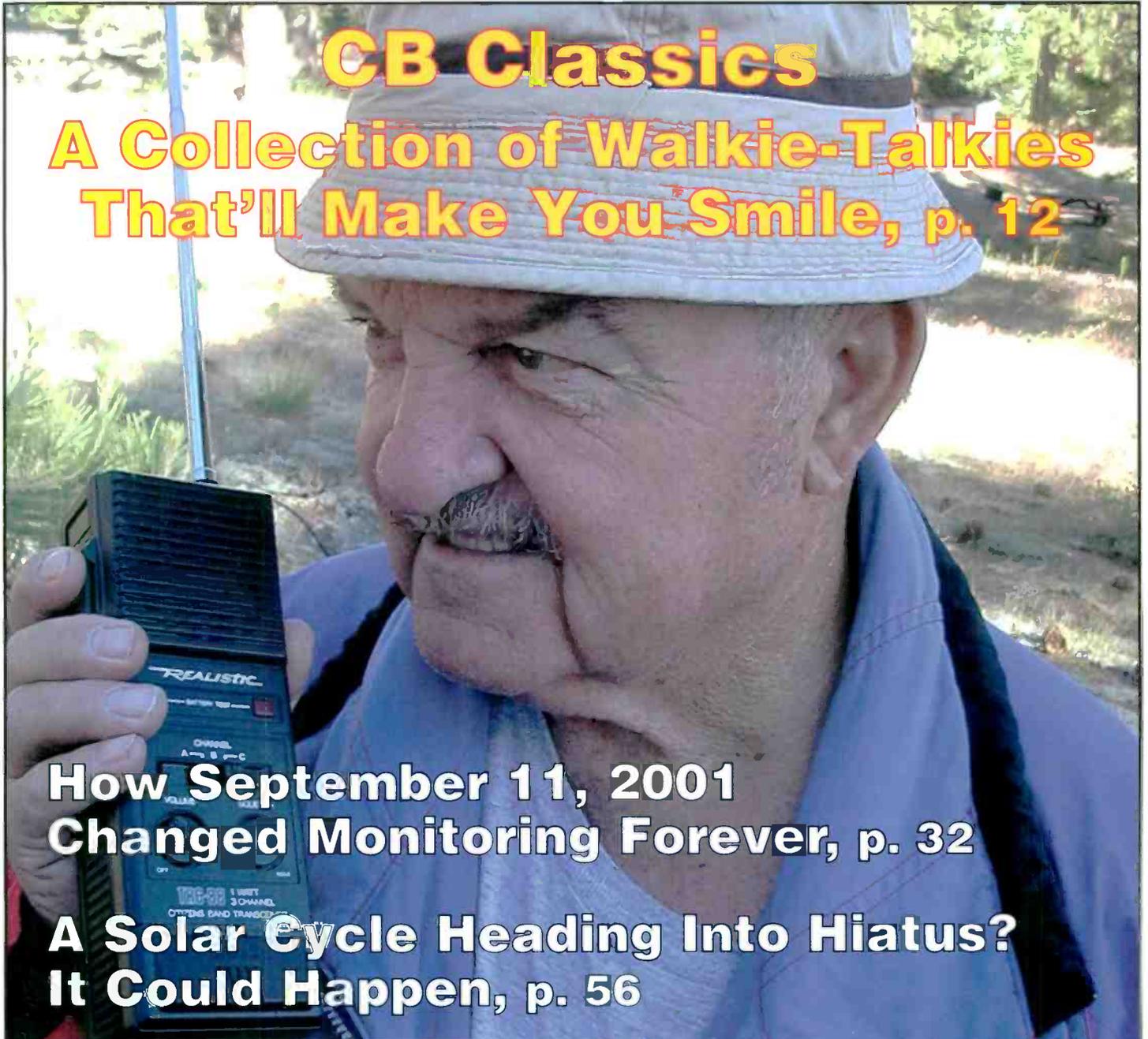


# POPULAR COMMUNICATIONS

SEPTEMBER 2011

Shortwave Listening • Scanning • AM & FM • Radio History



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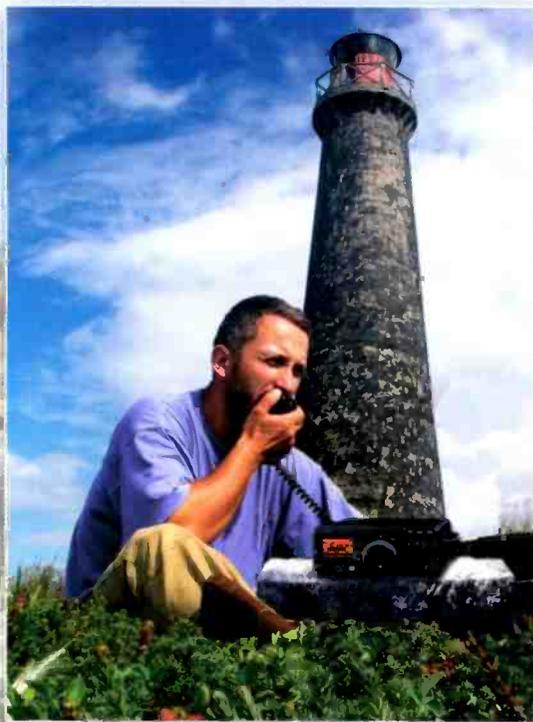
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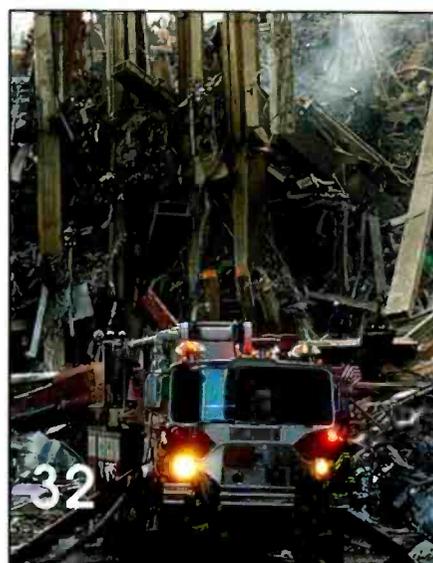
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## ON THE COVER

Jerry Parker was known in the 1960s as "Harry Carry" on Citizen Band radio in Southern California. Here he holds a Realistic TRC-88 walkie-talkie sold by Radio Shack *back in the day*. The one-watt, three-channel transceiver is of the vintage captured in the collection of Jeffrey Reed, a writer and CB history enthusiast who has assembled a gallery of classic walkie-talkies from the genre's heyday. It's featured in this month's *Pop'Comm* beginning on Page 12. Parker, of Paso Robles, California, would later become WV6HXR after getting his Novice amateur radio license. He can be heard on the ham bands today as WA6OWR. (Courtesy of K16SN)

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## EDITORIAL

### Tuning In

by Richard Fisher, KI6SN  
[editor@popular-communications.com](mailto:editor@popular-communications.com)

# A Wrong-Headed Direction for the VOA

In a direct assault against a well-oiled Nazi propaganda machine, the Voice of America's William Harlan Hale assured the people of Germany: *Die Nachrichten können gut sein. Die Nachrichten können schlecht sein. Wir werden Ihnen die Wahrheit sagen.*

"The news may be good. The news may be bad. We shall tell you the truth."

It was on February 24, 1942, less than three months after the United States' entry into World War II. The VOA had just made its first overseas broadcast in German. By war's end, the service was sending out a wireless stream of hope and resolve in 40 languages across the world.

An international communications giant, the VOA today reaches a weekly audience of 123 million in 44 languages by radio, television, satellite and through the Internet. A substantial number of listeners come via shortwave.

So it alarmed us when we learned the VOA is considering scaling back its shortwave service. In the words of Mr. Hale: *The news may be bad.*

A strategic technology plan, commissioned and recently updated by the Broadcasting Board of Governors (BBG) — the federal agency with oversight of the VOA — suggests shifting emphasis to *more effective channels*. Read that: Digital — the Internet, with its streaming audio and video and social media channels.

Titled *Broadcasting Board of Governors (BBG) 2010-2012, BBG Technology Strategic Plan and BBG Technology Update-2009*, the document can be accessed at: < <http://bit.ly/YgqVM> >. In response to a Freedom of Information Act request, it was posted on the Internet by the watchdog group Government Attic. We encourage you to read it.

With VOA's near-70-year shortwave legacy, we see the BBG's possible change of direction flawed on several levels.

- If the United States does not continue to stake its claim on shortwave, others will — oppressive and terrorist-oriented regimes that view human rights and freedom as a danger.

- We've seen the vulnerability of the Internet recently in the Middle East and China, where the Web's ON/OFF switch is within arm's reach of a repressive government. *Whither VOA then?*

- Most people in impoverished regions aren't likely to be Internet users. They might, however, have a transistorized shortwave radio and listen to the VOA. What seems missed or ignored by the BBG is that much of the world is at *present* living in what the board seems to view as *the past*.

It doesn't take a Rhodes Scholar to realize these things. But Walter Isaacson, who heads the BBG, is, in fact, one. A brilliant mind and former head of CNN, Isaacson might be giddy with the not-so-new media or blinded by beltway myopathy. *We don't know.*

At the bottom line is VOA's *bottom line*: "Despite substantial transmitting station closings and steady optimization of station operations, the intrinsic high cost of operating high powered shortwave stations is constantly being weighed against the rapidly diminishing effectiveness of shortwave within a growing number of countries," the strategic technology plan says. "... The cost effectiveness of shortwave transmissions continues to wane and is expected to be circumscribed to a very small number of target countries in the relatively near future."

We say: *Find the money.*

According to Internet World Stats, as of March 31 about 2.1 billion of the world's 6.9 billion people are Internet users. That gap in itself should raise red flags to those charting VOA's digital course.

Consider this: Asia leads the world in Internet users (922 million). Yet the Internet's penetration in the region — the portion of the total population actually using the Web — is just 24 percent. For VOA to shut down broadcasts to China when Beijing is increasing its propaganda assault defies logic. However, that's precisely what Mr. Isaacson recommended.

Internet World Stats figures show Africa's Internet penetration at 11.4 percent, the Middle East at 31.7 and Latin America/Caribbean, 37. The world average is just 30.2 percent.

Is the VOA willing to give up potential listenership to more than two-thirds of the world's population by muting shortwave? *We hope not.*

Our stance is this: *Any* diminution of VOA shortwave broadcasting will be harmful to our country's longtime initiative to trumpet American values to the world.

If you feel as we do and would like to let VOA's leadership know, write:

Broadcasting Board of Governors (BBG)  
330 Independence Avenue, SW  
Washington, DC 20237  
Tel: (202) 203-4400 • Fax: (202) 203-4585  
Email: [publicaffairs@bbg.gov](mailto:publicaffairs@bbg.gov)

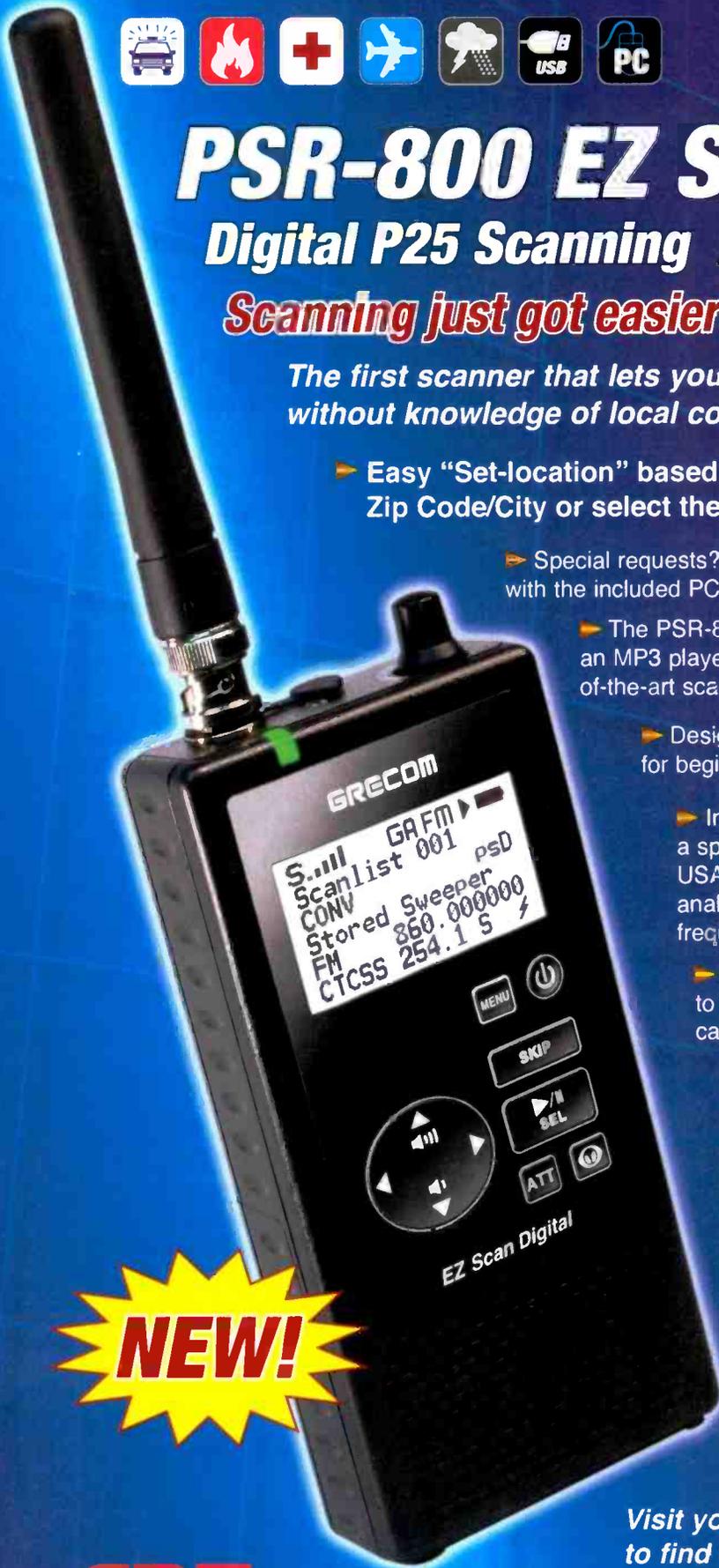


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# The Weirder Side of Wireless

by Staff

## Birds Attack TV Station Staffers in Atlanta

An aggressive flock of brown thrashers has been waging an aerial assault against staff members of WXIA-TV in Atlanta.

Reminiscent of Alfred Hitchcock's thriller, *The Birds*, they have been nose-diving from a walkway light pole near the station's studios.

"What did I ever do to you?" WXIA photojournalist Shawn Hoder asked the birds.

Video of the assaults can be seen on the Internet at: < <http://www.tinyurl.com/3qmxk4b> >. (Source: *Broadcasting and WXIA*)

## FakeTV Marketed As Anti-Burglary Device for Travelers

A small device that puts out the "exactly the same sort of light that a television produces" is being marketed as theft-prevention device to people traveling on business or vacation.

*FakeTV* "makes their homes look lived in, making them less likely targets," according to the device's producer, the Hydreon Corp. "When the would-be burglar sees the light from *FakeTV* shining through the curtains, it looks just like somebody is home watching television."

The company says the "light is not random, but made up of the effects of scene changes, fades, on-screen motion, and other elements. It is sometimes static, sometimes pulsating, often colorful and always changing."

In a testimonial provided by Hydreon Corp., Police Chief Michael Fields of Yuma, Colorado, says that "hopefully the bad guy will try another place or

easier target," because it appears someone is in the house.

"Keep in mind that this is not a substitute for deadbolts, dogs, effective lighting and other crime prevention methods," Fields said, "but a great addition for those that like to be proactive and deter criminals."

Hydreon Corp., a Minnesota-based technology company, has more about *FakeTV* on the Web: < <http://www.FakeTV.com> >. (Source: *Hydreon Corp.*)

## Deputy Radioed 'Will You?' — the Dispatcher Responded '10-4'

A Brevard County, Florida sheriff's deputy took to the police radio frequencies for an on-the-air proposal of marriage to a sheriff's department dispatcher.

Sheriff Jack Parker asked everyone to standby on the county-wide radio system for "an important announcement." Deputy Joseph Bracey then took the microphone, announced his love for dispatcher Ashley West and declared he wanted to spend the rest of his life with her.

**The deputy:** *Will you marry me?*

(STARTLED PAUSE)

**The dispatcher:** *Yes, I will marry you.* That's a *Big 10-4* in radio lingo.

According to a Yahoo! News-ABC News report, "she then promptly burst into tears, as dispatchers from around the county radioed in their congratulations. Bracey took some ribbing from fellow deputies for the gesture but says it was worth it."

A video of the proposal can be viewed at: < <http://yhoo.it/mOWECU> >. (Source: *Yahoo! News, ABC News, Associated Press*)



Here's a look at *FakeTV* as seen by an apparent *FakeBurglar* outside a residence in this promotional photograph from Hydreon Corp., maker of the anti-theft device. (We believe those are *FakeStars* in the heavens above, as well. Ed.) (Courtesy of *FakeTV*)

## Sports-Talk: The Barber of Civil? You Be the Judge

Former New York Giants running back Tiki Barber and WFAN Radio's Mike Francesa made sports-talk intense and interesting for its New York audience recently after the host asked whether Barber "wanted to return to the NFL for the love of the game or because his short career at NBC was 'a big failure.'" *Ouch.*

Barber recently lost on-air roles on *Football Night in America* and the *Today Show*, according to the *New York Post*.

Barber characterized Francesa's assessment as *hyperbole*, according to About.com Radio's Corey Deitz, and responded, "... it's unfair for you to label it that way."

"There's no way around it, that's a failure," Francesa said, and then told Barber "friends at NBC were not 'complimentary about your work.'"

As Deitz pointed out: "It's probably a good thing that Barber was on the phone and not in the studio." (*NBC Sports*)

# News, Trends, And Short Takes

by D.Prabakaran  
< bcdxer@hotmail.com >

## Commando Solo Heard on New Shortwave Frequency

Commando Solo, the U.S. airborne radio station operating above Libya on behalf of NATO, was heard in early June using a new shortwave frequency: 10125 kHz, USB mode. It was transmitting messages intended for Muammar Gaddafi's forces.

This frequency is in the 30 meter amateur band, but is also used by the Libyan Army. Commando Solo has previously used 6877 kHz and 10404 kHz. (Source: Published reports)

## Danmarks Radio Makes Waves on Its Waves

Danish public broadcaster Danmarks Radio (DR) was set to close its 250-kW mediumwave transmitter on 1062 kHz in Kalundborg, and has resumed broadcasting on 243-kHz longwave, but with a power of just 50 kW.

As has been the case on mediumwave, the programming on 243 kHz will be restricted to weather forecasts, communications for shipping and morning gymnastics.

DR closed its 300-kW, longwave transmitter on 243 kHz in February 2007. Since then, it has been used only sporadically for test broadcasts in DRM (Digital Radio Mondiale). But now 243 kHz has been put back into use again with AM broadcasts, using a newly purchased modern Nautel, 50-kW transmitter.

The target audience for the AM broadcasts is truck drivers, fishermen and recreational boaters — and to a lesser degree, expatriates, who are increasingly listening to DR via the Internet. (Source: radionyt.com)

## DRM+ Successfully Tested in New Delhi

The first ever DRM+ trial measurements in India have given very satisfactory results. The test, organized jointly by All India Radio (AIR) and Digital Radio Mondiale (DRM) Consortium, was an effort to test the strength and coverage of DRM digital radio.

The single test frequency of 100.1 MHz carried three program channels — Gold DRM (FM), Rainbow DRM (FM) and AIR news in Journaline. Its reception was measured by a test vehicle going in four directions from central New Delhi where the transmitter was installed

The Nautel, VS-1 transmitter with 300-W output power (500-W radiated power) along with the RFmondial DRM+ Modulator and the Fraunhofer DRM Content Server were used.

Two test modes were measured — robust 4 QAM and high capacity 16 QAM. The DRM+ coverage

was found to be comparable with that of an analog FM station operating at approximately five-times the power of the DRM+ signal. A full report will be published jointly by AIR and DRM. (Source: DRM Consortium)

## Mexico Approves HD Radio for Digital AM/FM

COFETEL, Mexico's spectrum regulating agency, has finalized the regulatory process selecting HD Radio Technology as a digital radio standard for the AM and FM bands in Mexico.

The decision authorizing the In Band On Channel (IBOC) system became official in mid-June when the COFETEL regulation was published in the *Diario Oficial de la Nación* — the Federal Register of Mexico. The official regulation was publicized during a Presidential press conference held at Los Piños.

The decision by COFETEL to accept HD Radio Technology as a digital standard for Mexico allows for broadcasters' voluntary use of the iBiquity technology in hybrid mode (analogue and digital) by both AM and FM station licensees, as well as the use of iBiquity multicasting technology. The regulation authorizes nationwide implementation of HD Radio broadcasting.

The IBOC system was recommended by COFETEL in February 2011. The recommendation then required the approval of COFEMER, the Mexican government's Commission for Better Regulation. After an open public comment period, COFEMER issued its approval on May 12, 2011.

Prior to this final approval, AM/FM stations in border regions of Mexico had been authorized to broadcast using HD Radio Technology. iBiquity is working closely with broadcasters, manufacturers and retailers in order to accelerate the roll-out of HD Radio™ Technology in Mexico. (Source: iBiquity Digital Corporation)

## European Gospel Radio Goes Live Daily

European Gospel Radio via IRRS-Shortwave is reported to be on the air daily with a live program in English on 7290 kHz to Europe, North Africa and the Middle East since June from 1800-2000 UTC.

The broadcasts can also be heard daily on two new AM mediumwave frequencies: 1368 kHz from Padua (Padova, North East Italy), and locally in Rome on 1566 kHz.

Broadcasting on these mediumwave frequencies will be daily from 1700-2400 UTC. Reception on 1368 kHz during darkness has been reported within a radius of approximately 700 km from Padua. (Source: Published Reports)

# Capitol Hill And FCC Actions Affecting Communications

by Richard Fisher, KI6SN **FCC Slaps California Man With \$24,000 Fine**

A \$24,000 *Forfeiture Order* has been issued by the FCC against a California man for allegedly “engaging in unlicensed radio operation and intentional interference to licensed radio operations and for refusing to allow an inspection of his radio equipment by FCC personnel.”

Kevin W. Bondy, of Encino, California, identified by the FCC as licensee of GMRS (General Mobile Radio Service) station WQGX752, “is accused of repeatedly and intentionally jamming four land mobile frequencies assigned to The Oaks Shopping Center in Thousand Oaks.”

