	24	23
MIDDLE EAST	9	9	9	9	9	10	10	9	9	9	9	9	9	9	9	14	15	16	11	11	10	10	10	9
JAPAN	20	20	19	18	17	15	11	11	10	10	10	9	9	9	9	9	9	9	9	9	9	15	17	19
CENTRAL ASIA	20	20	19	18	17	15	11	11	10	10	10	9	9	9	9	9	9	12	11	11	11	11	15	20
INDIA	15	16	16	14	12	10	10	9	9	9	9	9	9	8	8	8	9	9	9	8	8	10	13	14
THAILAND	19	19	19	18	16	14	11	10	10	10	9	9	9	9	9	9	9	12	13	12	12	12	11	11
AUSTRALIA	26	27	28	29	26	22	17	16	15	14	14	14	13	13	13	13	13	17	16	15	16	19	22	24
CHINA	17	18	18	17	16	14	11	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	15
SOUTH PACIFIC	29	30	30	29	26	20	18	17	16	15	15	14	14	13	13	13	16	16	16	20	23	25	27	28

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

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



predictions, they base their outlook on limited data. Imagine trying to forecast the weather for Florida by looking at the data from Washington State, thousands of miles away, and with only one or two data points. That's what it is like with solar weather forecasting.

We have a few observing satellites and a handful of earth-bound locations. The sun is incredibly far away. And, as Bill and I agreed, it is hard to make accurate forecasts because we don't have enough data to create a working model that includes every variable and contributing influence on solar weather. We cannot say for certain who will have great propagation and who will have lousy conditions anytime in advance. We *do* have models of ionospheric propagation and limited models of how the sun works and interacts with our earth, but nothing close to the same level as we see in weather forecasting.

Conflicting reports tend to come in after chaotic solar events. Some find that these circumstances don't degrade their working conditions, while others report a complete loss of signal. And, there's no real pattern in these observations. One thing I came away with from this discussion with Bill is that we radio hobbyists need to become more scientific in our data collection process. We need to record more information about our working conditions and contacts that, when gathered together into a database, would allow us to begin to unlock the secrets of propagation so that we can begin to better forecast how these events will affect us. Bill is hoping that by the end of this current solar cycle, enough new data will be collected so we can begin to make correlations about these solar weather events.

During the last part of October and the first part of November 2003, the solar activity did surge quite a bit. Looking back, we see that the big news story about the mother of all solar storms was a non-event, not worthy of all the media attention. Of course, there was a side benefit to this public exposure in that there was a congressional review regarding the continued funding of NOAA and the Space Environment Center (SEC), due for the end of October. Yet, even without a sensational solar storm, history was made. Some speculation was heard that perhaps there was to be a third solar cycle peak during this 11-year cycle.

The end of the year was clearly following the decline of Cycle 23. Solar activity was moderate, but showing clear signs that this cycle was typical, moving steadily toward the solar minimum some-

time in 2007. But, then, at the end of October, two massive solar sunspot regions developed. They began to produce significant flaring activity. After many weeks of somewhat quiet solar conditions and very few sunspot regions, these new regions captured the interest of scientists. They soon became the largest two flares thus far observed during Cycle 23. The flares became quite frequent and rather powerful. Many of them were at least M-class, and then a series of X-class flares exploded. These caused continual radio blackout periods over the sunlit side of earth.

Flares are categorized by assigning a letter followed by a number, which tells us the specific intensity of the flare. X-ray flare intensity is measured in units of power per area or watts per meters squared. Each letter (A, B, C, M, or X) represents a certain numeric value and the numbers following the letter in the flare classification multiply that value. The numeric values of the letter classes are:

A =  $1.0 \times 10^{-8}$  (W m<sup>-2</sup>)

B =  $1.0 \times 10^{-7}$  (W m<sup>-2</sup>)

C =  $1.0 \times 10^{-6}$  (W m<sup>-2</sup>)

M =  $1.0 \times 10^{-5}$  (W m<sup>-2</sup>)

X =  $1.0 \times 10^{-4}$  (W m<sup>-2</sup>)

(The "W m<sup>-2</sup>" means watts per square meter)

To determine the exact intensity of the flare, you multiply the number in the x-ray classification of that flare by the value of its class listed above. For example, an M8.0 flare has an intensity of at least  $8.0 \times 10^{-5}$  watts per square meter. M-class flares, particularly the less energetic ones, are likely to cause a fadeout on only the lowest frequencies of the HF radio spectrum. On the other hand, X-class flares will cause a fadeout for all HF frequencies over the entire sunlit hemisphere of the earth.