According to the *ARRL Letter*, “in assessing the \$24,000 fine, the FCC said ‘Bondy’s acts cut at the heart of the Commission’s responsibilities to protect the nation’s airwaves and regulate use of the spectrum,’ alleging he ‘operated a radio without a license on the specific frequencies assigned and licensed by the Commission to The Oaks, for the explicit and expressed purpose of prohibiting The Oaks’s use of its licensed frequencies.’” (*FCC, ARRL Letter*)

## Comment Sought On Changes to Emergency Alert System Rules

The Federal Communications Commission is seeking comment on proposed changes to Part 11 rules governing the Emergency Alert System (EAS) “to codify the obligation to process alert messages formatted in the Common Alerting Protocol (CAP) and to streamline and clarify these rules generally to enhance their effectiveness,” according to published reports.

*Radio Currents* magazine reported that in its Third Further Notice of Proposed Rulemaking (NPRM), “the FCC tentatively concludes, with respect to the CAP-related obligations addressed in this item that its focus should be on ensuring that CAP-formatted alert messages entered into the EAS are converted into and processed in the same way as messages formatted in the EAS protocol.”

The Commission expects to clarify Part 11 rules on how EAS participants should be able to convert CAP-formatted EAS messages into EAS Protocol-compliant EAS messages, as well, the story said.

The full text of the NPRM is available on the FCC Web site: < <http://bit.ly/kZDRF8> >. (*Source: Radio Currents*: < <http://www.radiomagonline.com> >.)

## High-Frequency Radar Proposal Could Impact Amateur Bands

The National Telecommunications and Information Administration (NTIA) has proposed establishing oceanographic radar allocations at several high-frequency spectrum segments, including the 60-meter amateur band and immediately adjacent to the 20-meter ham band.

The agency regulates federal government spectrum use and advises the president on telecommunications matters.

According to the ARRL, the recommendation to propose these allocations at next year’s World Radiocommunication Conference (WRC-12) came as a surprise to those members of a U.S. WRC working group set up by the FCC — including an ARRL representative — that had proposed different sets of frequencies and concluded that sharing between these radars and amateurs would be difficult at best.

Apparently, there has not yet been an explanation of why NTIA made these specific proposals or why it disregarded the working group’s advice. (*Source: CQ Newsroom* < <http://www.cqnewsroom.blogspot.com/> >)

## NFL to FCC: Hands-Off Sports Blackout Rules

Sports blackout rules, which prevent cable or satellite providers from carrying a National Football League game when the over-the-air broadcast is blacked out due to lack of attendance at the game, should not be tinkered with by the FCC, NFL officials said.

The admonition came in comments in the FCC’s retransmission-consent proceeding “and in response to (a) Sports Fan Coalition (SFC) call for waiving the blackout rule” during negotiation impasses. *Broadcast and Cable* reported < <http://bit.ly/myOajb> >.

The Commission “would allow sports fans to watch a local game they otherwise would be unable to view, while spurring the broadcast and pay-TV companies to reach a negotiated solution,” SFC argued.

The NFL league countered that waiving the rule would “undermine the retransmission-consent regime and give cable and satellite operators excessive leverage in retransmission-consent negotiations.” (*Source: Broadcast and Cable*)

(Continued on page 65)

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# All Sorts of Static As We Roll Down the Highway

by Rob de Santos, K8RKD  
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*“As hobbyists, we can’t sit on the sidelines. We need to be involved not only in the technical aspects of our hobbies but in the public policy aspects, as well.”*

If you want to get politicians excited, or want to start a vigorous discussion at a party, bring up talking on the phone while in your automobile — or texting, or putting on makeup or generally doing anything other than driving.

The range of opinions are predictable, but I’ll bet that most of the time there are two you won’t hear debated: The use of ham radios in vehicles and whether you should be allowed to listen to your radio — and here I mean just AM or mediumwave and FM.

For communications hobbyists, the in-car options have never been greater. We have AM, FM, Sirius XM, CD, GPS, scanners, mobile amateur radios, CB, MP3, smartphones and other mobile phones, Internet radio and the list goes on.

Just today I received a catalog from a well-known, Virginia-based car stereo specialist company (oops, make that car *electronics* specialist!) and the options are endless. And I didn’t even discuss what you can provide for your rear seat passengers.

On the whole, I would expect *Pop’Comm* readers to say these are good things.

Where is in-car communication headed? What can we expect in the future? It’s a certainty that the next big revolution is Internet connectivity from the car. Surveys show that as much as 20 percent of the population has already used their smartphone to feed audio to their car speakers. A true, rolling, *hotspot* is one of the most requested future feature, according to automakers. While Internet radio is an obvious short-term application, there are likely many more possibilities.

Users of General Motors vehicles have had limited *remote diagnostic* capabilities for some years now with the *On-Star*™ system. However, it is easy to foresee that the day may not be far off when your mechanic can give you a diagnosis of that *funny sound* while you are still traveling and set up a repair before you find yourself stranded somewhere.

Your car could stay in regular communication with the manufacturer and tell you when service is required or when the alternator is about to fail.

Another possibility is safer and perhaps even *driverless* cars. Google has received a fair amount of press for its tests of an automated vehicle where the driver is *hands off* and the car goes where it needs to — safely and efficiently.

Future roadways may have more than just *reflectors* to mark the lanes. There will be sensors to tell the car where you are allowed to go.

*Will this happen?* Experts are divided but there is little doubt smarter cars and smarter roads are coming.

What about personal communication? As more and more data is stored in *the cloud* — and not just on our personal computers and mobile phones — it seems only logical that we should never be without our contacts, appointments and other personal data. This should make it easier for us to make calls, let the babysitter know we are delayed on the freeway and so on.

We already have scanners that can reprogram themselves as we drive. Last month, I mentioned I believe we will soon have amateur radio handheld radios that reprogram themselves with new repeaters as we drive.

The debate, though, has been engaged: Which forms of rolling communications are considered good things and which are sufficiently distracting to be considered dangerous?

Some lobbying groups are already trying to ban anything that allows you to talk — be it a cell phone, ham radio or CB. Local laws have been passed to prevent the sending of SMS messages while driving, but written so vaguely as to restrict ham radio.

Some states have restricted the use of scanners in vehicles for many years and more than one or two radio amateurs have had to produce their FCC issued licenses just to be able to use their 2-meter rig.

The threat now though is much greater. As hobbyists, we can’t sit on the sidelines. We need to be involved not only in the technical aspects of our hobbies but in the public policy aspects, as well.

The greatest challenge is education — of our lawmakers, fellow citizens and fellow hobbyists. I don’t doubt for one minute that distracted driving is a serious problem and we must never fail to recognize that.

Just as no responsible authority would prohibit law enforcement officials from using their communications devices while driving, we must educate our fellow citizens on the legitimate and safe uses of our preferred forms of communication.

*What technologies are you looking forward to for your travels? What arguments would you make as to their safety? Let me know what you think. I look forward to hearing from you. Our focus on future communications continues next month.*

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# Reminiscing: A Rush of Nostalgia With a CB in His Hand

## Classic 27-MHz Walkie-Talkies Can Tug at the Heartstrings — And Pocketbook

By Jeffrey Reed

**W**Without a doubt, we live in a communications-mad society — and why not? The evolution of the electronics age has put instant communications in the hands of everyone from tech-savvy tiny tots to seniors who have caught the bug for innovative gizmos. Everything from text messaging classmates, to peeking in with Google Maps on what were before hidden venues, has put the world in the palm of our hands.

Sure, cell phones provide access to communication in all sorts of varieties — from idle gossip to emergency calls. The Global Positioning System (GPS) has rendered the use of the magnetic compass more by Boy Scouts and Girl Scouts than motorists.

Combined with the power of the Internet, and, of course, the advent of Family Radio Service (FRS), General Mobile Radio Service (GMRS) and Multi-Use Radio Service (MURS) radio bands, you'd think the romanticism of low-powered CB walkie-talkies would have disappeared — forever. Think again.

Like you, I'm a communications aficionado with an insatiable appetite to grow my shack and antenna farm. I continue to purchase and tinker with portable 11-meter walkie-talkies. There's just something about these 27-MHz, hand-held transceivers that not only remind me of days gone by, but also put the fun back into our great hobby. In fact, CB walkie-talkies can provide services that not all modern communications means can offer.

### Hand-Held Transceivers: The Beginning

The term "walkie-talkie" stems from a World War II development called the SCR-300, a 1940 release from the Galvin Manufacturing Co. — now Motorola Radio. It literally was a *talkie* used while walking — a heavy backpack lugged around by soldiers with a telephone-type handset for listening and talking, plus built-in antenna.

The term *handie-talkie* comes from the company's hand-held AM SCR-536 radio — the first of the large military-style trans-

*Jeffrey Reed is an award-winning Canadian journalist, and a life-long communications hobbyist. He lives in London, Ontario with his "better half" Beth, his golf clubs — and, of course, his prized collection of CB radios.*



From left, the Radio Shack Realistic TRC-180, TRC-209 and TRC-216 — all classic CB walkie-talkie radios in Jeffrey Reed's Citizens Band collection. (Courtesy of Jeffrey Reed)

ceivers that, even today, are emulated in the design of handie-talkies. A Canadian company, CM&S, also created a portable radio system called a *packset*, which later became known as a *walkie-talkie*.

Today, the CB terms walkie-talkie, handie-talkie and hand-held transceiver all refer to the same thing — Citizens Band radios you can hold and operate in your hand.



With its whip antenna collapsed, here's a top view of the classic TRC-209, showing controls for channel selection, external microphone, RF-Battery meter, external speaker, squelch and ON-OFF/Volume.

During the 1950s and '60s, surplus Motorola handie-talkies were commonly acquired by amateur radio operators. Motorola's public safety radios were loaned and donated to hams as part of the Civil Defense program. Today, business, public safety and outdoor recreation use dominates walkie-talkie applications.

## 11-Meter Radio: A Brief History

CB radio use has seen many ebbs and flows since early 1948, when the FCC issued the first license for its designated Class "D" 26.965 to 27.405 MHz — or 27 MHz — band.

By the 1960s, truckers, small business operators and radio hobbyists were using CB transceivers on a daily basis. Then, it hit — as hard as a Hank Aaron home run.

When the U.S. government imposed a 55-mph speed limit following the oil crisis and concurrent gas shortage in 1973, tuckers — today commonly referred to as professional drivers — were suddenly thrown into the spotlight. They were, of course, communicating via CB radios, informing fellow drivers of where to locate gas, and even warning others of speed traps set by *Smokey Bear*.

In 1976, C.W. McCall's song, *Convoy*, did for CB radio what the Bee Gees' 1977 movie soundtrack, *Saturday Night Fever*, did for disco dancing. Once the 1978 movie *Convoy* hit the big screen, a communications hobby — rivaled only by the Internet and texting — spread like wildfire in the U.S., Canada and beyond.

By 1978, both the FCC and Canada's Department of Communications (DOC) — now Industry Canada — had no longer required General Radio Service (GRS) licenses for CB use. Licenses were inexpensive — there were hundreds of thousands of unlicensed CB operators — and government on both sides of the 49th Parallel decided it was no longer cost effective to license Citizens Band users.

You could purchase a mobile CB transceiver and antenna for as little as \$75 at the corner store. As a teenager, I did. But in 1975, what truly gave birth to my love of the communications hobby was a two-channel, 1-watt walkie-talkie from the local



Along a side panel of the TRC-209 are controls for HI-LOW power, external antenna, charging and external DC power.

Radio Shack store. (See the sidebar, *Walkie-Talkies Launched My Life-Long Love Of All-Things Radio*. — Ed).

The rest, as they say, is history. My shack is now home to no fewer than a dozen 27 MHz walkie-talkies. This eclectic collection, sourced from garage sales, bargain stores, Internet purchases, pawn shops and retailers, includes radios from the mid-1960s to current day.

The smallest of the radios are the pair of Radio Shack Archer Micro Space Patrol transceivers (1977), each radio 5 inches x 2.5 inches x 1.5 inches and reaching a few city blocks on Channel 14, or 27.125 MHz. I picked up these toy radios at a local second-hand store. Channel 14 is by far the most common CB channel installed with inexpensive walkie-talkies, as well as with two- and three-channel units, which over the years have ranged in power from 1 watt to 2.5 watts.

## TRC-209: Mother Of All Handie-Talkies

The largest radio in my collection — and one of my most prized radios within a shack that has pushed out my better half's arts and crafts corner — is the Titanic-sized Radio Shack TRC-209. It's a mint-condition radio — even the 53-inch, center-



The background of the advertisement is a photograph of the Sydney Opera House under a blue sky with white clouds. In the foreground, a large black Grundig radio is positioned on the left, and a smaller black Grundig radio is on the right. A red circular antenna loop is placed between them. The large radio has a digital display showing '104.70' and a speaker grille. The smaller radio has a digital display showing '0.24' and '91.10'.

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A vintage Channel Master 6423A, left — a 2-watt, dual-channel handie-talkie with all-transistor circuitry and RF stage — was found, along with its partner radio with 10 transistor and RF stage, for just \$5 for the pair at a garage sale.

loaded telescopic antenna is as shiny as a new quarter and without any bends in its mass.

Measuring a whopping 10.5 inches x 3.5 inches x 2.5 inches, and weighing in at 2.5 lbs. when powered by 10 “AA” batteries, this radio has a large cult following. It was one of the first 4-watt, 40-channel CB walkie-talkies, and is full of features.

With the original 23 CB channels clogged, the FCC expanded the service to 40 channels in 1977, and that’s where things remain today. The beauty of CB walkie-talkies is that you can purchase AM units ranging from 1 watt to 4 watts output, and today costing anywhere from less than \$20 to about \$150.

The TRC-209 sold for more than \$200 in 1979 — almost the price I paid for my first car, a used 1973 Chevrolet Nova (I wish I still had that beauty parked in my garage).

Like the muscle car, I purchased this walkie-talkie as a second-hand unit, and for the bargain basement price of \$25. Along with my Cobra 135 SSB CB base unit in perfect working order, the TRC-209 is a gem in my always-growing shack.

You can *have* today’s feather-light smartphones: There’s nothing like hauling around this *bad boy* for old time’s sake. And it, too, has more features than a Swiss Army knife.

The top panel on the TRC-209 includes a nice RF/Battery meter, separate squelch and ON-OFF/volume controls, external microphone and speaker jacks and rotary channel selector — plus the enormous telescopic antenna.

The front panel houses the red LED channel display, and a nice-sounding speaker. Even the microphone does an outstanding job. The side panels provide grounding and better



The control head of the Midland 75-822 CB radio is a tidy package for mobile Citizens Band operation.

reception plus enhanced reception. The push-to-talk (PTT) button contains a smaller button to light up the channel display, which fades off after a few seconds to save battery power.

The bottom of the left side panel features an output power switch that also saves battery power when dropped down to low. You can also power this radio with eight “AA” batteries plus two dummy batteries — key up with this behemoth on a regular basis and you’ll empty your pocket pretty quickly.

An external antenna jack, plus charge and power jacks round out the full features included with this vintage beauty. It’s not quite as large as those backpacked Motorola SCR-300-A portable radios, nor the armed forces SCR-536 walkie-talkies, but it’s big enough to build up your biceps.

## The Handie-Talkie As A Multitasking Traveler

When you think of handie-talkies and their uses, you think of emergency uses, such as those involving REACT — Radio Emergency Associated Communications Teams. The Suitland, Maryland-headquartered group reached its pinnacle of membership during the CB heyday, but it is just as important today. In addition to CB Channel 9 — 27.065 MHz — REACT members also commonly use ham, FRS and GMRS radios.

But utilizing CB handie-talkies — in particular when used while traveling and connected to mobile antennas — still has merit. Road Trip America <<http://www.roadtripamerica.com>> recently reported: “(CB radios) work well, and they provide communication under circumstances where other forms of technology still don’t do a very reliable job.”

When I travel, I use my **Midland 75-822** handie-talkie/mobile to get a handle on road conditions — who better to ask than those behind the steering column of an 18-wheeler? Boosted by my K30 magnet-mount mobile antenna, it’s a terrific performer on the road.

The 75-822, along with the **Cobra Electronics 38 WX ST**, are the two most popular CB handie-talkies on the market today. Both boast beauty and brawn.

The Cobra unit features Soundtracker, a patent-pending tech-



An MFJ-4225MV Voltage Switching Power Supply and MFJ-281 ClearTone Speaker serve as nice accessories to the Cobra 38WXST CB walkie-talkie.

nology that improves sound quality of both transmission and reception of 27 MHz signals. A fully featured, hand-held CB, this unit includes NOAA National Weather Channels, dual-channel watch plus full 40-channel scanning.

The Midland radio's innovative design allows for the conversion from a handie-talkie to a mobile radio with the simple slide of a bottom converter, which includes a cigarette lighter power cord and BNC connector. The 4-watt, 40-channel unit has lots of features, including full channel scanning, five memory channels and NOAA National Weather Radio reception.

Special "emergency radio" CB handie-talkies/mobiles have been around since the 1970s. Midland has been a leader in this field. In the 1990s, its 75-784 was a popular dual-functioning radio, with its rubber-covered, BNC-connector antenna.

## Some Walkie-Talkie 'Greatest Hits'

Over the years, collecting CB walkie-talkies has become a hobby within a hobby — *I'm guilty as charged.*

There's a great Web site, *MuseoCB – El Museo del Radio Aficionado 27 MHz* < <http://www.museo-cb.com> > where the text is in Spanish. You can translate it to English, but the photos speak a thousand words.

I've spent hours glancing at the photos and reminiscing about the glory days of CB radio. I even found information on my vintage **Channel Master 6423A** — a 2-watt, dual-channel handie-talkie with all-transistor and RF stage. I purchased this unit — along with its partner radio with 10 transistor and RF stage — for just \$5 for the pair at a garage sale.

They even came with heavy leather carrying cases — *does it get any better than that?* Both were in great shape.

The mere mention of these manufacturers will, I suspect, conjure up memories for you: **Cherokee, Fanon Courier, General Electric, Hy Gain, Johnson Messenger, Kraco, Lafayette, Midland, Pace, Panasonic, Royce, Sanyo, Sharp, Sony, Toshiba and Westinghouse** — which manufactured its radios about two blocks from my childhood home. Everybody jumped on the walkie-talkie bandwagon in the 1970s — even Sears and JCPenney.

In more recent years, the **GE Communications 3-5979** was a very popular handie-talkie (1990s), with full power, 40 channels and a three-position power saver switch. It measured 12.5 inches x 3.5 inches x 3 inches and sold for just \$55.

**Radio Shack's Realistic TRC-216** also has a cult following, with its modern, rectangular box-type design in black



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# How Walkie-Talkies Launched My Lifelong Love of All-Things Radio

By Jeffrey Reed

I was 11 years old in 1973, and can still vividly recall watching the Watergate hearings on TV. Even as a preteen, the media and communications fascinated me.

It's no surprise I'm enjoying my 31st year in journalism. But it wasn't only news reporting that jump-started me in my chosen career.

That winter, I took \$30 from my newspaper route money and purchased a 1-watt, two-channel CB walkie-talkie from the local Radio Shack. I can't recall ever owning any of those kiddie walkie-talkies with 100 milliwatts of power and using amplitude modulation (AM).

Later, toy walkie-talkies also moved to the 49 MHz band, and some used frequency modulation — FM — shared with baby monitors and cordless phones, but that's another story.

My neighbor and best friend, Jim, also had a walkie-talkie, as did scores of other local neighborhood kids. Just like today's youth are addicted to the Internet and texting, we couldn't wait to get home and jump on the air to talk to our friends — the same friends with whom we had just spent an entire day!

It seemed like every weekend I would wander into that Radio Shack, hoping to have enough money to purchase additional crystals. The unit came with Channel 14 crystals — receive and transmit — plus another channel of your choice. Many of the lower-priced, hand-held CBs of that time came equipped with Channel 11, another popular call-channel with the hundreds of kids within my neighborhood in London, Ontario, Canada. I was two hours east of Detroit, two hours west of Toronto.

Later I purchased those crystals, but I originally chose crystals for Channel 19 — the truckers' channel.

Imagine the surprised look on my face when, one day, I was able to converse with a local trucker who had just pulled into town from Highway 401 — one of the busiest highways in all of North America and a major trade route.

If that wasn't a big enough thrill, that same truck driver pulled right up to my suburban home with his 18-wheeler, just to say *hello*. It was an occurrence plucked right out of a Red Sovine truckin' song.

After that visit, I was hooked. So was Jim. I designed and drew QSL cards for both of us — I was the Candy Man, he was the Blue Stallion — and we rode our bicycles to the local campground a few miles outside of town to join in on CB jamborees.

Often, to reach longer distances with my radio, I took a tip from a fellow CB'er and stuck the antenna of my handie-talkie into a heater vent in my upstairs bedroom. It worked! Later, with the help of our fathers, we installed a 9-foot marine whip at the peak of my roof. I still remember drilling the holes and feeding the coax through the frame of my bedroom window.

The antenna included a large, steel spring — you should have seen that antenna bend during a storm! I even talked *skip* to a CB operator in Florida one day, thanks to favorable propagation.

Many of the neighborhood kids were purchasing 2.5-watt, three-channel walkie-talkies, and — with the help of their par-



The CB handheld radios of today — such as the Midland 75-822 — are tiny compared to Radio Shack's Realistic TRC-209, circa 1970s — a large, three-channel, vintage 2-watt transceiver fashioned after the large handie-talkies used in World War II. The '209 is one of the favorites in Jeffrey Reed's collection of portable CB radios. (Courtesy of Jeffrey Reed)

ents — full-powered, 4-watt, 23-channel CB mobile radios, regulated power supplies and base antennas. I still recall staring at a large shelf behind the counter at that Radio Shack store where a long line of CB walkie-talkies were displayed like a carrot dangling in front of a donkey.

I could never afford such a radio back then — my first handie-talkie upgrade came in the form of Radio Shack's Realistic TRC-180, a large but lightweight three-channel, 2-watt transceiver fashioned after the large, WW II-type handie-talkies.

Today, I am lucky enough to own a full-featured radio circa 1970s — and it's in mint condition: The TRC-209, one of the first 40-channel CB walkie-talkies sold in Canada.

But alas, I took the first step in growing my hobby in 1975. With my father's help and radio operator's license from the Department of Communications (now Industry Canada), I purchased a 23-channel Transonic CB radio with extra-large front-panel meter. I later bought a 40-channel Craig mobile CB. I never lost my love for walkie-talkies, nor my love for communications. In fact, as a radio, TV and print journalist, I often write while listening not only to my scanner and the local amateur radio operators, but also to my CB radios.

So here I am, writing about CB walkie-talkies for a magazine that I have read for many, many years. Indeed, this love

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and silver. The side light and PTT features are designed as buttons flush with the panel — rather than traditional exterior PTT controls.

The **Realistic TRC-217** — a 4-watt, 40-channel handie-talkie — was a tank, as well, thanks to a solid casing and durable controls. It's about half the size of the giant TRC-209, but per-



From left, a Cobra 38WXT, Midland 75-800 and Midland 75-822 Citizens Band handheld transceivers.



Whether it's a CB walkie-talkie, handie-talkie or handheld transceiver, Jeffrey Reed, is always on the lookout for additions to his classic Citizens Band radio collection.

forms equally. I recently picked up two of these beauties in excellent condition at an online auction site for just \$20 for the pair. Interestingly, they were made in China rather than Japan — as were many of Radio Shack's CB walkie-talkies.

Throughout the 1990s, Radio Shack continued with its walkie-talkie offerings, although selection — as with other manufacturers — had diminished. Its 1996 annual catalogue showcased five units, including its then top-of-the-line **TRC-232** — just 3.4 watts output, despite 40 channels and multiple functions, including an RF meter and scanning capability.

The **TRC-222** — a 2.5-watt, 40-channel radio — was priced at less than half of its big brother, but offered many fewer features.

A peek at Radio Shack's 2000 catalogue shows what was then a new offering from the popular electronics company: The **TRC-238** — designed with water-resistant properties. (*No, you didn't want to drop your walkie-talkie in the lake when trying to land that big fish.*)

As is still the case with numerous current electronic gizmos, it was marketed as a "sports" CB. In fact, despite only five 27-MHz walkie-talkie products back then, Radio Shack advertised them as "a great way for family and friends to stay in touch while hiking, fishing, traveling, at amusement parks, job sites, vacation spots, or just around the neighbourhood. You can communicate with other walkie-talkies and CBs in vehicles and homes."

## Those All-Important Accessories

When you purchase a walkie-talkie, you'll want to add to it, as is the nature of this hobby. That's a bit of irony, since handie-talkies are made as mobile units.

Starkville, Mississippi-headquartered **MFJ Enterprises** manufactures an endless array of radio accessories, including antennas (portable, mobile and base), power supplies and speakers. Its **MFJ-4225MV Voltage Switching Power Supply** < <http://bit.ly/ktDwlU> > is a tank in a compact 3.7 lbs. It's rated at 25-amps surge, 22-amps continuous at 13.8 VDC and adjustable voltage from 9 VDC to 15 VDC.

When I'm not powering my Cobra 148 GTL SSB mobile radio as a base CB off the five-way binding post, I'll use the power supply's cigarette lighter socket to power my handie-talkies, including the full-featured Cobra WX ST. And the **MFJ-281 ClearTone Speaker** < <http://bit.ly/mPyIqu> > is a tiny, but mighty performer, as well, providing top-notch audio with my radios.

Another popular handie-talkie accessory is the rubber ducky antenna that screws onto both built-in, center-loaded and simple telescopic antenna mounts. While reception and transmission won't reach maximum potential, this slide-on rubber ducky does prevent you from bending the antenna on a tree branch, or — worse yet — *someone's head*.

## A Welcome Companion

I'm quite fortunate to have two hobbies that will last me a lifetime: Golf and radio communications. Just like when I reminisce about Jack Nicklaus and his heyday in the 1970s, I can also fire up my vintage radios and relive my youth in the 1970s. And like modern golf gear, today's handie-talkies are big performers.

When on the road, on the trails or by the fishing hole, my CB walkie-talkie is a constant companion.

# A Made-For-DTV Mystery (Continued)

## Second of Two Parts

by Phil Karras, KE3FL  
<http://cs.yrex.com/ke3fl>

**I**n Part I of this *made-for-DTV mystery*, we focused on my friend's reception problems after the switch to digital television, and ended up using two antennas for Washington and Baltimore to get the stations she thought she needed and to get one in particular that she really wanted.

We got familiar, as well, with the *TV Fool.com* DTV advice sheet for the 21771 ZIP code in Mount Airy, Maryland — where my neighbor and I live. (Visit < <http://www.TVFool.com> > on the Web. — Ed.)

Like my neighbor, I had some reception challenges, too. You'll recall, in her case no signal combiner was needed. My case was similar but the solution ended up being different, even though we both live in 21711.

Originally my location was an *analog TV heaven*. No outside antenna was needed and no amplifier was necessary — even with splitting the VHF signals four ways. I did end up using a homemade turnstile-bowtie UHF antenna to get the missing UHF stations we wanted and an antenna switch to choose between the antennas.

With the switch to DTV, I noticed it was difficult to receive TV signals with a portable television in the house that previously picked up the analog signals — almost too easy to view — from the living room or dining room with just the whip antenna. The signals were ubiquitous.

The different locations of my house and my neighbor's — described in Part I — caused very different problems. As we pointed out, as in real estate, DTV reception has everything to do with *location, location, location*.

I have always been interested in over-the-air (OTA) TV and radio, as well as all sorts of antennas, so it was no surprise to my family when I started exper-

*In Part I, we followed the journey of Phil Karras, KE3FL, as he successfully helped a neighbor solve her DTV reception problems through some deft antenna work. In Part II, the saga continues with the revelation that signal reception can be very different even within the same ZIP code.*

*(Read that: Phil's house!)*

imenting to see what digital stations we were likely to be able to get from our home in Mount Airy.

I think what has surprised all of us most was how long it took to get a good feel for what the changes have meant for our OTA DTV reception. I started this process at our home long before my friend called with her TV reception problems, so I had a good idea of the things to try for her, as we chronicled in Part I.

One of the things making it more difficult to test antenna arrangements is that in the DTV era, a station cannot just be tuned to. The viewer has to perform a *scan* for available stations and then — if a directional antenna is used — another *scan* to add channels that are received from another antenna heading.

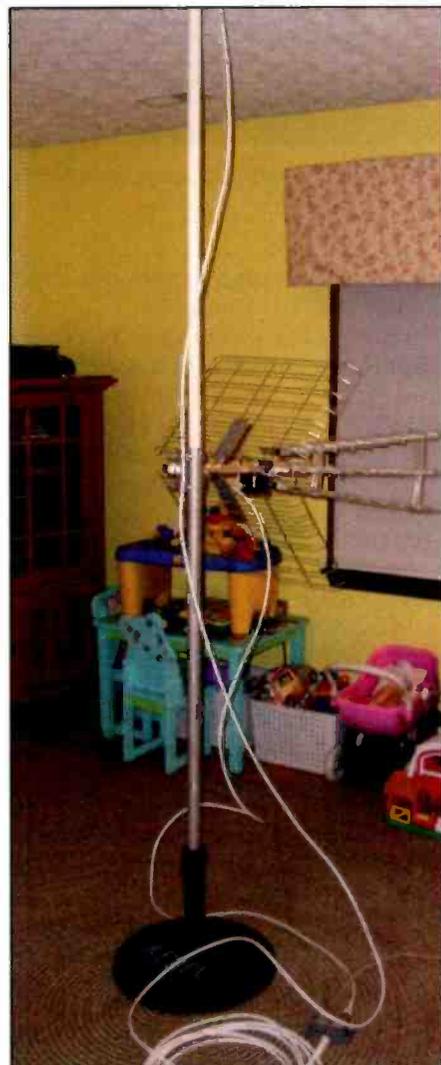
This procedure has to be done, as well, if another antenna is used or added to the mix. It really slows down the process of finding and testing the reception of the stations.

I bought a 7-inch, portable Auvio DTV for testing antennas, so it not only had to have a portable antenna but a means for attaching an external antenna.

I have been pleased except for the fact that it *does not* have a signal level indi-

---

**PHOTO 1:** Here's the high-gain antenna in the living room of Phil Karras' home in Maryland. (Courtesy of Phil Karras, KE3FL) →





**PHOTO 2:** A high-gain antenna is positioned in the attic.

cator. A trick I came up with was to never do a new scan no matter what.

I did one initial scan and now I do an *Add Channel* scan to add any new stations. These options are presented to the viewer in the DTV converter box operation MENU.

In this way my little test DTV has all the channels I can get from all my antennas — even those picked up with my test or temporary antennas. I no longer have to scan for channels when I want to test a new antenna, direction, height or location, unless I believe the new situation may be able to get a new channel. I just tap through the saved channels I already have and record if they are receivable or not.

Many of you may be wondering why with all the other ways of getting TV one would even bother with OTA TV. This is a good question.

If I could get all the local programming I'm interested in via one of the providers, I might not be *as interested* in doing this. But curiosity drives me, anyway. I have to *know* which of the stations we want to watch or listen to can be received in our area.

Also, we've had times where the cable went out and then the only way to view a show was to use OTA TV.

### 'Back in the Day' to Today

We live in a very RF rich area between Baltimore and Washington D.C. and have enjoyed the TV and radio programs from both cities, as well as some other areas.

With analog TV we were able to get 17 stations:

- **Baltimore:** 2, 11, 13, 24, 45, 54, and 67
- **Washington:** 4, 5, 7, 9, 20, 26, 50, 62, and 66
- **Others:** 22 (WMPT) south of Baltimore.

I started with the TVFool.com lists for reference. The following stations were listed as *green* — those stations in ZIP code 21771 we should be able to receive with only an indoor antenna: 2, 4, 5, 7, 9, 11, 13, 14, 20, 22, 24, 26, 32, 46, 50, 54, 62, 66 and 67 — a total of 19.

Grouped by location, they broke out like this:

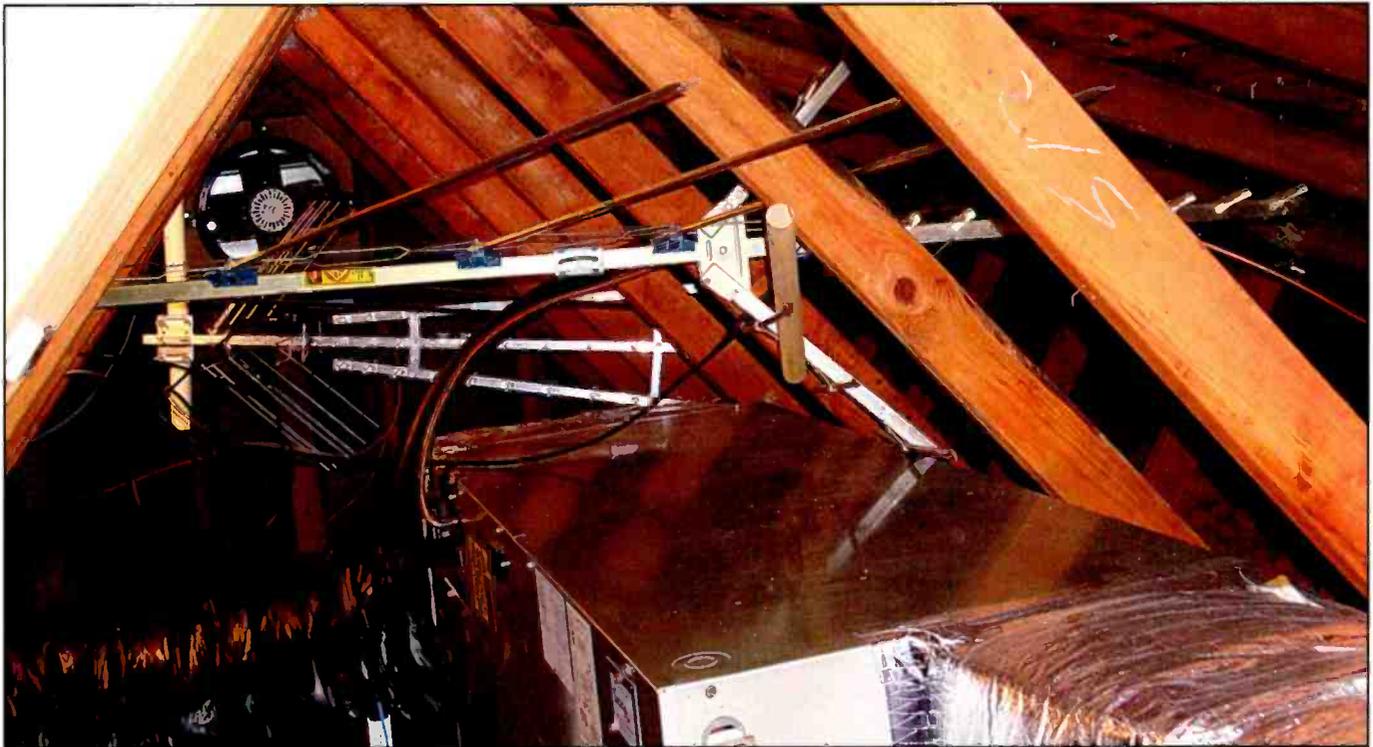
- **Baltimore:** 2, 11, 13, 24, 45, 54, and 67
- **Washington:** 4, 5, 7, 9, 14, 20, 26, 32, 50, 62, and 66
- **Others:** 22 (WMPT) south of Baltimore.

**NOTE:** TVFool.com lists *Fox 45 Baltimore* as an actual Channel 46 and nothing listed as the virtual channel — which is, in fact, Channel 45. At least that's what my TVs say.

I point this out to show that the online tools can only list what they have received from the FCC, the stations or you if you find an error. They *cannot know everything* and they are *not* always correct. Just keep that in mind. Things change.

With just a simple portable DTV with telescoping antenna I was only able to receive Baltimore station Channel 2.

Channels 11, 13, 45, 54 and 67 were either missing or NWW



**PHOTO 3:** The old antenna can be seen in the attic.

(*Not Worth Watching*) last winter. No Washington D.C. stations were received with this setup.

Back in the analog TV days I wrote *Phil's Easy Way to Improve Your UHF TV Reception*, (*Popular Communications*, January 2003, pages 6-10), in which I determined with either rabbit ears or the attic antenna I was unable to get *good ol'* analog UHF-TV reception. The dwelling's original owner used poor coax and no amplifier from the attic antenna to a four-way splitter — further reducing the signal levels.

So I added a UHF homebrew turnstile bowtie antenna using twin-lead feed line to an antenna switch to our VCR and TV. After this addition, we were able to get the UHF stations we were interested in from both Baltimore and Washington.

Now, after the DTV changes, most stations are either high-VHF or UHF and with these higher frequencies comes more loss in the coax. Add to that the reduced power mandated by the FCC and the situation simply makes it even more difficult to receive these stations from our location.

When I finally got around to looking at the situation after the switch to DTV, I discovered we had lost reception of all of our Washington D.C. TV stations when using any antenna except the old VHF-UHF antenna in the attic.

The attic antenna is still able to receive channels 2, 7, 9, 11, 13, 24, 45, 54, 66 and 67 with both 7 and 9 being around the signal level of 75 (+/- 5). The UHF antenna used by the TV room VCR and TV had died and was not receiving very well at all.

When I removed it, I found the wires making up the antenna had broken. The UHF, turnstile bowtie over the kitchen, which was used by the master bedroom VCR and TV, was still in good condition — but the mast was not.

I replaced the mast, moved my 2-meter, amateur radio J-pole to this mast, added a few feet of height, and then also attached the UHF TV antenna.

This UHF antenna was able to receive channels 2, 11, 13, 24, 45, 54 and 67. Channel 7 came in on-and-off — sporadically. Channels 9, 62 and 66 were NWW.

In essence, this antenna only receives the Baltimore stations with the exception of the Washington ABC station on *actual* Channel 7 — sometimes. This in itself is interesting since Channel 7 is a high-VHF station not a UHF station, 174 to 180 MHz. This is not too far off from my J-pole antenna's design range of 144 to 148 MHz and 440 to 460 MHz.

After I noticed that Channel 7 wasn't all that far off from a 2-meter J-pole's designed frequency range, I tested every antenna I have — including the 80/40-meter dipole — to see if any of the Washington stations were able to be received with them.

The stations received with the 2-meter/70-cm J-pole, which is a bit higher than the bowtie turnstile antenna on the same mast over the kitchen, were: 2, 11, 13, 24, 45, 54 and 67. These are all Baltimore stations, with no Washington stations in the mix.

I also bought the same high-gain, UHF TV antenna I had bought for my friend. I mounted it about 3 to 4 feet up from the floor in the living room in various locations and angles to see what could be received without an amplifier.

I chose the living room because the windows face south toward Washington D.C., and the previous owner of our house had mentioned he could get all the Baltimore and Washington stations from his TV in the living room with just an indoor TV set-top *rabbit ears* antenna. (See *PHOTO 1*)

I used the portable DTV for the tests on all antenna installations I've designed and tried. Once I could receive the stations using this setup I would run coax to the new DTV in the bedroom to see how it was doing with 100 feet of coax.

Once I found the correct angle for getting the Washington stations, I moved it a bit from there to see if I could also get the Baltimore stations I'd lost and I found an angle that seemed to work well enough for both of these cities.

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As in any directional antenna installation, sometimes compromises are made to receive as many of the stations wanted as possible. Compromises are made on having the antenna in the attic rather than outside; of course, there is some signal loss because of this, as well as not using a rotator to point in the best direction for each station.

In my case, I made both of these compromises because in the attic the antenna will last for decades. The original VHF/UHF antenna there is now more than 40 years old and looks and works like new.

An attic installation precluded the use of a rotator in my case. So I was hoping for a pointing angle solution to receive signals from two cities: Baltimore stations, almost due East at 88 degrees from true North; and Washington, D.C. stations, almost due South at 177 degrees from true North.

As you can see, any antenna pointed directly at either location will be broadside to the other. The compromise with the original attic antenna was to point it about south-south-east (SSE) so it is mostly pointed to the Washington stations, but not perfectly broadside to the Baltimore stations. For the VHF stations, this worked very well for many years and still does. This antenna was left as is.

The high-gain, UHF-only antenna was pointed more toward Washington. (See **PHOTO 2**) The old VHF/UHF antenna — used for only the VHF stations — was still pointed in its original direction. (See **PHOTO 3**) Both antennas were in the attic and now combined using a Radio Shack VHF/UHF Splitter-Combiner, #15-2586. (See **PHOTOS 4 and 5**)

We were able to receive 16 channels: 2, 4, 5, 7, 9, 11, 13, 14, 20, 24, 26, 32, 45, 50, 54, 66 and 67 last winter:

- **Baltimore:** 2, 11, 13, 24, 45, 54, 67 (Maryland Public Television — WMPT)
- **Washington:** 4, 5, 7, 9, 14, 20, 26, 32, 50, 66
- **Missing:** 22 (WMPT-south of Baltimore), and 62 — both Maryland Public Television.

This is almost all of the original analog TV stations we were ever able to receive. The two missing stations — 22 and 62 — are both WMPT/PBS, which we can get from Baltimore 67.

On top of that we were never able to get Channel 32 when it was analog, which is Howard University's PBS station (WHUT) in Washington, D.C. So, with the

new antenna arrangement we can now get three PBS stations: WETA, Washington D.C.; WHUT; and Baltimore/WMPPT, usually with different programs.

When I say we receive 16 channels, I am referring to 16 different numeric channel numbers. The TV counts every subchannel as a different channel and so it counts the total as something much higher.

We are not able to get all the original analog stations with the new dual antenna arrangement, but then we're only missing two duplicate WMPT/PBS stations and I'm getting two new stations, 14 and 32.

Channel 14 is a Spanish language station and no one in our household speaks the language. But the addition of Channel 32 is very welcome, indeed.

At the beginning of this article I listed the TVFool.com green stations. It took some work, but I've gotten almost all of those stations with this antenna arrangement.

It could not be done with anything less, so its *green* list, in our case, ended up being more like a *yellow* list — loosely designated with this requirement:

"An attic-mounted antenna is probably needed to pick up channels at this level and above."

Final list of stations picked up last winter included:

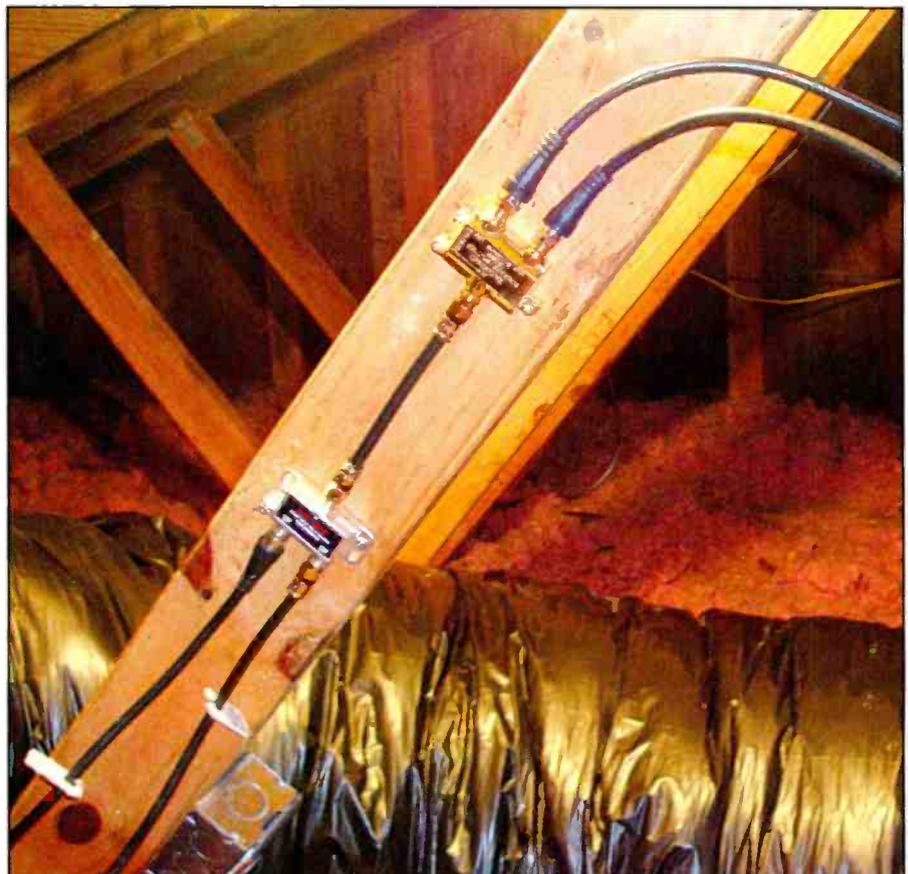
- **Baltimore:** 2, 11, 13, 24, 45, 54, 67
- **Washington:** 4, 5, 7, 9, 14, 20, 26, 32, 50, 62, 66
- **Others:** 22 (MPT) on the WRC-TV's tower.

Our *missing stations* are 22 and 62 — both the same as 67 and all MPT PBS stations.