## History Was Made!

During the last part of October and beginning of November, the number of X-class flares increased, until 1955 UTC on November 4, 2003. That was the moment we witnessed the most intense (at the time of this writing) X-ray solar flare of all observational history.

No one at the time could tell us exactly how big it really was. This flare saturated the instruments on the observing satellites for about 13 minutes during the peak of the flare. The instruments stopped at X17.4.

Day/Month/Year	X-Ray Class
04/11/2003	X28
16/08/1989	X20.0
02/04/2001	X20.0
28/10/2003	X17.2
06/03/1989	X15.0
11/07/1978	X15.0
15/04/2001	X14.4
24/04/1984	X13.0
19/10/1989	X13.0
15/12/1982	X12.9
06/06/1982	X12.0
01/06/1991	X12.0
04/06/1991	X12.0
06/06/1991	X12.0
11/06/1991	X12.0
15/06/1991	X12.0
17/12/1982	X10.1
20/05/1984	X10.1
25/01/1991	X10.0
09/06/1991	X10.0
29/10/2003	X10.0

Table 1. Top X-class Flares. Data to November 7, 2003; Flux values for flares above X15-17 may have been estimated. (Source: IPS Australia)

The scientists and engineers who designed the original sensor equipment back in the 1970s never expected flares to reach such levels as we have seen. As a matter of fact, the original sensors witnessed many events that caused saturation at much lower levels. They had to redesign things to handle X-class events, thinking that their new upper levels would be enough. This time, it was not. When this big flare hit, it simply overwhelmed all sensors.

I talked with Christopher Balch from the SEC, NOAA, shortly after the big flare. He was working on determining the official magnitude of the flare. Chris obtained two likely candidates: Using a standard log-normal fit analysis, the flare was an X25 event. Using a result from an individual from the University of Colorado, Boulder, who analyzed HESSI data on the event (<http://hessi.ssl.berkeley.edu/>), the flare was an X28. The SEC has other methods, as well. The SEC finally announced the flare as being an X28 event—the largest ever recorded.

Since we do not have any accurate record of flare intensity prior to the 1970s, our perspective of this massive flare and the overall flare activity during this period is somewhat limited. Certainly, X-class flares of this magnitude are not regular events. They certainly are not

unheard of. For that matter, the intense solar activity witnessed during this period is not unusual during the decline of solar cycles. The geomagnetic storming and solar activity during this period ranked number six over the last 30 years.

Take a look at **Table 1** for a list of flares over X10. Only three of the 20 flares occurred prior to the maximum of the cycle (December 1979 for Cycle 21; July 1989 for Cycle 22; and April 2000 for Cycle 23). The *worst* year for X-class flares was actually 1991, not 2003. Seven of the 20 flares occurred during 1991, and most of those were during June. The May 1984 flare was the latest flare in a solar cycle to be included in this list. That flare was more than four years after solar maximum. It is clear that the sun is not going out of control. It is not shooting a warning shot across our skies. It is just doing what it always does. And while the X28 flare of November was historical, it was not out of character with the decline of the solar cycle.

## Current Solar Cycle 23 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for October 2003 is 66, up from 49 in September. The 12-month running smoothed sunspot number centered on April 2003 is 70, down from March's 74. The lowest daily sunspot value during October 2003 was recorded on October 13, 14, and 15 with a count of 13. The highest daily sunspot count for October was 167 on October 29 and 30. A smoothed sunspot count of 42 is expected for January 2004.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 153 for October 2003, compared to 112 for September. The 12-month smoothed 10.7-centimeter flux centered on April 2003 is 136, down from September's 140. The predicted smoothed 10.7-centimeter solar flux for December 2003 is about 99, give or take about eight points.

The observed monthly mean planetary A-Index (Ap) for October 2003 is 32. The 12-month smoothed Ap index centered on April 2003 is 20.