### Six Months Later . . .

The final work for all of this was done during the winter months when it was comfortable to be in the attic. Once spring had completely sprung, all the leaves were on the trees and bushes. As a result we lost Channel 4 (WRC-DT, NBC, Washington, D.C.); WETA, Channel 26/25; and WHUT Channel 32/33.

I was going to start testing outside antennas mounted on the roof but remembered I had a homebrew UHF-bowtie antenna mounted to a broom han-



**PHOTO 4:** Combining UHF and VHF antenna systems, the combiner-splitter allows the lines to go to two rooms.

dle and mounted on a corner of my garage work bench.

I took the portable DTV out to the garage and found it received WETA just fine. Adding 100 feet of good, quality, RG-6 coax allowed us to bring the signal to the bedroom where I measured the signal level at around 60 and we were once again able to watch WETA, Channel 26 and Channel 32. But WRC-DT Channel 4 (28) and Channel 7 and 9 from Washington were still missing.

Since WETA is the station we watch most, this temporary summertime solution is satisfactory for now.

Another point is that if this simple bowtie antenna in the garage can get Channel 26 with a signal level of 60, then another simple turnstile-bowtie up on my HF antenna mast, may be all that is really needed for a UHF antenna here — just as it was for the old analog UHF stations.

Only more testing will tell for sure. My next antenna project will be a three-element, Yagi-turnstile-bowtie antenna for the UHF stations I'm still missing in the summer.

## Shopping Ideas and Advice

Another useful online site that has a wide selection of antennas and amplifiers, as well as other DTV-related items is: < <http://www.solidsignal.com> >.

I came across this site while doing a Google search and have now used them and trust them. The people there are very helpful. This site also has a UHF/VHF Separator/Combiner for less than \$2. Visit: < <http://www.solidsignal.com/pview.asp?p=UVSJ> >.

The other thing you should do before going to your satellite or cable company is conduct an online search for whatever you're seeking to see if someone is selling that item on eBay or some other site for less. I've simply been amazed at what I've been able to find in that way.

## The 'Take-Aways'

The lessons learned are to do your homework. First check which channels your location *should theoretically* be able to receive at TV-Fool.com. Remember, though, you may not be in the best location for this theoretical reception and things may have changed for the worse.

Check which frequencies these channels are really on so you know if you still need a VHF antenna, though you can get

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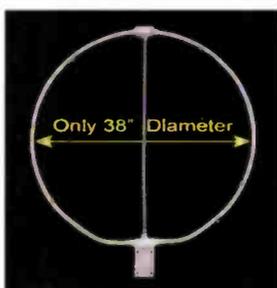
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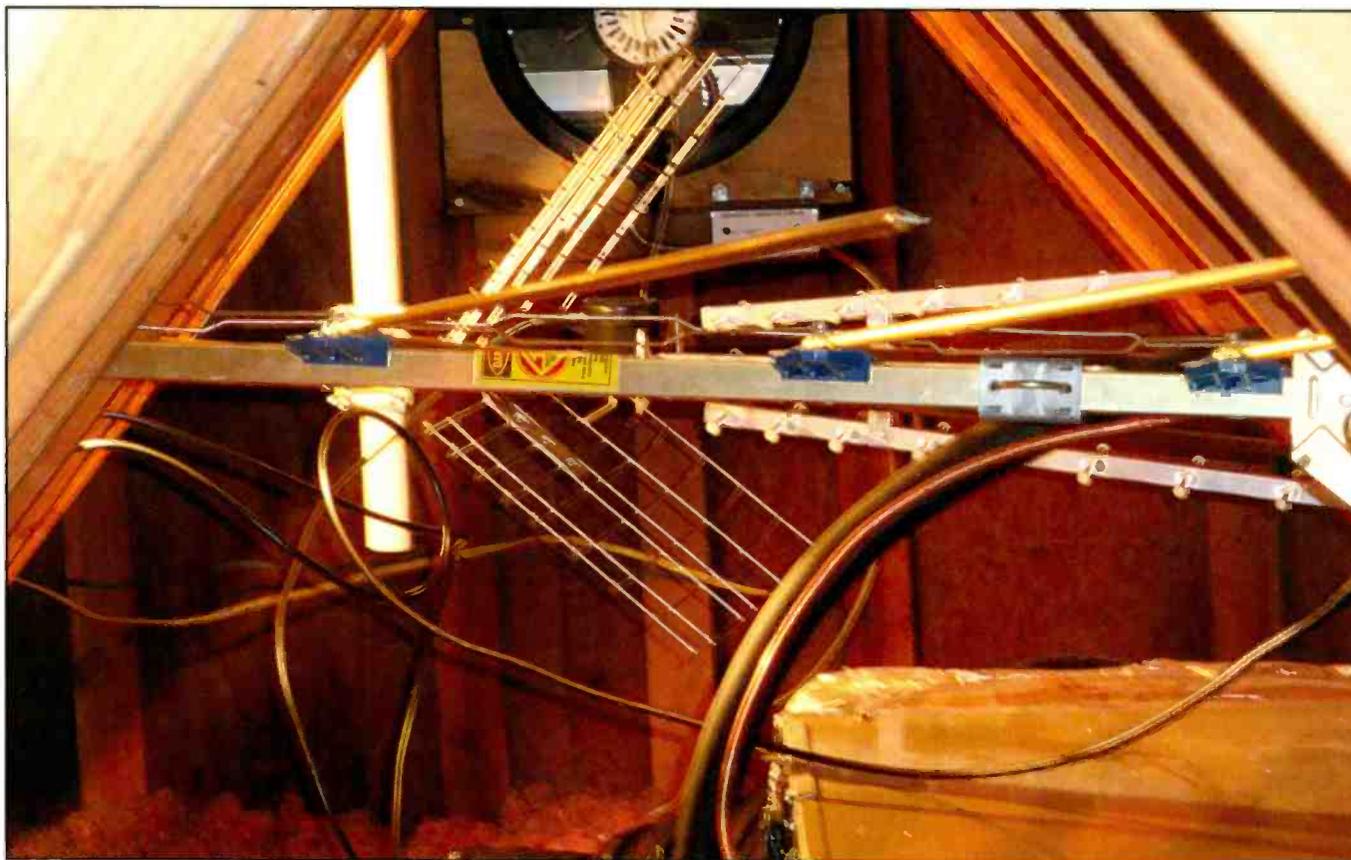
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**PHOTO 5:** The two antennas in the attic. A lot of metal is needed for reasonable DTV reception in the 21711 ZIP code of Mount Airy, Maryland.

away with just TVFool.com to see the *actual* channel — which, if you remember, the relationship tells you which are VHF (2 – 13) or UHF (14 – 69) channels. You can look up the *actual* channel frequency on en.wikipedia.org: < <http://bit.ly/mIs3jR> > It shows all the currently-assigned channels and frequencies. It also shows all the channels that used to be assigned to analog TV and which have been reassigned and to which services. So be sure you're looking at the current allocations.

## Antenna Advice

If you do not receive signals from your antenna, try rotating it and try a bit more height, if you can.

If this does not work, try relocating it. As my shift from the attic antenna to the garage antenna shows — 20 feet to the east and 10 feet lower in height — signals clearly depend on the location of your receiving antenna.

Even a few inches may be enough to make a difference. Or you may need more. This is the time-consuming part of the antenna location project.

Remember, sometimes the smallest location difference, to get around whatever object is blocking the signal, may be all that's needed.

A case in point: Channel 4 was impossible to receive from any of my TV or VHF/UHF amateur radio antennas. It is now on the Channel 48 frequencies. It does not come in at all from the turnstile bowtie antenna above my kitchen or from the 2-meter/70-cm, J-pole antennas on either side of the house, yet I can receive it at times with a simple dipole antenna made of

aluminum foil taped onto the kitchen window — much lower than the bowtie and J-pole antennas and about 5 feet to the east of them.

Also, of all things, I can receive it pretty well using my HF, 80/40-meter, amateur radio dipole that extends the length of the house and beyond. Again: *Location, location, LOCATION!*

## In Conclusion . . .

I hope this helps you find a way around the loss of signals due to DTV's lower signal power, possible different frequencies and possible different locations of transmitting antennas for OTA DTV.

We were all told that the lower power would cover the same reception area, *but I for one do not believe it.* I've seen two cases — my own and my friend's — which indicate that enough work to ensure the same reception was not done prior to the change.

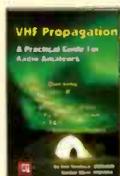
We do not receive the same signals at the same strength we did before, *period!*

If you're lucky enough to live close to the antennas then you may not notice any difference and perhaps even some improvement. But if you're a greater distance away — like me, at about 25 to 30 miles from the Baltimore or Washington, D.C. stations — then you may be in for a bit of work to get some of the stations back. *But that's the thrill of the chase, isn't it?*

If you want to read more about my upcoming attempts to get Channels 4 (48), 26 (27) and 32 (33) using a three-element, Yagi-turnstile-bowtie antenna on the roof, visit: < <http://cs.yrex.com/ke3fl> >.

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## Lew McCoy on Antennas

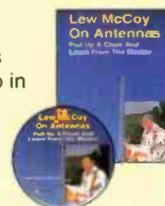
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# Sending a Homemade DTV Antenna Outside

## Second of Two Parts

By Richard Fisher, K16SN

**I**n the two years since the switch from analog to digital television (DTV) broadcasting, tinkerers and lots of people in the innovative *make generation* have been satisfying the do-it-yourselfers (DIY) with simple antenna designs.

Last month in Part I, *Pop'Comm* featured a simple, multi-element bowtie DTV antenna suitable for indoor use.

For Part II — by building a new version with a slight change in element spacing and overall dimensions — we take the antenna outside.

As you'll see, it follows the same basic layout as the indoor version, only somewhat more compact — a smaller board for its foundation, tighter spacing between elements and a much smaller overall footprint. That should be good news to people who live in antenna-restricted communities and want to keep their DTV-reception profile as low as possible (**Photo A**).

As with the indoor version featured last month, the outdoor antenna has four bowties made from metal coat hangers with the lacquer sanded off of them.

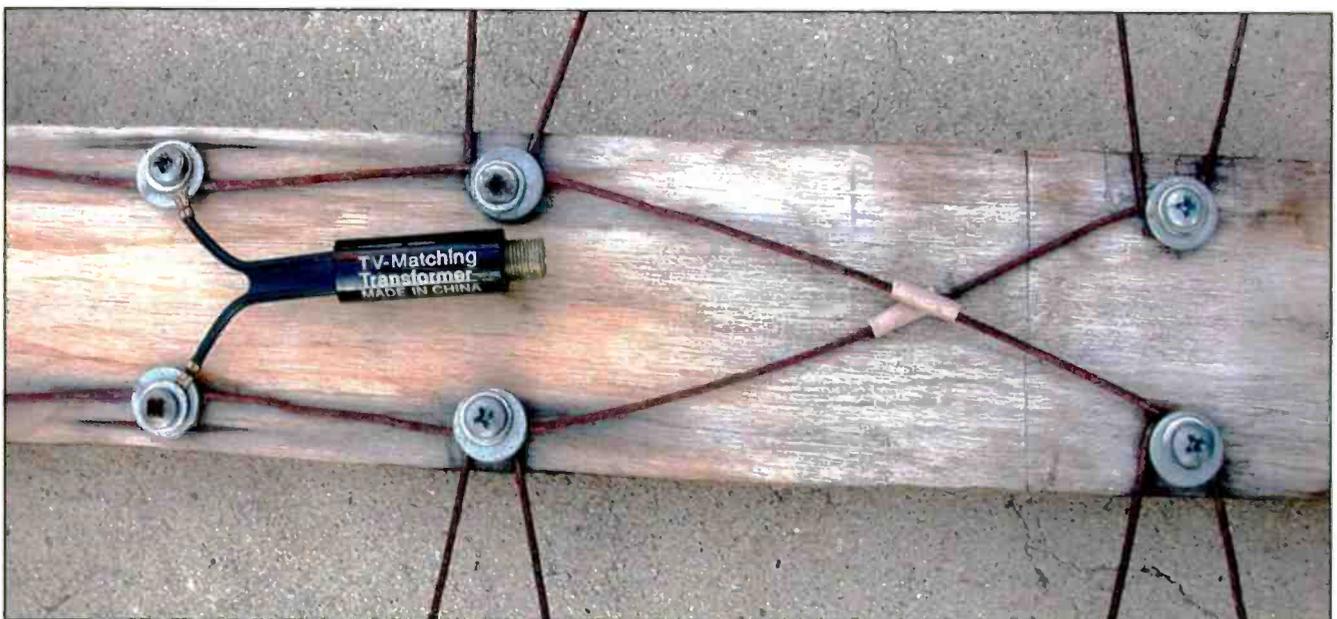
Each bowtie has two sideways 'V'-shaped elements for a total of eight metal pieces.

Additionally, there are two phasing lines that interconnect the bowtie parts. The antenna is fed in the center of the phasing lines between the four bowties — two above and two below.

A small, inexpensive impedance-matching transformer is placed at the feed point to match the 300-ohm impedance of



**Photo A:** This little homebrew DTV antenna's coat-hanger elements have turned rusty red, which helps it blend nicely into the side of a palm tree — and is barely visible from the ground. (Courtesy of K16SN)



**Photo B:** The impedance transformer and small pieces of insulation on the phasing lines are visible in this close-up picture of the antenna.

the DTV antenna to the 75-ohm coaxial cable running to your DTV converter box. (*The inexpensive impedance transformer can be found at many stores, including Radio Shack and Walmart. – Ed.*)

Other than wood screws, washers and a couple of pieces of insulation to keep the phasing lines from touching where

they cross, there's nothing more needed to build this antenna.

A piece of three-quarter-inch plywood that is 23.25-inches long and 3-inches wide is used for the base. The accompanying illustration shows the placement and spacing of the screws and washers that hold the coat hanger pieces in place (**Figure 1**).

Each side of the bowtie elements is 8-inches long — in other words each side-way 'V' is about 16 inches long. The element bends in the middle around the screw holding it in place, making each side of the 'V' 8 inches long.

The antenna shown in the photographs has been hanging on the side of a palm tree since early January. The elements show a good bit of rust — which is good, because it blends in with the color of the tree's bark. From the ground, the antenna is almost invisible. It still performs spectacularly.

You'll see that light brown colored insulation was chosen to keep the phasing lines electrically separated and to carry on the *camouflage motif* (**Photo B**).

### How Does It Perform?

In fairness, Southern California — in my case, midway between Los Angeles and Palm Springs — is a fairly rich DTV environment. There are antennas all over famed Mount Wilson, which is about 45 miles west of me. Other stations broadcast from high points around the region, as well.

That said, 115 stations have been logged using this little antenna — many more than my DTV-watching neighbors. I cannot account for its success, choosing, rather, *not to mess with it*, as the adage suggests.

For my ZIP code area, the Federal Communications Commission's DTV Reception Map Web site < <http://bit.ly/mPkhYV> > says I should be receiving strong signals from 23 stations. There are subchannels of those 23, as well. (*You can see what strong signals are in your area by going to the site and putting in your ZIP code. – Ed.*) Click on a station in the list along the left of the page and a pop-down gives you information on the antenna's compass direction from you, the strength of the received signal you should have, and so on. A yellow antenna icon pops up on the map, as well (**Figure 2**).

Antenna Web also provides reception maps < <http://www.antennaweb.org/> > lick on *Choose an Antenna*, then type in your ZIP code. You'll see a map with your location. Click *Continue* and you'll be taken to a page listing stations in your area.

Pictures and information for the indoor DTV antenna featured in Part I in August's *Pop'Comm* are featured on *Pop'Comm On the Web* at: < <http://www.popcommmagazine.blogspot.com/> >. They will be helpful in building the outdoor antenna in this month's Part II.

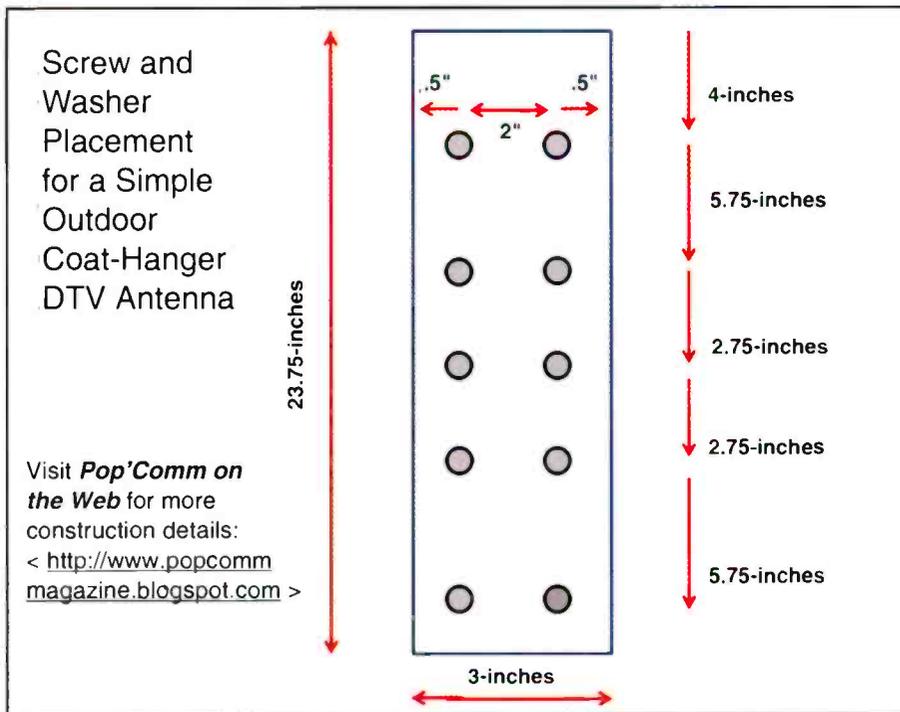


Figure 1.

Figure 2: A handy DTV Reception Map on the FCC Web site can provide lots of information about the stations in your reception area and can pinpoint where their antenna is located in relation to your receiving antenna. Visit: < <http://bit.ly/mPkhYV> >. Simply put in your ZIP code and you'll be good to go.

# Monitoring How 9-11 Changed Us Forever

**10 Years After the September 11 Terrorist Attacks, We're Listening So Differently**

## Commentary

By Tom Swisher, WA8PYR

It's likely that nobody who saw the planes crash into the towers at the World Trade Center, the Pentagon or the crash aftermath in rural Pennsylvania would be surprised by how much the world has changed since September 11, 2001.

We seem to parse reality into two distinct eras: Pre 9-11 and post 9-11. Ten years later, the changes in so many ways are painfully obvious.

More subtle, though, may be how different the world of emergency communications and radio monitoring is today compared to that of a decade ago. It's a thoroughly mixed bag.

Not only have security concerns led in some instances to an increasing inability for honest communications monitoring hobbyists to hear what's going on, but communications procedures have dramatically changed.

Technology, both in the communications field and hobby radio, has grown and matured to the point that we now have capabilities no one even *dreamed of* 10 years ago.

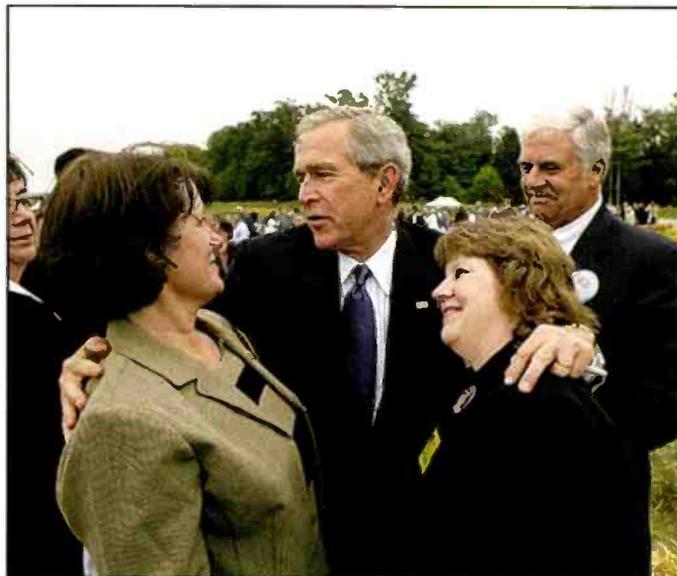
## The Interoperability Initiative

*Change?* Inter-agency communication is *the big one*. When 343 firefighters and 60 police officers died in the collapse of the towers at the World Trade Center, a major shift in policy began — in part because on 9-11, incompatible radio systems meant that some responders were unable to hear an evacuation order.

While some in local government communications had been pushing interoperability for many years prior to the attacks, and some areas were already well on the road to complete interoperability, communications in general were treated as an afterthought.

In many places it was occasionally inconvenient — but perfectly acceptable — for first responders to operate on incom-

*“The big changes we’ve seen, and will continue to see, are in the sheer variety of systems, technologies and situations to monitor and ways to monitor them, which in turn should keep the hobby fresh and interesting for years to come.”*



On the fifth anniversary of the September 11, 2001 terrorist attacks, President George W. Bush meets with family members of United Airlines Flight 93 victims at the crash site in Shanksville, Pennsylvania. (Courtesy of The White House)

patible radio systems. Post 9-11, though, the federal government began pushing heavily for all first responders nationwide to be able to directly communicate with one another.

Increased interoperability efforts initially took the form of best practices such as common frequencies and plain language — and improved education of responders in how to communicate with one another. These were all relatively simple steps that were already in effect in many areas but improved and enhanced overnight by federal interest and funding.

Other areas already had unified communications, either through the use of common VHF or UHF frequencies, or through shared trunked radio systems.

Interoperability efforts have continued to evolve into a greater emphasis on unified local and regional communications systems, or simply improvements to existing systems through shared planning efforts.

Interoperability is more than just common equipment and frequencies, though. Education, shared planning and mutual understanding is very important, as well. Many areas were then — and are to this day — completely and utterly fragmented from a communications standpoint, with adjacent agencies unable to communicate with one another.

Often this is due to poor planning and cooperation, but in some places is due to a rather extreme, highly developed and very narrow local-only mindset, with some agencies or jurisdic-

dictions unwilling to even talk to their neighbor agencies, even when the capability exists.

An unfortunate tendency exists to throw money at the problem in the form of technology and expensive gadgets, but education and planning are equally important, if not more so. They're often relegated to a back seat, but greater emphasis needs to be made on education and planning.

The focus on interoperability has also led to a debate over some very basic questions — such as: “*Who is a first responder?*”

Some believe that firefighters, Emergency Medical Services (EMS) and law enforcement are the only responders who qualify. Others say that all basic government services are included. Life safety services certainly qualify, but shouldn't the road maintenance crews also? Or the water department? After all, how will the fire trucks get to the scene of a disaster when large trees and other debris are blocking access? Or when the water lines are damaged and fire crews have no water?

The incident commander will need those road crews to clear access, and the water department to get the water back on. It works best if everybody can talk to one another.

“*Who is in charge?*” The incident commander calls the shots and broadly defines the path communications at an incident will take. But fire, EMS and law enforcement often have wildly different ideas about how to communicate — not only with other agencies and disciplines, but even among themselves.

In most areas, the fire department is in charge, at least until fire suppression and life safety issues are dealt with. But what happens when, for example, a local police chief shows up in the middle of a rescue, insists on taking command and throws out the communications plan in favor of his own?

These and many other questions are being asked and debated by EmComm planners all over the country.

Ultimately, interoperability has improved communications, not only through additional frequencies and defined nationwide interoperability plans, but also for no other reason in some areas than by causing agencies and localities to take a very close look at how they communicate — then make improvements.

The introspection has put pressure on those agencies and jurisdictions which

## Pop'Comm September 2011 Reader Survey

Your feedback is important to us at *Pop'Comm*. It helps guide us to make the magazine even more valuable to you each month.

Please take a few minutes to fill out this month's Reader Survey Card and circle the appropriate numbers corresponding to the questions below. We'll pick a respondent at random for a year's free subscription or an extension of an existing subscription as thanks for your participation — so don't forget to fill in your mailing address and other contact information.

We encourage your comments and suggestions in the space provided, as well. Thank you.

*Last, but not least:* You can now take this survey online. See details below.

**On this 10th anniversary of the September 11, 2001 terrorist attacks, how would you rate the preparedness of the amateur radio emergency communications?**

Excellent	1
Good	2
Fair	3
Poor	4

**Has the proliferation of cell phones since 9-11 made amateur radio irrelevant in emergency communications today?**

Yes, for the most part.	5
No, cell phones are unreliable.	6
Depends on the size and scale of the incident.	7

**Are you active in amateur radio public service/emergency communications?**

Yes, enthusiastically.	8
Yes, but only casually.	9
No, but I'd like to get involved.	10
No, I have no interest in that part of the hobby	11

**When was the last time you were involved in a public service or emergency communications activity as a ham?**

Within the last month.	11
Within the last year.	12
Within the last three years.	13
Never have, but will someday.	14
Never have, never will.	15

**What is the area of amateur radio emergency communications that needs the greatest improvement? (Use the comment line.)**

### Take This Reader Survey Online

You can now participate in this reader survey via the Internet. Simply go to *Pop'Comm On the Web*: < <http://www.popcommmagazine.blogspot.com/> > and click the link to the *Pop'Comm September 2011 Reader Survey*. It's quick and easy.

### And the Winner Is . . .

For participating in the Pop'Comm Readership Survey, the winner of a free subscription or extension is **Terry Stivers, KØZMN, of Greenville, Missouri**. Congratulations, Terry! And thanks for the kind words about how much you enjoy Peter J. Bertini's “The Wireless Connection” and “Shannon's Broadcast Classics!”

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before simply had no intention of even talking to their neighbor agencies on the radio, as well.

## Our Advancing Technology

In a word: *Digital.*

It's the wave of the future, and digital systems are popping up all over the country. The defined nationwide standard for public safety communications in the form of the Association of Public-Safety Communications Officials International's *APCO Project 25* has led to the rise of new, feature-rich wide-area systems in many metropolitan areas and some states. They are wonders to behold — allowing seamless communications and improved interoperability across counties, regions and states.

But digital is not necessarily a *good thing*. The lower costs and greater features available through technology, not to mention commercial competition, have led to the rise of competing digital technologies such as MotoTRBO and NXDN/Nexedge. While these are based on the same technology as P25, they're very different and very incompatible. And with various manufacturers each pushing their own flavor of digital, interoperability has suffered.

This is an unfortunate side effect of the unfunded FCC mandate for land mobile

licensees of frequencies below 512 MHz to narrowband their systems. Because these competing systems are designed more for business use and not so much for the public safety market, they're less expensive than P25 systems.

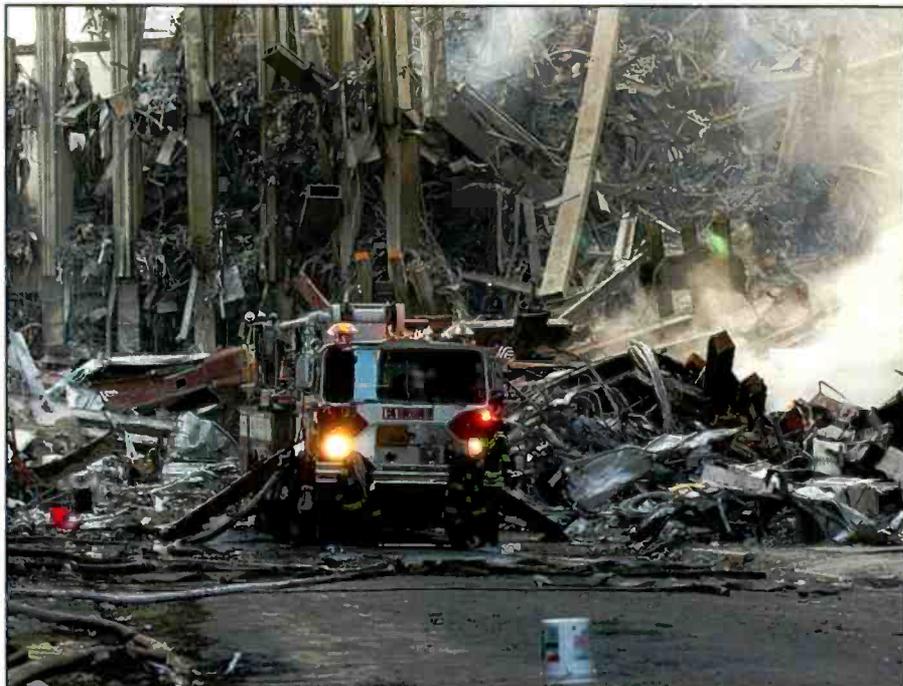
Faced with the necessity to replace their existing radio systems at the same time as budgets are getting tighter and tighter, some agencies — especially smaller ones — are opting for these less expensive systems, which just happen to allow them to *go digital*.

To these agencies, this is a good thing, because they're getting the latest technology for less money. Unfortunately, it's also smaller agencies which are more likely to have an inward-looking mentality and less likely to plan with their neighbors.

While analog would be a much better choice for interoperability over a non-standard version of digital, interoperability often is simply not a consideration.

The federal government has taken both interoperability and technology a step further, however, pushing for a unified, nationwide radio system for first responders, either dedicated or shared with commercial services.

This, in turn, has led to a debate among those in favor of such an idea, and those who have their doubts as to the wisdom and feasibility of such an idea. While both



Communications challenges during emergency operations at the World Trade Center on 9-11 sparked what has become an ongoing debate about interoperability within and between agencies and their first responders. (Courtesy of the U.S. Navy)

sides of the debate have valid points, there are many questions yet to be answered such as priority access, capacity, feature sets, direct (simplex) communications, backup systems and so forth.

Others are asking: *Is it really necessary to spend billions-upon-billions of dollars so first responders across the country can talk to each other — even though most never will? Wouldn't it be better to strengthen local and regional interoperability, where it's really needed and used on a daily basis?*

Technology is a wonderful solution for many things, but when one leaps without looking carefully, one often ends up where one does not want to land. There are many aspects to technology that must be studied very carefully before systems are implemented in order to avoid a communications nightmare.

## Encryption — It Can Be a Good Thing

*Ohhhhhhhhhhhhhhhhhhhhh . . . the dreaded E word.* Might as well be a four-letter word in the minds of some. But properly applied and properly administered, encryption can be a good thing.

The public safety community — especially law enforcement — has a legitimate concern about people being able to monitor their communications. Granted, it's not so much with honest *John Q. Taxpayer* wanting to listen on his scanner to what's going on in the neighborhood. It's a concern over lawbreakers being able to evade justice during their nefarious activities by listening to law enforcement communications.

Unfortunately, some agencies have taken encryption to extremes by switching it on for their entire systems, causing

inevitable problems for interoperability. How? First because agencies can no longer monitor the activity of their neighbor agency. Once on the scene, encryption can be addressed by having everyone switch to a common, unencrypted channel or talk group. But in the heat of the moment, the last thing anyone wants to do is have to think about grabbing the radio and switching channels.

Encryption key management can also be a pain. If someone loses an encrypted radio, the entire fleet must be re-keyed or the security afforded by encryption is lost. With newer systems this can be done over the air, but it's a somewhat time-consuming process and costs extra money to boot.

On top of that, older systems or those without the OTAR (Over The Air Re keying) feature must call all the radios into the shop to be re keyed, which is an even more time-consuming and expensive process.

As technology improves and becomes less expensive, the use of encryption is increasing. Fortunately, most agencies take a thoughtful, measured approach to encryption. The feature is most often only enabled on tactical or special operations channels or talk groups, while channels or talk groups used for normal daily operations are left in the clear.

Properly applied and used in conjunction with proper communications security procedures and other available communications tools such as Mobile Data Computers, encryption can enhance the ability of public safety to serve and protect while at the same time allowing law-abiding citizens to keep tabs on what's going on in the area.



Smoke billows over Washington, D.C., an ominous sign on September 11, 2001 that the Pentagon was under terrorist attack. (Courtesy of the U.S. Navy)

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This serves the best interests of not only public safety, by addressing their concern about eavesdropping evildoers, but also the interests of the average citizen who quite naturally has an interest in hearing that he or she is being properly protected — and for some people, that their tax dollars are being properly spent.

## It's Not Your Grandpa's 'High Frequency'

Let's talk about the high frequencies (HF). *Doesn't that mean shortwave? Isn't that a dead technology with all these fancy mega-buck radio systems around us, and satellites floating around overhead?* Dead it most certainly is not.

There has actually been something of a resurgence of interest in HF. We certainly do have all sorts of fancy communications systems surrounding us, especially in metropolitan and suburban areas. While VHF, UHF and 700/800 MHz systems are great for local use, there's still a need for reliable long-distance communications across a state or region, or even the country. These communications often take the form of health and welfare traffic, but coordination of incoming resources is always a necessity, and in a major disaster many of those resources are coming in from other regions and states.

In a catastrophe, long-distance phone lines and cellular networks will inevitably be overloaded or simply unavailable, and an inexpensive yet effective backup is needed.

With long-distance communications being a major necessity, HF systems are always an inexpensive way to do so, and have always been an effective standby. Ultimately all one needs is the proper transceiver, a power source and a piece of wire thrown over a tree limb to get the job done. This is the most basic way to do it in the field, and many amateur radio operators continue to provide valuable service to the community in just this manner.

However, using HF has always been a somewhat esoteric skill, and traditionally requires quite a bit of technical know-how and training. Propagation varies, and some frequencies will perform better than others based on the distance between two stations, weather and atmospheric conditions, and so forth. This makes frequency selection a difficult skill to master.

Enter *Automatic Link Establishment*. Simple to use compared to manually searching for the best frequency, ALE is a method for automatically initiating and sustaining HF radio communications.

Self-contained, with built-in computer control, transceivers work by constantly scanning a set list of frequencies and monitoring calls of other stations. When the address of a station is entered and called by an operator, the transceiver queries the other station and determines the best available frequency. Both transceivers then select that frequency and notify the operators that a link has been established.

Originally developed for military and government use, ALE has also entered the amateur radio community. With common computer-controllable transceivers available today and a laptop computer, amateur operators can enjoy the same capabilities as government stations.

This capability for both services means a much greater ability to serve the needs of responders in a major emergency.

Typically used to establish HF voice links, ALE can also be used to establish links for data communications — such as teletype, SITOR — or even email and text messages. ALE can be fun to monitor, too. With simple, free software and a computer-capable shortwave receiver, anyone can tune in.

## So What Does It All Mean?

All of these things, *and more*, have a bearing on how we as communications hobbyists do what we do.

Interoperability and technology have made it easier for responders to communicate with one another, and have improved things for communications hobbyists as well, opening up whole new worlds of fun stuff to monitor.

Some metropolitan and suburban areas have implemented big, expensive systems which have improved their communications but in some cases made it harder for people to monitor.

At the local level, many responders are still using the same systems they used in 2001 — with very few changes other than *better local cooperation*.

While lagging a bit in the implementation of new technology, hobby radio has generally kept pace and we're able to hear more and do more than ever before with those little boxes we carry around in our hands. The big changes we've seen, and will continue to see, are in the sheer variety of systems, technologies and situations to monitor and ways to monitor them, which in turn should keep the hobby fresh and interesting for years to come.

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# Embracing the Post 9-11 Communications Technologies

by Mitch Gill, NA7US,  
NA7US@yahoo.com

Osama bin Laden is no longer a threat, but Al-Qaeda is still out there and still trying to harm as many Americans and others as possible.

It is a matter of fact that security is being heightened since the threats have increased since his death. We all need to continue to be monitoring even though technology is changing to a digital world — and that includes radio communication.

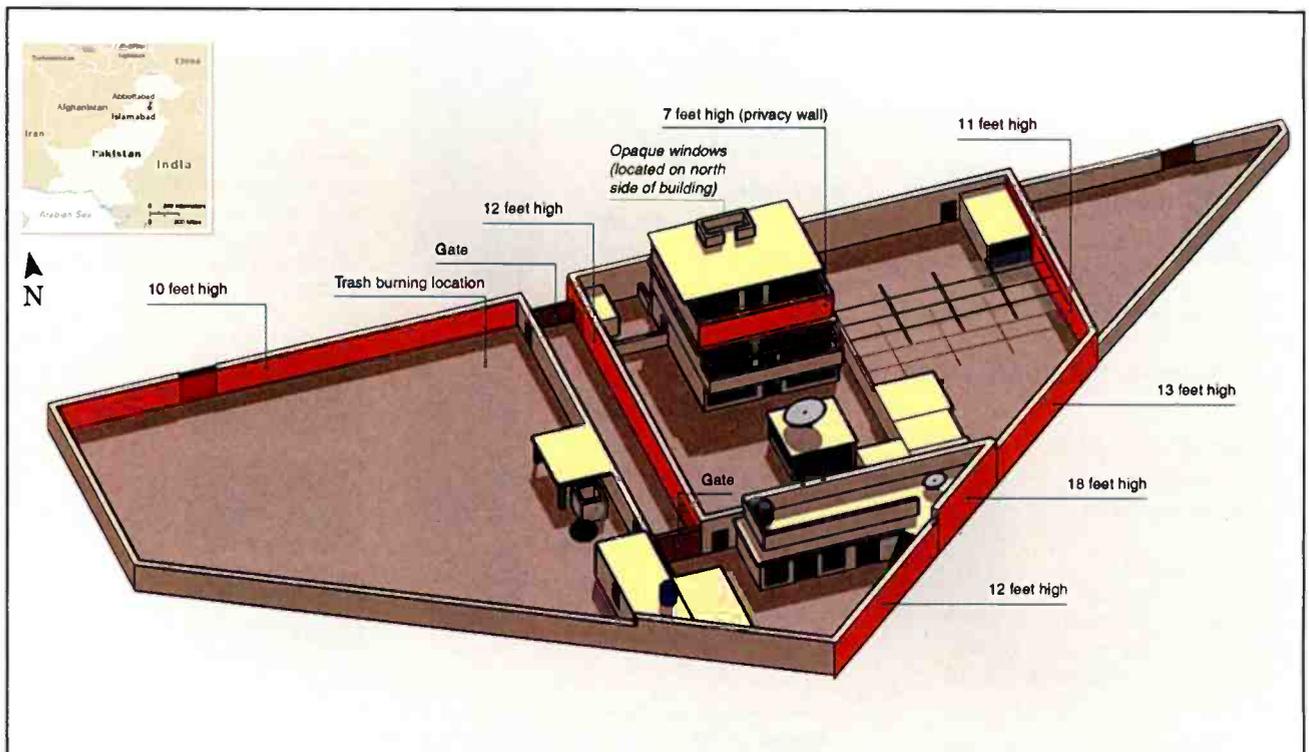
Rather than shun the new technology, I have chosen to embrace it. We all agree that if an electromagnetic pulse (EMP) < <http://bit.ly/mQX0E1> > or major solar flare occurs, we will lose our wireless capabilities that we enjoy.

We can also agree that an earthquake can temporarily knock them out, as well. I have discussed that tube radios may very well survive an EMP or solar flare. With all that being said, there will be many times where the new technology can help us to keep tabs on what is happening around the world, especially when it comes to acts of terrorism.

*“We all need to continue to be monitoring even though technology is changing to a digital world — and that includes radio communication.”*

A free Android application I use is called TerrDroid, created to keep users abreast of terrorist activity < <http://bit.ly/k5zynl> >. I can view it in map form or in a news format. I can also set the alarm to notify me of any incident worldwide or within a few hundred miles.

Another use for the Android system is for scanning emergency frequencies. I can put a small set of headphones on and be listening to the police either locally or many places throughout the world. I can use it for my amateur radio as I can look up repeaters around me, see when satellites



A Department of Defense illustration shows details of terrorist Osama bin Laden's *hideout-in-plain-sight* in Pakistan. (Courtesy of DoD)

will be within reach, and listen to repeaters.

The Android is just one system. There are others and they all have similar applications. It's a phone, scanner and Internet connection in one small package. I still carry my radios and still have my scanners in my mobile home and car — but when I have to go shopping with my wife I can now tolerate when she wants to look at every dress in the store because I have my headphones on listening and scanning through the frequencies.

## Homeland Security Vigilance

According to the Department of Homeland Security, Al Qaeda is now interested in destroying oil fields and natural gas storage facilities, including oil tankers. This was found in the items that Seal Team Six recovered from Osama bin Laden's hideout in Pakistan.

In short, focus on those areas to monitor. Check to see what is in your area and find the frequencies to monitor. Don't forget that the United States is the highest priority target for terrorists and not all of them will be foreigners. That is why we need to be even more vigilant in monitoring as many frequencies as possible.

I have heard that the homegrown terrorists may be using CB, FRS and GMRS radio communications. On the CB channels I would monitor AM and SSB. FRS and GMRS are on FM but if you hear strange, garbled voices, you might switch to AM or SSB even though they are not authorized for those frequencies.

## EMP and Some CBs

I have talked about electromagnetic pulse (EMP) in the past and have advised you to obtain tube-type radios. One area I forgot to mention is the old tube CB radios. Those may survive as well, and are great for short-haul communications.

In all likelihood, you will not be harmed by an EMP. It is not like electricity. But it could cripple our communications, power grids and so on — throwing us back to the Middle Ages. With as many unstable nations in the world that have nuclear weapons, this is unfortunately a possibility. We must always prepare for the worst and hope for the best.

## A Pop'Comm Salute

As I am writing this, it is close to

Memorial Day — a day, I have to admit, I used to look at as nothing more than part of a three-day weekend and the start of summer.

That all changed when I came back from Iraq and after knowing a few people who were killed over there. I can never look at this day the same way again.

So for this issue the salute goes to the families and loved ones of those who have served and died. *We are grateful for their service.*

## Radio Over IP

A fascinating new technology is known as *Radio over IP* or RoIP. Most people probably know about VoIP, or *Voice over IP*, when you have either used services such as Skype or know someone who has.

RoIP is similar, except that it pertains to radio communications. What is amazing about this technology is that you can choose who to listen to, who to talk to and who not to.

For example, there is a software program I have seen where I can listen to every police department in the state. I can choose a county or even a city or I can monitor them all.

I can also talk to others over the Internet just like a radio. It does not matter what frequency they are on, as the signal becomes digital and goes over the Internet.

## CB or Amateur Radio?

I am an amateur radio operator and love the hobby. It is phenomenal in an emergency — but that's because I know how to use it and what frequencies to use and how to set up repeater, offset frequencies and build antennas.

For the people who enjoy monitoring but have no desire to talk unless they have no choice, ham radio is not really the best answer.

On Citizens Band (CB) you merely turn to channel 9 and REACT (Radio Emergency Associated Communications Teams) <<http://www.reactintl.org/>> will respond and assist where they can.

If you are an amateur radio operator, I recommend both a CB and a 2-meter rig for EmComm use.