## HF Propagation

We're starting to approach the end of winter. The period of darkness is grow-

ing shorter, causing the average daily maximum usable frequencies (MUF) to rise a bit. Noise levels are still low at the same time, making for reliable DX. The solar activity is moderate and holds enough energy to keep the mid-HF spectrum alive with signals. General conditions are expected to be good to excellent for HF propagation throughout February.

Nineteen meters through 15 meters will open shortly after sunrise, and will remain open until early or late evening. Morning and evening DX openings between some areas in the Northern Hemisphere on these bands are very short, because the band in question closes on one end of the path before it opens on the opposite end. Transequatorial propagation on these bands will be more likely toward sunset during days of high solar flux and a disturbed geomagnetic field (look for days with an Ap greater than 15, or a Kp greater than 3).

Paths on 31 through 22 meters remain in their seasonal peak much like in January, but with longer openings. Continue to look for great openings between North America and Europe in the morning and between North America and Asia during the late afternoon hours. Twenty-two meters will often be the best daytime DX band, with 31 and 25 running a close second.

Ninety through 41 meters will be useful almost 24 hours a day. Daytime conditions will resemble those of 25 meters, but skip and signal strength may decrease during midday on days with high solar flux values. Nighttime will be good except after days of very high MUF conditions. Generally, the usable distance is expected to be somewhat greater on the higher of these bands than on 90. DX

activity tends to increase later in the evening toward midnight. Look for Africa and the South Pacific (Australia, Papua New Guinea, and so on) on 90 through 60 meters throughout the night. On 41, 49, and 60 meters, long path DX is possible along the gray line.

The 120-meter band continues to remain stable, with very low noise levels. Throughout the winter season, high noise may occur during regional snowstorms. The band opens just before sunset and lasts until the sun comes up on the path of interest. Except for daytime short-skip signal strengths, high solar activity has little impact. Continue to look for Europe and Africa around sunset until the middle of the night, and then Asia, the Pacific, and the South Pacific as morning approaches.

Signals below 120 meters will remain strong and exciting, except during times of regional storms and high geomagnetic activity. Mediumwave DX is still quite hot throughout February.

Other than occasional smaller meteor scatter events, weak signal VHF DX is not common during February. Some TE openings might occur, especially after any strong geomagnetic storm.

I have created an on-line discussion forum for you to come to ask questions about propagation and space weather. There is also a series of other topic areas, including shortwave listening and antenna design. Come and join in at <http://hfradio.org/forums/>. Of course, I always have live propagation information at <http://prop.hfradio.org/>.

Turn on your favorite radio and enjoy the great DX season on the medium and shortwaves.

Happy hunting!

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of a mobile phone because you wouldn't forget to bring your handheld along.

But, interestingly, about one-fourth of you said you don't have and don't even want a wireless phone. Some days I really wonder if most people really *want* that cell phone in their pocket or purse. Sometimes isn't it good to just get away from the computer and cell phone, especially in a restaurant or movie theater?

Is your vehicle equipped with any form of telematics? Thirty-five percent of you said you've had two-way radios, a mobile phone, or other electronic communications and/or navigational gear for quite a while. About 27 percent of you told us you have no interest in vehicular communications or navigational equipment. (I guess your sense of direction is a whole lot better than mine!)

Relatively few of you (about six percent) reported having recently added a telematics device, such as a cell phone, two-way radio, or GPS in your vehicle, and an equal number of you said you have original factory-installed telematics equipment, such as OnStar.

But, despite all our coverage of telematics in Alan Dixon's "On-The-Go Radio" column, about 25 percent of you asked, "What is telematics?" Twenty-eight percent of respondents said they want to learn more about telematics in *Pop'Comm*; 20 percent of you said you had never heard the term "telematics" before reading it in *Pop'Comm*. Half that number said they had heard the term but never knew exactly what telematics was about. There will be a special pop quiz mailed to you every other month!

Nearly 20 percent of you said you're really only interested in one or two aspects of mobile electronics, such as mobile CB radio, and surprisingly 15 percent of you said you have no interest in telematics.