*Until next time, keep monitoring and be prepared for anything.*

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# BROADCASTING

## World Band Tuning Tips

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This listing is designed to help you hear more shortwave broadcasting stations. The list covers a variety of stations, including international broadcasters beaming programs to North America, others to different 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	12095	"BBC, Thailand Relay		0300	4055	Radio Verdad, Guatemala	SS
0000	15230	China Radio International	SS	0300	4780	Radio Djibouti	AA
0000	11595	Democratic Voice of Burma, via Armenia	BB	0300	9780	Republic of Yemen Radio	AA
0000	12070	Deutsche Welle, Germany, (via ?)	GG	0300	7200	Sudan Radio TV	AA
0000	12050	Deutsche Welle, Germany, Rwanda Relay	GG	0300	4965	The Voice- Africa, Zambia	
0000	11700	Radio Bulgaria	Bulgarian	0300	7475	Voice of Greece	Greek
0000	6055	Radio Exterior de Espana, Spain	SS	0300	7235	Voice of the Broad Masses, Eritrea	Tigrinya
0000	11780	Radio Nacional Amazonas, Brazil	PP	0400	12133u	AFN/AFRTS, Florida	
0000	6135	Radio Santa Cruz, Bolivia	SS	0400	12095	BBC, Cyprus Relay	
0000	15275	Radio Thailand		0400	11930	Belaruskoye Radio, Belarus	Belarussian
0000	9860	Radio Tirana, Albania		0400	15285	Broad. Service of Kingdom, Saudi Arabia	AA
0000	11765	Super Radio Deus e Amor, Brazil	PP	0400	9480	Deutsche Welle, Germany, via England	GG
0000	15385	Voice of America, Philippines Relay	CC	0400	7365	Islamic Republic of Iran Broadcasting	Kurdish
0000	13760	Voice of Korea, North Korea	SS	0400	9630	Radio Exterior de Espana, Spain, C. Rica	SS
0000	7270	Voice of Russia	RR	0400	11995	Radio France International	
0000	7285	Voice of Russia, via Moldova		0400	7395	Radio Japan, via Madagascar	Swahili
0000	9370	WTJC, North Carolina		0400	7310	Radio Romania International	
0100	9410	BBC, Oman Relay		0400	7375	Voice of Croatia, via Germany	Croatian
0100	11665	CVC-La Voz, Chile	SS	0400	9420	Voice of Greece	Greek
0100	17715	Radio Australia		0400	9735	Voice of Russia, via French Guiana	SS
0100	11925	Radio Bandeirantes, Brazil	PP	0400	11980	Voice of Turkey	TT
0100	11815	Radio Brazil Central	PP	0400	3240	TWR, Swaziland	
0100	9400	Radio Bulgaria		0400	3250	Radio Luz y Vida, Honduras	SS
0100	15190	Radio Inconfidencia, Brazil	PP	0400	3340	HRMI/La Voz Missionaria, Honduras	SS
0100	7215	RFE/RL, USA, via Germany	Kazakh	0400	4960	Voice of America, Sao Tome Relay	
0100	9430	Voice of Russia, via Armenia	SS	0430	6165	Radio National Tchadienne, Chad	FF
0100	7260	Voice of Turkey	TT	0430	9870	Radio Voice of the People (to Zimbabwe)	via Madagascar
0100	9980	WWCR, Tennessee		0500	7255	BBC, Ascension Island Relay	
0130	11905	Sri Lanka Broadcasting Corp.		0500	7295	Radio Algerienne, Algeria, via France	AA
0200	6977	Galei Zahal, Israel	HH	0500	15415	Radio Australia	
0200	5025	Radio Rebelde, Cuba	SS	0500	12035	Radio Exterior de Espana, Spain	SS
0200	7440	Voice of Russia, via Ukraine		0500	6010	Radio Havana Cuba	
0200	3280	La Voz del Napo, Honduras	SS	0500	11725	Radio New Zealand International	
0200	5045	Radio Cultura do Para, Brazil	PP	0500	9665	Voz Missionaria, Brazil	PP
0200	5910	Alcaravan Radio, Colombia	SS	0500	7240	RDP International, Portugal	PP
0300	11875	Radio Romania International		0500	7275	RT Tunisienne, Tunisia	AA
0300	9685	International Radio of Serbia		0500	7250	Vatican Radio	
0300	11920	Islamic Republic of Iran Broadcasting		0500	7250	Vatican Radio	
0300	4885	Radio Clube do Para, Brazil	PP	0500	5755	WTWW, Tennessee	
0300	6110	Radio Fana, Ethiopia	Amharic	0500	5890	WWCR, Tennessee	
0300	9670	Radio Miraya, Sudan, via Slovakia		0600	6165	CKZN, Canada	
0300	3320	Radio Sonder Grense, South Africa	Afrikaans	0600	12080	Radio Australia	

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0600	11615	Radio France International		1800	11660	Adventist World Radio, via Austria	AA
0600	11625	Vatican Radio		1800	15345	Radio Argentina al Exterior	SS
0600	15120	Voice of Nigeria		1890	13640	Radio Tirana, Albania	
0700	7125	Radio TV Guinea, Guinea	FF	1900	11750	Adventist World Radio, USA, via S. Africa	Hausa
0700	13590	CVC-One Africa, Zambia		1900	11670	All India Radio	
0700	9710	Radio Australia		1900	11820	Broad. Service of Kingdom, Saudi Arabia	AA
0700	11750	HCJB-Australia		1900	9555	Broad. Service of Kingdom, Saudi Arabia	AA
0800	9635	RTV Malienne, Mali	FF	1900	15540	Radio Kuwait	
0800	3290	Voice of Guyana		1900	15190	Radio Pilipinas, Philippines	unid
0900	6185	Radio Educacion, Mexico	SS	1900	15345	RTV Marocaine, Morocco	AA
0900	6170	Radio New Zealand International		1900	9535	Trans World Radio, Swaziland	vernacular
0900	5990	Radio Senado, Brazil	PP	1900	11945	Hamada Radio Intl, Nigeria, via Germany	Hausa
1000	6035	La Voz del Guaviare, Colombia	SS	2000	9620	KBS World Radio, S. Korea, via Portugal	AA
1000	6120	Radio Japan, via Canada	SS	2000	15190	Radio Africa, Equatorial Guinea	
1000	4790	Radio Vision, Peru	SS	2000	9705	Radio Ethiopia	Amharic
1000	9525	Voice of Indonesia	EE, others	2000	11875	Radio Ibrahim/IBRA, Sweden, via England	vernacular
1000	12085	Voice of Mongolia		2000	11930	Radio Marti, USA	SS
1000	6010	Radio Mil, Mexico	SS	2000	9665	Radio PMR, Moldova	
1100	15400	HCJB-Australia	Amoy	2000	12080	Voice of America Relay, Botswana Relay	FF
1100	6165	Radio Nederland, Bonaire Relay	SS	2000	9460	Voice of Turkey	TT
1100	9655	Radio New Zealand International		2100	9445	All India Radio	
1100	3925	Radio Nikkei, Japan	JJ	2100	9410	BBC, Seychelles Relay	
1100	9615	Radio Veritas Asia, Philippines	Mandarin	2100	9410	BBC, Seychelles Relay	
1100	9705	Voice of Malaysia		2100	9905	BBC, Cyprus Relay	AA
1100	3912	Voice of the People, (to North Korea)	KK	2100	7380	Deutsch Welle, Germany, Portugal Relay	
1100	3260	Radio Madang, Papua New Guinea	Tok Pisin	2100	9810	Islamic Republic of Iran Broadcasting	Bosnian
1100	4747	Radio Huanta 2000, Peru	SS	2100	17775	KVOH, California	SS
1100	5020	Solomon Islands Broadcasting Corp.		2100	9305	Radio Cairo, Egypt	AA
1200	6285	Korean Central Broadcast Station, N. Korea	KK	2100	17680	Radio Canada International	PP
1200	6075	Madgadan Radio, Russia	RR	2100	15330	Radio Canada International	FF
1200	5960	Radio Fly, Papua New Guinea		2100	15110	Radio Exterior de Espana, Spain	SS
1200	15265	Radio Japan, via Bonaire	JJ	2100	21690	Radio France International	FF
1200	15540	Radio Nederland, Bonaire Relay	DD	2100	7255	Voice of Nigeria	
1200	5930	Radio Rossii, Russia	RR	2200	11915	Broad. Service of Kingdom, Saudi Arabia	AA
1200	7385	Radio Taiwan International	CC	2200	9430	China Radio International	FF
1200	6115	Voice of the Strait, China	Amoy	2200	11865	Deutsch Welle, Germany, Portugal/Rwanda Relay	GG
1200	7205	Xinjiang PBS, China	CC	2200	12040	HCJB, Ecuador	GG
1300	15575	BBC		2200	11540	Radio Cairo, Egypt	AA
1300	6070	CFRX, Canada		2200	15585	Radio Free Asia, USA, N. Marianas Relay	CC
1300	11955	China Radio International	Indonesian	2200	13670	Radio Havana Cuba	SS
1300	11715	KJES, New Mexico		2200	11670	Radio Havana Cuba	SS
1300	11590	Radio Free Asia, USA, Kuwait Relay	Tibetan	2200	11670	Radio Nacional Venezuela, via Cuba	SS
1300	11940	Radio Romania International	Romanian	2200	9800	Voice of Russia	
1300	7465	Radio Thailand	CC	2200	11605	Voice of Russia, via French Guiana	PP
1300	11870	Trans World Radio, Guam	Bengali	2300	13650	Radio Japan	CC
1300	7390	Voice of America, Northern Marianas Relay	CC	2300	17795	Radio Australia	
1300	11710	Voice of Korea, North Korea		2300	15850	Galei Zahal, Israel	HH
1300	12020	Voice of Vietnam		2300	6270	Radio Cairo, Egypt	AA
1300	11700	Voice of America, Thailand Relay		2300	17750	Radio Kuwait	AA
1400	11680	CVC-La Voz, Chile	SS	2300	15250	Radio Nacional Venezuela, via Cuba	SS
1400	7240	Radio Australia		2300	15720	Radio New Zealand International	
1400	17125	Voice of Africa, Libya		2300	17725	Radio Taiwan International, via Florida	SS
1400	11675	Voice of America, Sri Lanka Relay	Urdu	2300	15650	Voice of Greece	Greek
1400	7295	Voice of Russia	CC	2300	7415	WBCQ, Maine	
1400	9930	World Harvest Radio, Indiana, via Palau		2300	15610	WEWN, Alabama	
1600	15460	Voice of America, Thailand Relay					
1700	15155	Adventist World Radio, via Germany	Oriya				
1700	9770	Radio Polonia, Poland					
1700	11515	Radio Dabanga, Sudan, via Madagascar	AA				
1700	15140	Radio Sultanate of Oman	AA				
1700	15690	Radio Taiwan International, via Florida					

## Trivia

by R.B. Sturtevant, AD7IL

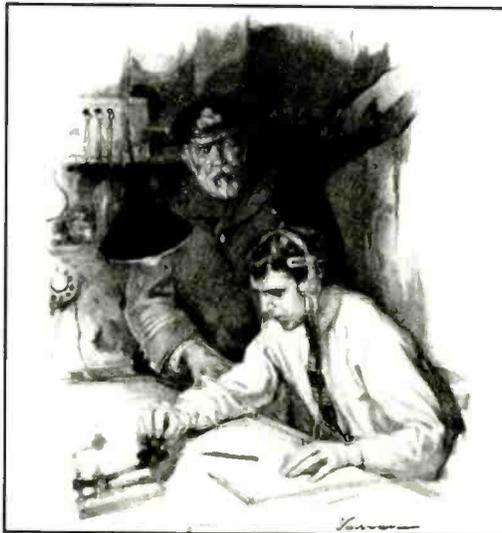
**Q:** *When did Morse code's famed SOS stop being used as the worldwide distress signal and why?*

**A:** That would have been on December 31, 1999. It was replaced by a much-easier-to-use Global Maritime Distress Safety System, which involves satellites and automatically sent digital signals.

The last SOS was picked up just 45 minutes before the GMDSS became the only system available. At the time it was thought to be a joke for the end of that era. Actually it was a freighter taking on water with a load of timber aboard. Today, even the U.S. Coast Guard has stopped using Morse code transmissions, but still monitors the International Distress Frequency of 500 kHz.

**Q:** *What is a General Radio Operators license? Is it like a General Class ham license?*

**A:** No it is not like the General License held by many amateur radio operators. It is a license class that is held by professional radio engineers like you would find at a commercial radio station or aboard a ship or aircraft. Anyone who fixes transmitters for someone else must hold this license. It is similar to an Extra Class license



Appearing on a leaf preceding the book's title page, this illustration — titled *The S.O.S.* — originally appeared in *The Wireless Man* by Francis A. Collins, Grosset & Dunlap Publishers, New York, Copyright 1912 by The Century Company. For more, visit: < <http://bit.ly/mzjcnK> >. (Courtesy of Wikimedia Commons)

in the difficulty of the questions but there are a lot more of them.

The first part covers the Marine Radio Operator Permit and has a lot about shipping. To pass this part of the test you need 18 out of 24 questions right. And they don't care if you live in Colorado, which doesn't have many ocean-going ships. You still have to get that part.

The second part is about radio, electronics and related subjects and requires a score of 75 out of 100 to pass. If you want a career in electronics, it is a good career move.

**Q:** *Why do (did) they call Morse code intercept operators "monkeys?"*

**A:** In the military, being a *High-Speed Morse Code Intercept Operator* is quite an accomplishment. It is something that requires a lot of dedication and practice.

As is usual in the military, those who aren't in a particular *club* develop nicknames for those who are. All paratroops call nonparatroops *legs* or *ground pounders*.

As a medic I was called *Doc* or *Sick Call*. It is just part of the culture.

*High-Speed Morse Code Intercept Operators* listen to Morse code traffic and simultaneously write it down with a manual typewriter. The term *monkey* comes from the expression: *You can teach a monkey to type and listen to the radio at the same time*. These words, of course, are spoken by someone who has never tried to do it.

**Q:** *How far do you think that amateur radio can go in its development and are there any real limits?*

**A:** Any regular reader of this column should know by now that I believe that progress among the amateur radio community is limited only by the imagination of the various amateurs and how they approach the technology of the hobby.

Einstein's Theory of Relativity suggests the possibility of teleportation. It was backed up by a paper Einstein published in 1935.

I have heard that it has already been done over short distances with nonliving material like small rocks and pieces of cinderblock. Currently physicists are predicting teleportation of complex molecules in a few years and DNA samples or viruses in a few decades.

We just have to make sure it is done on frequencies where we have privileges or get the appropriate frequencies converted to the amateur radio bands.

## New, Interesting, And Useful Communications Products

### The MFJ-9200 QR-Pocket™ Six-Band CW Transceiver

Starksville, Mississippi-based MFJ Enterprises, Inc., describes its new MFJ-9200 QR-Pocket CW Transceiver™ as a “bold new addition to MFJ’s legendary QRP transceiver line — delivering unmatched six-band CW performance in a compact, pocket-sized package.”

Built using direct-digital synthesis and microprocessor technology, the MFJ-9200 “represents a quantum leap over traditional designs with an unprecedented number of features for a very affordable price,” the company says.

The MFJ-9200 covers 80 through 15 Meters using computer-modeled, plug-in filter modules that yield “no-compromise receiver performance and solid QRP+ transmit power on every band.”

A built-in iambic keying with a manual-key sensor is included, along with a programmable CQ message, and QSK T/R switching MFJ describes as *seamless*.

“DDS frequency control delivers rock-solid stability, precise 100-Hz readout and eight memory channels per band. Plus, you get a choice of three, main-dial tuning rates and RIT with 10-Hz tuning resolution.”

MFJ has provided many other features, including selectable IF-bandwidth for monitoring SSB or CW; a 20-dB, front-end attenuator for overload protection; and a switched backlight for the LCD display.

“There’s also plenty of receiver overlap for monitoring international shortwave broadcasting. The MFJ-9200 runs on any power source between 8 and 15 VDC and draws a miserly 40 mA on receive with the display backlight turned off — perfect for prolonged off-the-grid adventures. Best of all, the QR-Pocket Radio is the smallest and lightest backpack transceiver currently available,” the company says.



In a trail-friendly chassis design, most of the MFJ-9200 QR-Pocket CW Transceiver™ controls are on the top panel of the radio. (Courtesy of MFJ Enterprises)

### MFJ-Provided Specifications:

- Frequency Control:** DDS, 60-MHz reference frequency
- Tuning Step:** 100-Hz, 1-kHz, and 100-kHz
- RIT Step:** 10-Hz
- VFO Memories:** 8 per band
- VFO Display:** LCD, 802-pixel, switched backlight
- VFO Display Frequency Resolution:** 100-Hz, 10-Hz with RIT activated
- Operating Modes:** Transmit-A1 (CW), Receive-A1, A3J (LSB or USB)
- CW Offset:** ~700 Hz
- T/R Switching:** Full QSK
- Frequency Coverage:** 80, 40, 30, 20, 17 and 15 meters
- Receiver MDS:** 0.1-uV, all bands
- AGC Threshold:** 3 to 5-uV, all bands
- Bandwidth:** Selectable, 600-Hz CW, 2.5-Hz SSB
- Audio Output:** 100-mW, 8-Ohm load, stereo plug
- Receiver Current Drain:** ~40-mA no backlight, ~80 mA with backlight
- Transmitter Keying:** iambic automatic, straight-key sensing, CQ memory
- Speed Range:** 3-45 WPM
- Transmitter Power:** 5-W or better, all bands, at 12.6 Volts
- Harmonic and spur suppression:** -50 dB or better, all operating voltages
- Typical Transmit Current:** 0.9-A at 10-V, 1.2-A at 14-V
- Supply Voltage:** 8-15 VDC at 1.5A
- Dimensions:** 4.8 inches x 3.15 inches x 1.34 inches (120 x 80 x 34 mm)
- Weight:** 7.4 oz, (200 gm)

The company says the QR-Pocket Transceiver™ comes complete with one band module of your choosing. “and modules for the other bands are available at truly minimal cost.”

“Transceiver operation is intuitive, easy to master and clearly explained in an easy-to-understand manual written by popular author and QRP Hall of Fame member Rick Littlefield, K1BQT,” MFJ says.

MFJ Enterprises lists the MFJ-9200 QR-Pocket CW Transceiver™ at \$249.95. Visit the company’s Web site at: < <http://www.mfjenterprises.com/> >.

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*Any day you don't learn something new is a wasted day!*

## Vaca Sagrada! Bad News From Portugal's RDP International

### Budget Cuts Plague Other Outlets, As Well — But There's Good News, Too

by Gerry L. Dexter  
[gdex@wi.rr.com](mailto:gdex@wi.rr.com)

**S**adly, we begin this month with more *ugly* news. RDP International, based in Lisbon, Portugal, has *temporarily suspended* activity on shortwave because it is suffering from a loss of listenership, officials said. The move is a means of cutting costs, as well.

*Vaca sagrada!* (Translation: *Holy cow!*) Should sufficient outcry ensue, the broadcasts may return. With three months of silence already having passed by, though, the roses have probably died by now — or at the least, the bloom is off!

Still, you can always cast your frustration and disappointment in RDP International's direction by emailing: <[rdp.internacional@rdp.pt](mailto:rdp.internacional@rdp.pt)>, or you can drop a line to: Av. Marechal Gomes da Costa 37, Bloco B-2\*, 1849-030, Lisbon, Portugal.

### DW Cutbacks: Say It Ain't So . . .

I've seen the writing on the wall for years now and I think Deutsche Welle is finally inching its way toward oblivion. The broadcaster has just announced a major cutback in services.

Beginning with the next broadcast season — around November 1 — DW will discontinue its relays from Sines (Portugal) and Trincomalee (Sri Lanka). This very damaging move will reduce weekly broadcast hours from 260 to a mere 55!

It will leave Kigali, Rwanda, as DW's only active affiliated outlet! What's left of DW's programming hours will have to go out from several assorted sites. (See the "Relay Race" feature in the May 2011 issue for a list of possible sites. — Ed.)

It's an open question as to which of those remaining in use may be considered unnecessary or whether others may be added to the line-up. So we're due for a major shake up here!

### RNZI in Budget Freeze and 'Make Do' Mode

Another worrisome spot is Radio New Zealand International — one of the best of the international

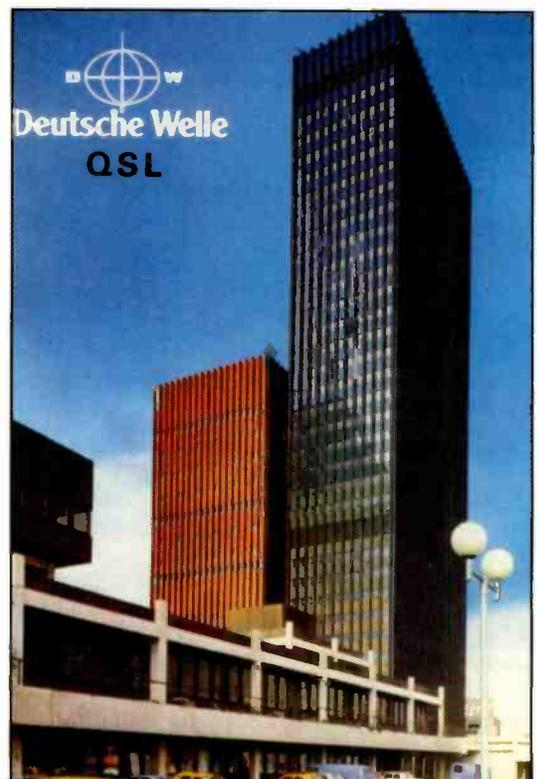
shortwave stations. RNZI has announced that — again this year — it has to go into *make do* mode, faced with yet another frozen budget.

That means another year with no salary increases, no new equipment or fresh programming.

### Encouraging News From Down Under

There is more action from Australia. A new station, Ozy Radio on 5050, is being noted *very* early in the mornings playing a long list of past pops.

This appears to be the low-power station men-



Deutsche Welle is busy shooting itself in the foot, as they prepare to close their relay stations in Portugal and Sri Lanka.



Radio New Zealand International is in "make do" mode as they face another year with no increase in their budget.

tioned in last month's column. The station has a Web site at: < <http://www.ozyradio@iprimus.com.au> >.

### WWV/WWVH Take a Time Out

You have probably heard by now that the Space Weather Prediction Center's (SWPC) propagation reports aired on WWV/WWVH are being discontinued, effective September 6.

One can only surmise that this is a first step down a road leading to a *not very good place* for these stations. Complaints may be made to the center via email at: < [www@noaa.gov](mailto:www@noaa.gov) >. Once WWV stops carrying that information, it will be available on the web at: < [www.swpc.nasaw.gov/ftplib/latest/wwv.txt](http://www.swpc.nasaw.gov/ftplib/latest/wwv.txt) >.

### Africa No. One Off the Air?

There is word that Africa No. One is in serious financial difficulty and may already be off the air.

The Libyan ownership has had its assets frozen by the West and hasn't been able to pay its staff or for its Eutelsat satellite feeds. The station is said to have huge debts and it is unlikely that the minority portion owned by Gabonese interests would be able to rescue the situation.

You can check on its activity — or lack of it — by tuning 9580, usually in the late afternoons.

### Facelift for Radio Nederland @ Madagascar

The Radio Sweden Horby transmitters have been purchased by Radio Nederland, which will reinstall them at its Madagascar relay site — now showing its age.

As of May, the three 500-kW mammoths were in the process of being dismantled and readied to be shipped. I don't have any idea yet when they'll begin service from the Madagascar. The Radio Nederland Bonaire Relay site is scheduled to be closed in October of next year.

### AWR and HCJB Extend Their Reach

Adventist World Radio is planning an upgrade to its site in Guam in order to more effectively cover China. The station is adding a fifth antenna system, increasing coverage of northern China, Mongolia and Siberia. A further advantage will be the ability to add programming for those areas.

Not to be outpaced, HCJB-Australia is installing a third high-

power unit for its new facility. The new transmitter is supposed to be operative by October.

### Other Bits and Pieces . . .

New from Peru is **Radio Genesis**, an evangelical station from Huanta, operating on 4850.7 — but on a quite-limited schedule from 1100-1200 and 2300-0030.

The seldom-heard **Bangladesh Betar** is adding a powerful new transmitter, which will be coupled to a new rotatable antenna system. The goal: To better serve Bangladesh citizens working abroad. The new facility is supposed to be operative from the Kabirpur transmitting site any day now!

West Virginia's **Charles Maxant**, who stays abreast of such things, reports that **WMLK** (Pennsylvania) plans to return to the air soon with a 125-kW transmitter purchased from Swiss Radio. *The Mountain Man*, as he likes to be known, also notes that **WRNO** (Louisiana) is awaiting parts for its wounded transmitter, supposedly on the way — I presume from the Elcor factory in Costa Rica. So you can expect these two U.S. stations to return to the air soon.

### Let's Hear From You

Remember, your shortwave broadcast station logs are always welcome. But *please* be sure to double or triple space between the items, list each logging according to its *home* country and include your last name and state abbreviation after each.

We're always looking, as well, for spare QSLs, station schedules, brochures, pennants, station photos and anything else you think would be of interest.

In case you hadn't heard, I'm still seeking that photo of you at your listening post. *You're up!*

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

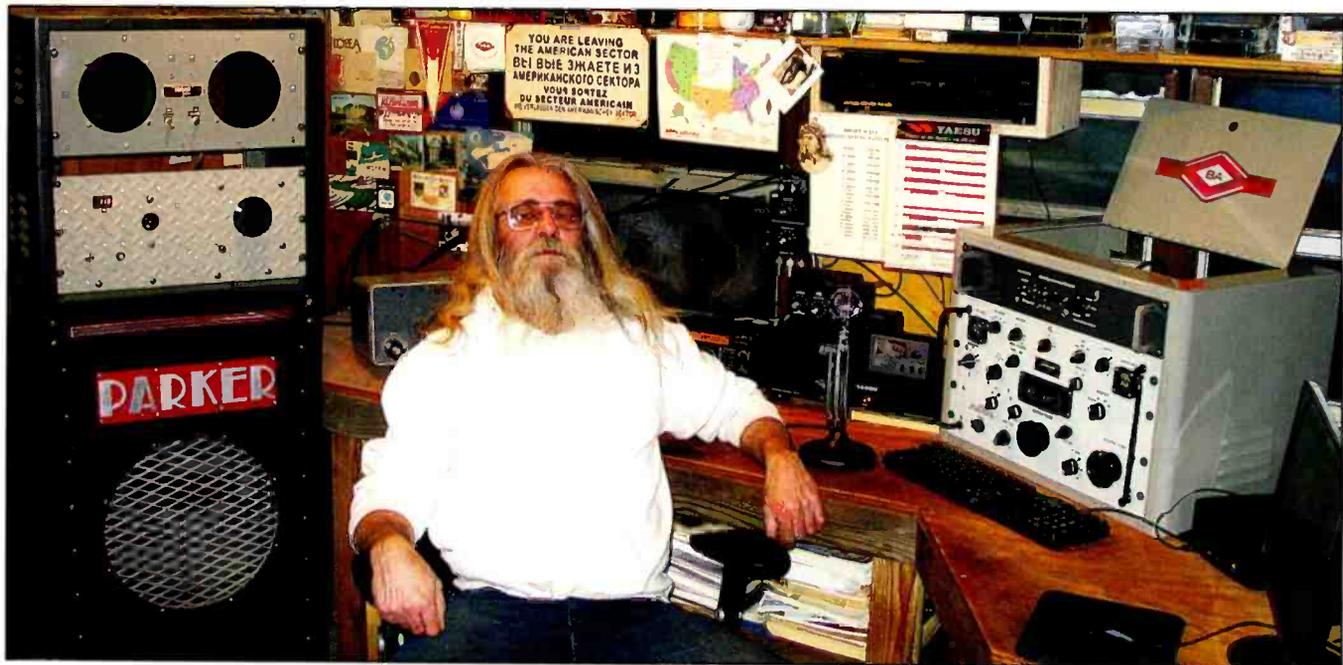
**ALBANIA**—Radio Tirana, 7425-Shijak at 0447 with Albanian songs. (Parker, PA) 9860 at 0025 ancg times and frequencies and 13640 at 1845 in Albanian. (Maxant, WV) 13735-Shijak at 2028 with pops. (Sacks, NH)

**ALGERIA**—Radio Algerienne, 7295 via Issoudun in AA at 0526. (Parker, PA)

### Help Wanted

We believe the Global Information Guide — month after month — offers more logs than any other monthly SW publication! (470 shortwave broadcast station logs were processed this month!) Why not join the fun and add your name to the list of GIG reporters? Send your logs to Gerry Dexter, Global Information Guide, 213 Forest St., Lake Geneva, WI 53147 or email them to < [gdex@wi.rr.com](mailto:gdex@wi.rr.com) >. See the column text for formatting suggestions. And please be sure to double-check them to make sure you've included everything!

*\*Not all logs get used. There are usually a few which are obviously inaccurate, unclear or lack a time or frequency. Also discounted are unidentifieds, duplicate items (same broadcaster, same frequency, same site) and questionable logs.*



Here's loggings reporter Rich Parker with his beloved R390A receiver.

**ARGENTINA**—Radio Argentina al Exterior, 15345 in SS at 1820. (Maxant, WV)

**ASCENSION**—BBC South Atlantic Relay, 7255 with news items heard at 0516. (Parker, PA) 11890 at 2955 in Hausa. (Brossell, WI) 12095 with *Assignment* at 2100 and 15400 with a discussion at 2053. (Sacks, NH)

**AUSTRALIA**—Radio Australia, 7240-Shepparton with American oldies at 1428. (Brossell, WI) 9710-Shepparton with a sports discussion at 0718. (D'Angelo, PA) 12080 with vocals at 0625. (Maxant, WV) 15160 at 0747 with sports news. (Yohnicki, ON) 15415-Shepparton with commentary at 0530. (Padazopulos, Greece) 17715 at 0125 with pgm on social networking. (Barton, AZ) 17795-Shepparton at 2326, //15560. (MacKenzie, CA)

ABC Northern Territory Service, 2310-Alice Springs at 1130. (Barton, AZ) 2325-Tennant Creek at 1158 with M/W and news analysis, //2310 and 2485. (Barton, AZ)

HCJB Global, 11750 with vocals at 0625. (Maxant, WV) 15400-Kununurra at 1145 with Christian music and M in Amoy. (Fraser, ME)

**AUSTRIA**—Adventist World Radio, 11660 at 1840 with commentary in AA. (Sacks, NH)

**BAHRAIN**—Radio Bahrain, 9745 at 0038 with AA vocals and M anc, brief AA talk and apparent ID at 0100 f/by a short newscast. (D'Angelo, PA) 0140 with AA call to prayer. (Alexander, PA)

**BELARUS**—Belaruskoye Radio, 11930 at 0402 with M/W in Byelorussian and several possible commercial annts. Then a talk by a W f/by several people in a discussion. (D'Angelo, PA) With local music and possible news at 0403. (Alexander, PA)

**BOLIVIA**—Radio Santa Cruz, 6134.8 at 0057 with LA vocal, M with ID and short SS talk, another vocal, ID at 0105 f/by closedown. (D'Angelo, PA) \*0859 sign on with SS opening and local flute music. (Alexander, PA)

**BONAIRE**—Radio Nederland Relay, 6165 in SS at 0110 with IS and into news. (Fraser, ME) 15540 in DD at 0225. (Padazopulos, Greece)

**BOTSWANA**—Voice of America Relay, 4930-Mopeng Hill in vernacular at 0310. (Parker, PA) 12080 in FF at 2027. (Brossell, WI)

**BRAZIL**—(all in PP - gld)  
Radio Clube do Para, Belem, 4885 at 0316. (Parker, PA)  
Radio Bandeirantes, Sao Paulo, 9645.5 at 0010 with talk. //11925. (Alexander, PA) 11925 with talks and a phone interview. (Parker, PA)

Radio Voz Missionaria, Camboriu, 5939.8 at 0430 with continuous PP inspirational music. //9665.1. (Alexander, PA) 9665 at 0527 with inspirational pops. (Parker, PA)

Radio Senado, Brasilia, 5990 at 0856 sign on with jazz and romantic ballads. (Alexander, PA)

Super Radio Deus e Amor, 11765 at 0000 with preacher, ID jingles. //6060 weak under Cuba and 9565 weak with adjacent channel QRM. (Alexander, PA)

Radio Nacional Amazonia, Brasilia, 11780 at 0038. (MacKenzie, CA) 1319 with songs. (Brossell, WI) 0650 with pops. (Yohnicki, ON)

Radio Brazil Central, Goiania, 11815 at 0135 with Brazil pops. //4985 was weak. (Alexander, PA)

Radio Inconfidencia, Belo Horizonte, 15190 with Brazilian ballads and talk. //6010 was poor. (Alexander, PA)

**BULGARIA**—Radio Bulgaria, 9400-Plovdiv, in BB at 0059 with IS, news. (Sacks, NH) 11700 in BB at 0045. (MacKenzie, CA)

**CANADA**—Radio Canada International, 11990 in SS at 0030, 15330 in FF at 2112 and 15445 in SS at 2350, 17860 in PP at 2128, //15334. (MacKenzie, CA)

CFRX, Toronto, 6070 at 1345 with weather and traffic. (Maxant, WV)

CKZN, St. John's (p) at 0649 with CBC news and features. (D'Angelo, PA)

CHU, Ottawa, 14670 with time annts at 1740. (Maxant, WV)

**CHAD**—Radio Chad, 6165 to 2231\* close and \*0429 sign on with Balafon IS, NA at 0431, FF annts and Afropops. (Alexander, PA)

**CHINA**—China Radio International, 6020 via Canada at 0557 with *China Studio* pgm, 9690 via Spain in EE at 0350, //9790 via Cuba, 11840 via Cuba in EE at 2340 and 13700 via Canada in SS at 2212. (MacKenzie, CA) 6175 via Albania in SS at 2350. (Padazopulos, Greece) 7390-Xi'an at 2109 in (I) Korean and 11955-Kunming in (I) Indonesian at 1330. (Brossell, WI) 9430-Urumqi in FF at 2200 and

Here's your "blast from the past" for this month:

**Radio Venceremos**, an El Salvador clandestine operated by the Farabundo Marti Liberation Front (FMLN) on 6853, at 0137 in SS on December 22, 1981.



Antennas at the Vatican Radio Santa Maria di Galeria site.

11695 via Albania in FF at 1855. (Sacks, NH) 13660 in EE at 0630. (Ng, Malaysia)

CPBS/China National Radio, 6165-Beijing in CC at 1245, 7205-Urumqi at 1255 in (I) Uighur, 7345-Beijing in (I) Mandarin at 1311 and 7375-Beijing in CC at 1230. (Brossell, WI)

Xinjiang PBS, 7275-Urumqi in CC at 0430. (MacKenzie, CA) 9705-Urumqi in Kyrgyz with M/W talks at 0517. (Parker, PA)

Voice of the Strait, Fuzhou, 6115 in (I) Amoy at 1240. (Brossell, WI)

Firedrake jammer (p), 13920 and 13980 at 1335 with usual instrumental against Sound of Hope. Both frequencies good. (Sellers, BC)

**CHILE**—CVC-La Voz. 11665-Santiago, at 1700 with Christian music to ID on the hour, improving to very good. (Barton, AZ) 17680-Santiago in SS at 1413. (Yohnicki, ON)

**COLOMBIA**—La Voz del Guaviare, San Jose del Guaviare. 6035 at \*0935 sign on with SS ballads, talk at 1002 and into the Rosary at about 1011. (Alexander, PA) 1011 with Rosary, pgm change at 1030 and into romantic vocals with SS DJ. (Perry, IL)

**CROATIA**—Voice of Croatia, 7375 via Wertachtal in Croatian at 0108. (Sacks, NH) With talks at 0409. (Parker, PA)

**CUBA**—6010 in SS at 0510 and 17560 in PP at 2015. (Maxant, WV) 6010 in EE at 0554, 12020 in SS at 2347, 13670 in SS at 0015, //11760, 13760 in SS at 0008, 15230 in SS at 0045, 15235 in SS at 2107, 15370 in SS at 2354 and 17560 in SS at 2147, //13670. (MacKenzie, CA) 9620 in SS at 0128. (Sacks, NH) 13670 in SS at 2225. (Barton, AZ) 15230 in SS at 1500. //15360. (Yohnicki, ON)

Radio Rebelde, 5025 in SS at 0528. (MacKenzie, CA)

**DJIBOUTI**—Radio Djibouti, 4780 at \*0300 sign on with NA, AA anmts at 0301, Koran at 0302 and AA talk at 0314. (Alexander, PA) 0303 with Koran recitations, AA talk at 0315. (D'Angelo, PA) 0320 with talks in vernacular. (Parker, PA)

**ECUADOR**—HCJB, 12040 in GG at 2228. (MacKenzie, CA)

**EGYPT**—Radio Cairo, 6270 at 2335 with non-stop AA music. (Fraser, ME) 9305-Abis in AA at 0049, 9315-Zabaal in SS at 0053 and 11540-Zabaal in AA at 2235. (Sacks, NH) 11590 at 0015. (Maxant, WV)

**ENGLAND**—BBC, 11620 Cyprus Relay in (I) Hindi at 1434 and 15575-Skelton on health care in Britain at 1338. (Brossell, WI) 9410 Oman Relay at 0101, 9915 Cyprus in AA at 2058 and 17795-Skelton at 1829 with *Have Your Say*. (Sacks, NH) 12095 Cyprus at 0432 and 15180-Rampisham in FF at 1802. (Parker, PA) 12095 Thailand Relay at 0010. (MacKenzie, CA) 1231 Oman Relay with news at 1231. (Padazopoulos, Greece) 21660 Thailand Relay at 1050. (Ng, Malaysia)

**EQUATORIAL GUINEA**—Radio Africa, 15190 with an EE sermon at 1948. (Brossell, WI)

**ERITREA**—Voice of the Broad Masses, 7175 at 0300 with AA news and frequent mentions of Asmara, short segment of music, ID and more talk. (D'Angelo, PA) 7235 at 0305 with vernacular talk, HOA music. (Alexander, PA)

**ETHIOPIA**—Radio Ethiopia, 9705 at \*0258 sign on with short electronic keyboard IS, f/by opening Amharic anmts and NA, three gongs at 0300, then HOA music. (Alexander, PA) 0403 with HOA vocals, discussion in (p) Amharic. (D'Angelo, PA)

Radio Fana, Addis Ababa, 6110 at 0310 with HOA pops and (p) Amharic anmts at 0316. (Perry, IL) 7210 from \*0256 with IS, Amharic talk and local songs, //6110. (Alexander, PA)

Voice of the Tigray Revolution, 5950 at \*0257 as WYFR left, then reopened relaying Radio Taiwan. The Ethiopian was very weak. (D'Angelo, PA; Alexander, PA)

**FRANCE**—Radio France International, 9805 with news at 0435 and 11615 with weather for Europe and North Africa. (Maxant, WV) 11995-Issoudun with EE talks at 0423. (Parker, PA) 12070 via Rwanda in GG at 0019 and 21690 in FF at 2112 (MacKenzie, CA) 13680-Issoudun in RR at 1836 and 15300-Issoudun in FF at 1823. (Sacks, NH)

**GERMANY**—Deutsche Welle, 7280 Portugal Relay with news at 2100 and 12070 Rwanda Relay on universities there at 2144. (Brossell, WI) 7430 on the European Union at 0505. (Maxant, WV) 11865 Portugal Relay on bin Laden at 2009, 13860-Rampisham in Hausa at 1817, 15620 Portugal Relay in Hausa at 1829, 17610-Wooferton in GG at 1835. (Sacks, NH) 9480 via England in GG at 0407 and 12050 Rwanda Relay at in GG 0000 (MacKenzie, CA) 11795 via England at 2030. (Ng, Malaysia)

Deutschland Radio, 6190 with GG and classical music at 0146 - 0259, then 3 + 1 time pips and news on the hour. In the clear until Radio Nederland opened in DD at 0259. (D'Angelo, PA)

Radio Dardasha, 13740 at \*1900-1927\* with soft instl music, AA talk, Arabic music and abrupt sign off. (Alexander, PA)

**GREECE**—Voice of Greece, 7475-Avlis in Greek at 0340. (Parker, PA) 0208, also 9420 in Greek at 2202. (Sacks, NH) 15630 in Greek at 2221. (Padazopoulos, Greece) 2128. (MacKenzie, CA)

**GUAM**—TWR, 11870 at 1325 in (I) Bengali. (Brossell, WI)

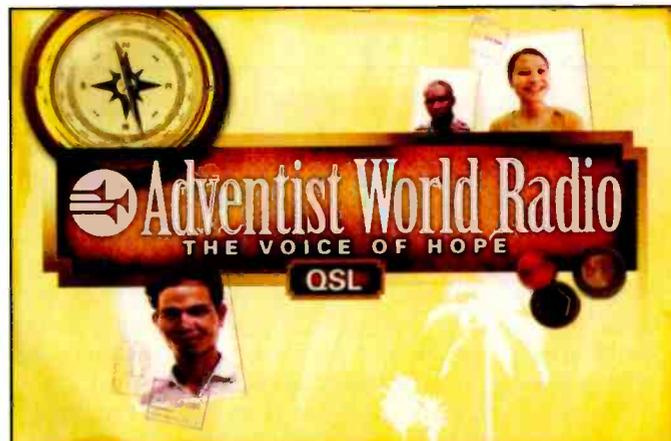
**GUATEMALA**—Radio Verdad, Chiquimula, 4055 at 0325 and W in SS with music bridges, bells, cookoo and banjo sound effects. (Parker, PA) 0600 ending transmission with anthem. (Alexander, PA) 1120 with M ancr in SS and mailing address. (Barton, AZ)

**GUINEA**—Radio Guinee, 7125 at 2240 with Afropops, FF anmts and off at 2259\*. Also, 0602 with Afropops in FF and vernacular. Occasional ham QRM (Alexander, PA)

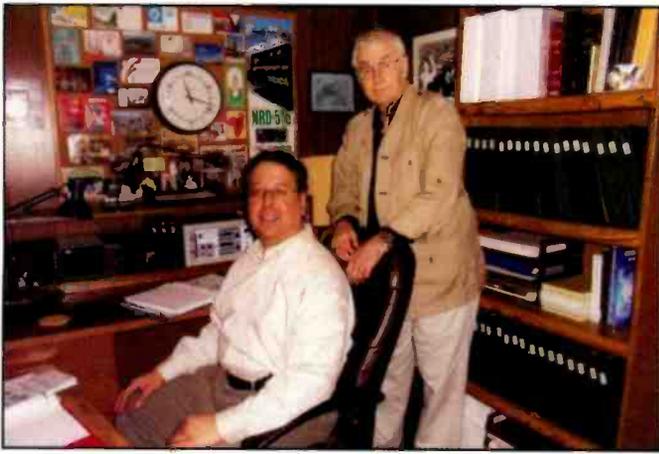
**HAWAII**—WVW, 5000 at 0526 with time signals, W with ID. (MacKenzie, CA)

**INDIA**—All India Radio, 9445-Bangaluru at 2151 and 11670-Bangaluru in EE at 1847. (Sacks, NH) 9870-Bangaluru in (I) Hindi at 1329. (Brossell, WI) 1910 on fighting in Libya. (Maxant, WV) 2221 with news. (Padazopoulos, Greece)

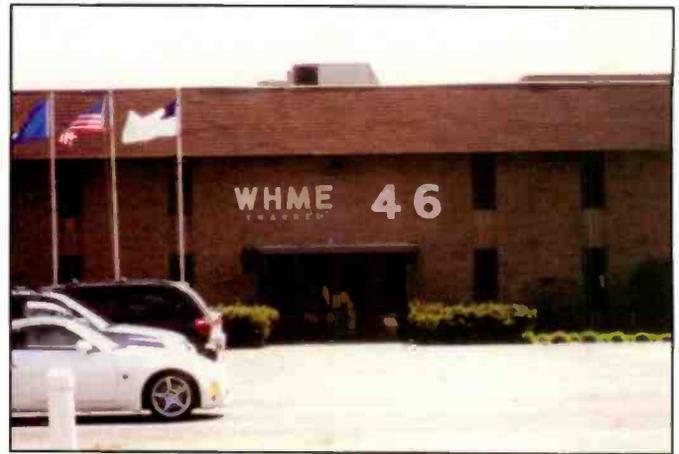
**INDONESIA**—Voice of Indonesia, 9525 at \*0955 abrupt sign on in KK, theme and into EE at 1000. (Alexander, PA)



Adventist World Radio is adding antenna capacity at their Guam station.



Here's old friend Thomas Gavaras (MN), on a visit to G.I.G. headquarters.



The channel 46 TV building in South Bend, Indiana, is also home to LeSea Broadcasting's WHRI. (Photo: S. Dexter)

Radio Republik Indonesia, 3325-Palangkaraya (Kalimantan), at 1245 with W in II. Just fair, at best. (Barton, AZ)

**IRAN**—Islamic Republic of Iran Broadcasting, 7365-Kalamabad in (I) Kurdish-Sorani dialect with W talk and music bridges. Also, 12015-Kalamabad in (I) Estonian with 2-M in conversation at 0409. (Parker, PA) 9810 at 2051. (Sack, NH) 11920 at 0346 with W, news in EE and interview. Blasted away by Romania at 0400. (D'Angelo, PA)

**ISRAEL**—Galei Zahal, 6977 in Hebrew at 2305 with local pops, 15850 with a variety of instls and local pops. HH anmts. (Alexander, PA)

**JAPAN**—Radio Japan, 6110 via Canada at 0515 on bicycle production and 6120 via Canada in SS at 1005. (Maxant, WV) 7395 via Madagascar in Swahili at 0450. (Parker, PA) 12045 via Germany in (I) Farsi at 1445. (Brossell, WI) 13640 in JJ at 2224. (MacKenzie, CA) 13650 at 2240 with IS and opening in CC. (Barton, AZ) 15265 in JJ at 1225. (Padazopulos, Greece) 15445 via Wertachtal in JJ at 1825. (Sacks, NH)

Radio Nikkei, 3925 at 1115 long JJ monologue, //6055, both good. (Barton, AZ)

**KUWAIT**—Radio Kuwait, 15540-Kabd, 1900 with *Women of the Middle East* in various professions. (Fraser, ME) 17550 at 2310 with M and M.E. music. (Barton, AZ) 2350 in AA then off at 0000. (MacKenzie, CA) 17725 at 1406 with Afropops, EE talks on the revolution. (Alexander, PA)

**MALAYSIA**—Voice of Malaysia, 9750-Kajang in EE with songs at 0705. (Ng, Malaysia)

**MALI**—ORTM, 9635 at \*0759 sign on with local flute and opening FF anmts, tribal music at 0800, some vernacular talk at 0806. (Alexander, PA)

### This Month's Winner

To show our appreciation for your loggings and support of this column, each month we select one "GIG" contributor to receive a free book or other prize. Readers are also invited to send in loggings, photos, copies of QSL cards and monitoring room photos to me at *Popular Communications*. "Global Information Guide," 25 Newbridge Rd., Hicksville, NY 11801, or by email to <gdex@wi.rr.com>. The email's subject line should indicate that it's for the "GIG" column. So, come on, send your contribution in today!

The prize winner this month is Rich Parker, Pennsburg, PA, who receives a Radio Free Asia coffee mug for his exceptional logging efforts year in and year out! See the March 2010 issue for a feature article on RFA.