We've passed on all the survey results to the appropriate columnists and talked with them about tweaking *your* magazine to fit your needs. As always, I also invite your letters and e-mails with comments and suggestions. Please don't forget that our radio avocation is more than a pastime, it's a hobby that you can learn from, pass on to your family and friends, and so much more!

The winners of our random survey card drawing are Emily Keene of Pennsylvania and Paul Anton of Michigan. Besides our thanks, each receives a free one-year gift subscription to *Popular Communications*. Have you sent in your survey card recently? ■

# v.i.p.

## spotlight how you got started in radio

### Congratulations To William Giwojna Of New York

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

#### Our February Winner: William Giwojna!

William Giwojna, of Glen Cove, New York, tells us,

I've been a Glen Cove resident for most of my life. My father introduced me to shortwave radio listening way back in 1966 when I was 11 years old. He assembled a Lafayette ExplorAir regenerative receiver and attached a horizontal 50-foot outdoor length of copper wire for an antenna.

As you can see, I presently own several pieces of RadioShack equipment, which provides me with plenty of radio coverage. I have included a picture of my AM radio from the 1930s. My grandparents owned it and the brand name is Pathe. I believe it's a European radio. Can anyone tell me how much it could be worth?



*William didn't send us a photo of himself, but did show us his well-appointed shack.*



*Here's William's antenna farm in Glen Cove, New York.*



*Here's a look at the Pathe radio mentioned in William's letter. Anyone who's able to ID it, please contact Popular Communications and we'll send the info to William.*

**Our Readers Speak Out** (from page 32)

I have tried to learn Morse code and I am still trying, and one day when I retire (in the not too distant future) and have nothing else to do but study the code, maybe I will get it. Morse Code is a MODE OF OPERATION. It should not be a requirement for those of us who can otherwise provide polished, professional, skilled communications with dignity and without profanity or derogatory speech.

Thank you, Harold, for your excellent viewpoint.

William E. (Bill) Neylans, Jr., KF4EHP  
Keystone Heights, Florida

**Columnist Peter Bertini:  
"Craftsman Of Many Skills"**

**Dear Editor:**

I've been reading—indeed studying—Peter Bertini's "Tuning Eye Magic" construction article featured in the July issue ["Wireless Connection" column]. From the wealth of accurate technical information he has incorporated into this project, it's obvious that Peter has invested a great deal of time, research, and hands-on experiments in preparing this lesson for us. Thank you!

Thanks to him for sharing his expertise with fellow radio builders and for his gracious appreciation of the assistance other radiomen and I furnished. His color photographs were crisp, sharp, and true. He's a craftsman of many skills! The professional quality of the schematic diagrams compliments the professional quality of his benchwork. All in all, your "Magic Eye" series of columns is a classic and deserves to be incorporated into a hard-bound textbook.

Bob Ryan  
Hemet, CA

**NOAA Sees The Light**

**Dear Editor:**

About four years ago you published a long letter I wrote you regarding the travails I'd had with trying to get NOAA weather radio here in our little town of Rockingham in southern North Carolina. I'm writing to let you know that earlier this year they finally saw the light and have strengthened the station coming out of Florence, South Carolina. I'm not certain, but I think they bounce the signal off of TV 13 towers. This is the strongest over-the-air signal we get here. It is coming in loud and clear, and I thought in fairness I should announce it when they got something right.

It's great to be up-to-the-minute now on weather info like everybody else.

Keith Wiglesworth

**Dear Keith:**

Thank you for your letter and follow-up. Your perseverance in wanting to be forewarned about natural and manmade disasters serves as a model and encouragement to many others in similar areas of fringe reception of NOAA signals.

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## connection radio communications humor

### Bill's Mailbag

**H**ello, friends of Lunacy. I wasn't going to repeat that phrase, but this past month, loyal reader Bob Sturtevant, KD7KTS, of Bandon, Oregon, wrote and proudly proclaimed that he was indeed a "Friend of Lunacy." I guess that makes me "lunacy," which is okay by me, because it's not even a misdemeanor here in Cowfield County.

Bob shared enough good (and bizarre) stories with me that, if he knew about typesetting and such, he too could be a highly paid professional journalist. Bob was kind enough to pass on some bits of lunacy for all of you, and my hat is off to him for maintaining his composure while these things occurred.

Bob writes, "I went to a yard sale and found a boom box with the shortwave bands on it." Since this incident, Bob has learned better than to ask about such things at a yard sale, but this was his first experience. "I wanted the rig for SWL DXing," Bob said, "So I asked the guy if the radio's shortwave bands worked. The man looked very puzzled for what seemed to be a long time, and then finally said, 'I don't think so. There is not a lot of shortwave around here—so I never tried it.'"

I never did ask if Bob bought the radio or not, but with no shortwave around where he lives, why would he bother? Bob, by the way, said this column is "...much easier to understand if I spend 20 minutes in a revolving door just before sitting down (one must) to read it."

I've been pondering that for two weeks now and I'm still not sure if it's a compliment.

I've been known to complain about people in retailing. I remember a day when people in retailing were pretty much experts about what they sold, whether it was clothing, televisions, radios, pianos, or plumbing supplies. Today, most people who sell plumbing supplies are still pretty smart about what they sell. I'm sure there are people in other fields who are also knowledgeable about their product lines, but I'm having a hard time finding them. And sometimes it's not the specific product knowledge, but *general* knowledge—as in the ability to *think*.

Communication is difficult at drive-through fast food windows because of poor systems, bad microphones and speakers, and noisy engines, but none of those problems account for this problem at my drive through pharmacy:

"Hello. I called you earlier. I'm here to pick up a prescription. My name is Bill Price."

Long silence. Ruffle ruffle ruffle, look look look, ruffle ruffle ruffle.

"No, I'm sorry sir, the only Price we have here is William." Aaaaaahhhhhhhhhhh!

So I am not surprised when Bob tells me of a retail incident involving the attempted purchase of a code key. He says:

"Another time I went into an electronics shop and introduced myself to the manager. I said "I am a ham radio operator and I want to buy a key. Have you got one?"

"No sir, but the hardware store across the street makes them up them on the spot."

---

*"...when I don't want to hear the voices, I make sure I'm wearing my aluminum foil hat to keep them out of my head."*

---

I wonder if this type of situation is taken into **account** when clubs wonder why it's so hard to bring people into **the hobby**.

Although we tend to pick on our own, this lack of **knowledge** about communications is not limited to the United States—oh, not by a long shot.

Bob said, "I once wrote to the Imperial War Museum in London and asked for information about some of the field radios used by British forces during World War I. The head of the Military Equipment Collection (a woman with an M.A.) replied that the wireless sets in their collection couldn't be used for radio transmission work because they could only transmit in Morse code."

I believe I saw tufts of Bob's hair attached to his e-mail as he had torn them out in a fit of frustration. Bob closed by saying that this sort of thing probably happens to radio enthusiasts all the time, but the darn *civilians* treat us like *we're* the crazy ones—just because we listen to voices that come "out of the air."

I know that he's right. I know that when I don't want to hear the voices, I make sure I'm wearing my aluminum foil hat to keep them out of my head.

How about all of you? Got some interesting anecdotes to share with your fellow readers? Would you like to win an all expense paid weekend at the home of fearless editor Harold ("You're bringing your own lunch, aren't you?") Ort?

I really like hearing from readers—even the one who chided me for giving the baggage inspector a rough time when traveling with all my harmonicas (hint: it's a *HUMOR* column!), so please, drop me an e-mail. Tell me your favorite lunacy story, or just say hi. It's great to hear from all of you. ■

**Solution to  
Puzzle Corner  
on page 27**

B	R	A	N	T	C	A	K	B	S		
C	E	D	I	I	D	C	D	O	U	R	
C	D	R	W	M	C	C	K	I	N	A	
			D	I	E	R	B	A	S	I	C
Y	R	A	E	L	N	E	W	E	M	E	
E	N	D	S	A	U	D	I	A			
R	O	S	S	T	A	I	E	R	G	S	
			S	P	O	R	T	S	C	A	E
P	L	L	S	S	B	J	I	D	D	A	
L	A	I	R	E	A	D	C	A			
A	C	H	E	R	A	E	B	A	C	C	
N	O	U	N	A	B	C	U	N	U	N	
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