**MEXICO**—Radio Educacion, 6185-Mexico City in SS with vocals. (Maxant WV)

**MOROCCO**—RTV Marocaine, 15341 in AA at 1337 with songs and talk. (Sellers, BC)

**MOLDOVA**—Radio PMR/Radio Pridnestrovie, 9665 at 2048. (Stack, NH) 2238-2259\* with M in GG and choral anthem at 2256. Voice of Russia began at 2300. (D'Angelo, PA)

**MONGOLIA**—Voice of Mongolia, 12085 at 0957-1058\* with local music, IS at 0959, talk in (I) Mandarin at 1000, then a half hour EE pgm at 1030. (Alexander, PA)

**NEDERLAND**—Radio Nederland, 11615 via Ascension at 1947 with Afropops and rock. (Brossell, WI)

**NEW ZEALAND**—Radio New Zealand International, 6170 at 0713 with news, ID. (D'Angelo, PA) Music selections at 0915 and 11725 at \*0500 with contact info. (Maxant, WV) 0515 with *Checkpoint* pgm. (Barton, AZ) 9655 with *Dateline* at 1105. (Ng, Malaysia) 1105. (Fraser, ME) 6170 with news at 0713 and 15720 at 2340. (MacKenzie, CA)

**NIGERIA**—Voice of Nigeria, 7255 at 2131 with vernacular talk, Afropops and tribal music. (Alexander, PA) In FF at 2250. (Brossell, WI) 15120 with EE ID and background drums. (Maxant, WV)

**NORTH KOREA**—KCBS/Korea Central Broadcasting Station, 2850-Pyongyang at 1100 with W ancr. (Barton, AZ) 6185 with vocals and KK talk and 7285 in KK at 1225 (Brossell, WI)

Voice of Korea, 11710 at 1325 with W in EE. (Maxant, WV) 1326 at 9335. (Sellers, BC) 13760 in KK at 1845. (MacKenzie, CA) 0010 with W ancr. (Barton, AZ)

**OMAN**—Radio Sultanate of Oman, 15140-Thumrait in AA at 1726 and into Koran. (Parker, PA)

**OPPOSITION**—Hamada Radio International (to Nigeria), 9620 via Germany at 0530 with talk in Hausa and short music breaks, listed //11970 unheard, 11945 at \*1930 via Germany with local music and opening ID, 21480 via Germany at \*1403 with abrupt sign on and talk in Hausa. (Alexander, PA) 9610 via Wertachtal at 0542 in local language with frequent mentions of Nigeria. (D'Angelo, PA)

Radio Y'Abadanga (to Uganda), 15410 at \*1700-1715 with pops and African chorals. Airs Saturdays only. (Alexander, PA)

Radio Darbanga (to Sudan), 15515 in AA at 1715. (Brossell, WI)

Radio Voice of the People (to Zimbabwe), 9870 at 0425-0457\* with vernacular talk, EE ID and news of Zimbabwe. (Alexander, PA)

Radio Free Sarawak, 6205 with talks in (I) Malay at 1220. (Brossell, WI)

Democratic Voice of Burma, 11595 via Armenia, at \*2330 opening with W ID in BB. M/W with news. (D'Angelo, PA; Alexander, PA)

Voice of the People (to North Korea), 3912 in KK with W ancr at 1110. (Barton, AZ)

National Democratic Front (to South Korea), 3480 with marches at 1050. (Barton, AZ)



The sign at LeSea Broadcasting in South Bend, Indiana, lists all of their broadcast enterprises. (Photo: S. Dexter)

with a lecture, 7385-Tiganesti in FF at 0112, 7435-Galbeni at 2220, 9525-Galbeni with country songs at 0122, 9560-Tiganesti in FF at 0125. 11715-Galbeni in SS at 1942 and 11950-Tiganesti with *The Cooking Show* at 2252. (Sacks, NH) 7310 at 0425 and 11875 at 0354, ID and IS with contact info at 0356\* close. (D'Angelo, PA) 11735 at 1720 on different religions there. (Maxant, WV) 11940 at 1335 with a live sporting event. (Brossell, WI) 21500 with *Radio Newsreel* at 0530. (Ng, Malaysia)

**RUSSIA**—Voice of Russia, 7260-Vladivostok in RR at 1305, 9745 (unknown) in FF at 2151 and 9900-Samara in (I) Pashto/Dari at 1331. (Brossell, WI) 7270-Yerevan in RR at 0050, 7440 via Ukraine in EE at 0206, 9430-Yerevan in SS at 0109 and 9800-Krasnador on forestry conservation at 2207. (Sacks, NH) 9665 via Moldova with *In Focus* pgm. (Fraser, ME) 9735 in SS at 0345. (MacKenzie, CA) 9735 via French Guiana in SS at 0456-0500\* close and 12070-Moscow in RR with talks at 0445. (Parker, PA) 12040 at 1715 with *Outlook* pgm. (Padazopoulos, Greece) 13775 at 0525. (Barton, AZ)

Radio Rossii, 5930 in RR heard at 1205. (Barton, AZ)

Magadan Radio, 6075-Petropavlovsk-Kamchatsky in RR at 1233. (Brossell, WI) Kyzyl Radio, 6100 with US pops and RR anmts at 1235. (Brossell, WI)

**SAUDI ARABIA**—Broadcasting Service of the Kingdom, 9555 in AA at 1937. (Brossell, WI) 9555 at 2156, 9675 at 2052, 11820 at 2245 and 11915 at 2255, all from Riyadh, all in AA. (Sacks, NH) 15285 with Koran. Listed as being in Swahili. (Barton, AZ)

**SERBIA**—International Radio of Serbia, 9685 at 0335 on the Serbian business climate. (Maxant, WV)

**PAPUA NEW GUINEA**—Radio Fly (p) (New Guinea), 5960 with 70s songs and some rap and a couple in Tok Pisin. Best around 1300. (Perry, IL)

**PERU**—Radio Vision, Chiclayo, 4790 during the 1000-1040 period with a charismatic SS preacher. (Perry, IL)

**PHILIPPINES**—Radio Veritas Asia, 9615 at 1155 with IS trumpets, EE, presumably closing of their Mandarin broadcast. (Perry, IL)

Radio Pilipinas, 15190 in unid language at 1843. (MacKenzie, CA)

**PIRATES**—Captain Morgan Shortwave, 6925 at 0246 with blues, M ancr, email as < [captainmorganshortwave@gmail.com](mailto:captainmorganshortwave@gmail.com) >. (D'Angelo, PA) \*2218, \*2145 with jazz and blues. (Zeller, OH) 2355. (Hassig, IL)

The Crystal Ship, 6815 at 0009, 0031 and 0041 with rock and classic rock. "Voice of the Blue States Republic." (Zeller, OH) At 0220 with rock, ballad rock and country rock. (Hassig, IL)

Radio Ronin Shortwave, 6931 with Ragnar's *Pirate* Week pgm and clips of pirates. (Parker, PA) 6935 at 1417 with rock/pop and several IDs. Also 6939 at 0400-0403\* with pops and closing ID. And, 6945 at 0008-0047\* with Motown selections. Usual IDs and Gmail address. (D'Angelo, PA) 6945 at 0005 with pop/rock. Email as < [radioroninshortwave@gmail.com](mailto:radioroninshortwave@gmail.com) >. (Hassig, IL)

WHOF-Hall of Fame Radio, 6950 at 2342 with instls, 2344 with KNBS pgm from 1985. (D'Angelo, PA)

WPON-The Weapon, 6925u at 2143-2202\* with drama protesting police and lawyers. Peter Gunn theme music. (D'Angelo, PA)

Radio 2012, 6925 at 2349-2358\* with rock, ID at close. (Zeller, OH)

International Bowling League Relay service, 6925 at 0417 with parodies of the Beatles. Green Acres and other songs. Seemed to disappear around 0440. (D'Angelo, PA)

Radio Free Mars, 6925 at 2149-2224\* with classic rock and occ. news and remarks by M. (Zeller, OH)

Radio Gaga, 6930 at 2355-0003 with rock, ID. (Alexander, PA)

Wolverine Radio, 6925u at 0056 with Al Jolson and big band swing tunes. (Hassig, IL)

Chopin Radio, 6940 at 0217-0234\* with classical piano music. (Alexander, PA)

Channel Z, 6957 at 0024-0029\* classic rock/pop. (Zeller, OH)

Rave-On Radio, 6925u at 0125 with Dylan, Neil Young, theme from Jaws. Reports go to < [www.frn.net](http://www.frn.net) >. (Hassig, IL)

Renegade Radio, 6925u at 0215-0232 with rock, rock/pop. No address given. (Hassig, IL)

WBOG, 6925 at 2320, 2345 with rock and a radio drama. (Alexander, PA)

Mouth of Muhammad Radio, 6940 at 0023, clearly copied the ID at 0023. (Zeller, OH)

Radio Malta (Europe?) 6934 at 2340-0205 plus with oldies pops, 60s and 70s. IDs, tentative email: < [shortwavemaalta@hotmail.com](mailto:shortwavemaalta@hotmail.com) >. (Alexander, PA)

**POLAND**—Radio Polonia, 9770 via Germany at 1715 with interview of the Polish president. (Maxant, WV)

**PORTUGAL**—RDP International, 7240-Sao Gabriel at 0508 with PP talk, ID, frequencies and targets. (Parker, PA)

**ROMANIA**—Radio Romania International, 7355-Galbeni in Romanian at 0102



The "radio booth" in the LeSea building contains at least a dozen computers controlling their various program feeds. (Photo: S. Dexter)



RDP International is on a shortwave hiatus, temporarily, they say.

**SEYCHELES**—BBC Indian Ocean Relay, 9410-Mahe discussing news items at 2119. (D'Angelo, PA) 2122. (Sacks, NH)

**SOUTH AFRICA**—Radio Sonder Grense, 3320-Meyerton with assorted hymns at 0319. (Brossell, WI)

**SOUTH KOREA**—KBS World Radio, 9650 via Canada at 1220 with another nasty collision with Voice of Korea, making the former's pgm of Korean pops a messy jungle. (Barton, AZ)

**SPAIN**—Radio Exterior de Espana, 6055-Nobeljas at 0030 with QRM from Cuba. (Maxant, WV) 9630-Nobeljas in SS at 0359. //9620. Also, 15110 in SS at 2102 and 15595 in PP at 2140 and 15160 in SS at 0049. (MacKenzie, CA) 9690 in FF at 2055, 11610 in FF at 2047, 12015 in AA at 2018 and 17715 in SS at 1840, all Nobeljas. Also, 17805 Costa Rica relay in SS at 1857 (Sacks, NH) 12035-Nobeljas in

SS at 0500. (Parker, PA) 15110 in SS at 2255. (Padazopoulos, Greece) 15160 in SS at 0145 colliding with CRI. (Barton, AZ)

**SRI LANKA**—Sri Lanka Broadcasting Corp., 11905 at \*0020 sign on with drums and local music, NA and more drums and music, EE ID at 0025, chants and local music. Also, 15745 at 0126 sign on with the same routine, time pips at 0200 and into EE news. (Alexander, PA) 15745 at \*0130 with 2+1 time pips, M with ID and TC, big band music. Then an ID and news at 0200. (D'Angelo, PA)

**SUDAN**—Sudan Radio TV, 7200 at \*0236 with AA talk, local chants, AA talk and chirping birds. (Alexander, PA)

Miraya FM, 9670 via Slovakia at 0350 with EE interview and call-in pgm, news at 0401, ID and ancd "mirayafm.org" website. (Alexander, PA) 0402 with M and news in EE, ID, AA pgm began at 0410. (D'Angelo, PA)

**SWEDEN**—IBRA Radio/Radio Ibrahim, 11875-Rampisham in the Fon language at 2013. (Sacks, NH)

**SWAZILAND**—TWR, 9525 in (I) Lingala at 1928. (Brossell, WI)

**TAIWAN**—Radio Taiwan International, 7385 in CC at 1230. (Brossell, WI) 15690 via Florida with local news at 1725. (Maxant, WV) 17725 via Florida in SS at 2335. (MacKenzie, CA)

**THAILAND**—Radio Thailand, 7465 in CC at 1325. (Brossell, WI) 15275 at \*0000 with ID, *English News Hour*, ad for Bangkok Airways. Switched antenna beams from ECNA to WCNA at 0029. (Alexander, PA, Fraser, ME)

**TUNISIA**—RT Tunisienne, 7275-Sfax in AA at 0521. (Parker, PA)

**TURKEY**—Voice of Turkey, 7260-Emirler in TT at 0144 and 9460-Emirler at 2039. (Sacks, NH) 11980-Emirler in TT with Turkish pips at 0430. (Parker, PA)

**TURKMENISTAN**—Turkmen Radio, 5015-Ashgabat at 1203 in (p) Turkmen. No response from this one after years of attempts! (Brossell, WI)

**UNITED STATES**—Voice of America, 7235 Northern Marianas Relay in listed KK at 1302, 7295 via Novosibirsk in CC at 1426, 7390 via Novosibirsk in (I) Cantonese at 1314, 11700 Thailand Relay with

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American jazz at 1320. (Brossell, WI) 11675 in (I) Urdu at 1436 and 15460 Thailand Relay at 1640. 15385 Philippines Relay in CC at 0001. (MacKenzie, CA) 17820 with M and news in PP. (Barton, AZ)

Radio Free Asia, 9490 via Lithuania in Uighur at 0117. (Sacks, NH) 11590 Kuwait Relay in (I) Tibetan at 1316, //11635 Thailand. (Brossell, WI) 13625 Northern Marianas in CC at 1832 and 15585 Northern Marianas in CC at 2345. (MacKenzie, CA)

Radio Marti, 7365 - Greenville in SS at 0107 and 9565-Greenville in SS at 2200. (Sacks, NH) 11775-Greenville in SS at 0040 and 11930-Greenville in SS at 2237. (MacKenzie, CA)

Radio Free Europe/Radio Liberty, 7435 Biblis Relay in RR at 0445. (Parker, PA)

AFN/AFRTS, 12133.5u-Key West with Fox News at 0427. (Parker, PA)

Adventist World Radio, 11750 in (I) Hausa at 1942. (Brossell, WI) 15155 via Nauen in (I) Oriya with upbeat Nepali-type music to 1757\*. (Parker, PA)

WBCQ, Maine, 7415 at 2350 with *The Last Roundup* pgm. (Fraser, ME)

Family Radio, Florida, 9310 via Kazakhstan in (I) Tagalog at 1252 and 11665 via Ascension in (I) Yoruba at 1951. (Brossell, WI) 11855-Okeechobee in SS at 2135, 15130 in SS at 2030 and 17555-Okeechobee in GG at 11833 and 17690 in TT at 1838. (Sacks, NH) 13615 at 2230. (Barton, AZ) 17725 in FF at 2140, 18930 in AA at 2125 and 18980 at 2120. (MacKenzie, CA)

Gospel for Asia, 12005 via Germany in an unid language with hymns and songs at 1443. (Brossell, WI)

WHRI/World Harvest Radio, Indiana, 9930 via Palau at 1420 with an EE sermon. (Brossell, WI)

KJES, New México, 11715-Vado, at 1430 barely heard, only a trace of audio. (Barton, AZ) 1335 with a child asking if they're being heard. (Maxant, WV)

WWCR, Tennessee, 5890 at 0550, 5935 at 0552, 9980 at 2325 and 13845 at 2206. (MacKenzie, CA) 9980 at 1915. (Barton, AZ)

WTWN, Tennessee, 9480 at 2327. (MacKenzie, CA)

WTWW, Tennessee, 5755 at 0543. (MacKenzie, CA)

KVOH, California, 17775 in SS at 1846. (Sacks, NH) 2135. (MacKenzie, CA)

WTJC, Kentucky, 9379 at 0058. (Sacks, NH)

WEWN, Alabama, 12050 in SS at 2021. (Sacks, NH) 2354 in SS, 15610 in EE at 2344. (MacKenzie, CA) 13580 at 1330 and 15610 with call-in at 1850. (Maxant, WV)

VATICAN—Vatican Radio, 7250 at 0513. (Parker, PA) 7305 in SS at 0153, 7355 in Tamil at 0101 and 15570 in PP at 1827. (Sacks, NH) 11645 to Africa at 1745. (Maxant, WV)

VENEZUELA—Radio Nacional, 11670 in SS at 2244. (Sacks, NH) 15250 in SS at 2300. (Barton, AZ) 2322 in SS. (Fraser, ME)

VIETNAM—Voice of Vietnam, 12020 signing on in EE at 1330. (Sellers, BC)

YEMEN—Republic of Yemen Radio, 9780 at 0342 with M in AA with M.E. vocal. (D'Angelo, PA)

ZAMBIA—CVC-One Africa, 4965 with an EE sermon at 0320. (Brossell, WI) 13590 on old South African churches. Also, 15255 with religious vocals and preaching. (Maxant, WV)

And, once again, order is restored! Hearty thanks and high fives to everyone who joined in this time: Rick Barton, El Mirage, AZ; Fotios Padazopoulos, Zaharo,

Greece; Brian Alexander, Mechanicsburg, PA; Stewart MacKenzie, Huntington Beach, CA; Rich D'Angelo, Wyomissing, PA; Ralph Perry, Wheaton, IL; George Zeller, Cleveland, OH; Harold Sellers, Vernon, BC; Robert Brossell, Pewaukee, WI; William Hassig, Mt. Pleasant, IL; Peter Ng, Johor Bahru, Malaysia; Robert Fraser, Belfast, ME; Charles Maxant, Hinton, WV; Richard Parker, Pennsburg, PA; Michael Yohnicki, London, ON and a welcome to Benjamin Sacks, Brookline, NH. Thanks to all of you! Until next month, good listening!

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# Disappearing Sunspots and an Ice Age?

by Tomas Hood, NW7US, [nw7us@arrl.net](mailto:nw7us@arrl.net)

In November 2009's *The Propagation Corner*, the research by S.K. Solanki and his students from Zurich — starting in 1990 with the new infrared capability at the now McMath-Pierce Solar Telescope on Kitt Peak in Arizona — was explored in light of the continued work of the team of scientists led by Dr. Matthew Penn.

Each team made observations of sunspots, mapped magnetic fields and other spectral data, and discovered an unsettling possibility: In terms of magnetic strength and area, the vigor of sunspots is decreasing over time, independent of the sunspot cycle.

I interviewed Dr. Penn for a podcast you can hear at: < <http://is.gd/AYYdmf> >. In it, he speculated if the trend emerging from the latest data analyzed through 2009 continued, it might indi-

*“Is the Sun a machine that follows an exact sequence of events, and each cycle follows a set of rules? Or is the Sun a dynamic, randomly active object that is not so predictable?”*

cate that by 2015 or so, sunspots might just disappear completely and the next cycle (Sunspot Cycle 25 — we're now at the beginning of Cycle 24) would be a *dead* cycle.

At the time this possibility was announced, most of the solar scientists dismissed the conclusions, pointing out the very limited duration of the observations and other statistical issues in the data.

Fast-forward to June, 2011. At the annual meeting of the solar physics division of the American Astronomical Society, held at New Mexico State University in Las Cruces, results of solar research studies were announced that quickly caught the attention of the world's press, governments and radio hobbyists from all corners of the Earth.

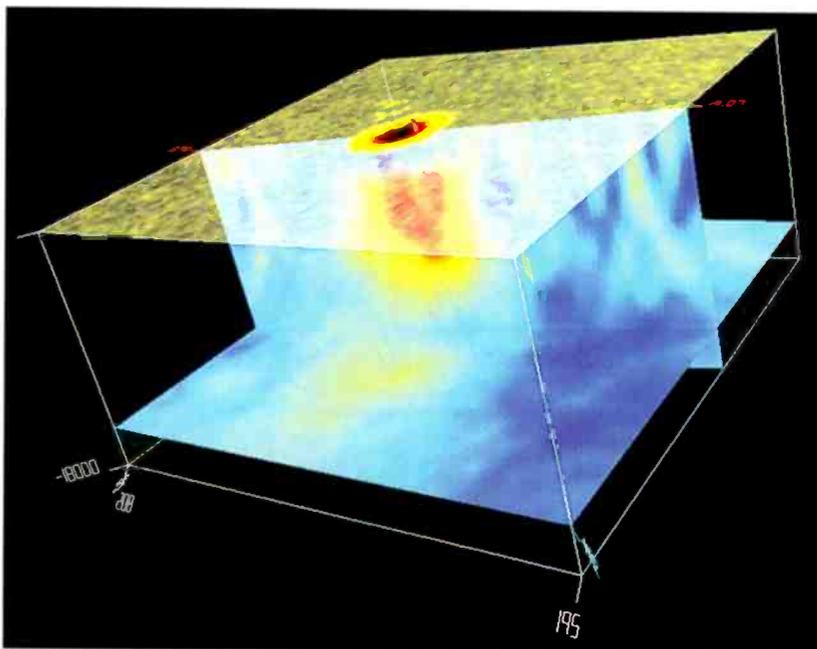
“The solar cycle may be going into a hiatus,” Frank Hill, associate director of the National Solar Observatory's Solar Synoptic Network, said during a news briefing June 14, 2011.

The studies looked at a missing jet stream in the solar interior, fading sunspots on the sun's visible surface — *remember Dr. Penn, who everyone discounted?* — and changes in the corona and near the poles.

“This is highly unusual and unexpected,” Hill said. “But the fact that three completely different views of the sun point in the same direction is a powerful indicator that the sunspot cycle may be going into hibernation.”

That statement has created intense discussion and a flurry of news stories on every network, blog and in many newspapers. *Why?* One of the implications is that some believe that the level of sunspot activity (more specifically, the correlating energy radiated by the Sun that ebbs and flows along with the sunspot cycle's rise and fall in activity) has an influence on Earth's climate.

The less energetic the Sun, the lower will be Earth temperatures. They point to the Maunder



**Figure 1:** The subsurface structure (sound speed) below a sunspot as derived from Doppler measurements by MDI (Michelson Doppler Imager). Using the technique of time-distance helioseismology, three planes are shown. The surface intensity shows the sunspot with the dark central umbra surrounded by the somewhat brighter, filamentary penumbra. The second plane cuts from the surface to 24,000 kilometers deep showing areas of faster sound speed as reddish colors and slower sound speed as bluish colors. The third plane (bottom) is a horizontal cut at a depth of 22,000 kilometers showing the horizontal variation of sound speed. (Courtesy of National Aeronautics and Space Administration/Goddard Space Flight Center/Solar and Heliospheric Observatory)

Minimum, which was a 70-year period from 1645 to 1715 when the sun showed virtually no sunspots — a period during which we had unusually low temperatures around the world.

Frank Hill is the lead author of one of the studies that used data from the Global

Oscillation Network Group to look at characteristics of the solar interior. The group includes six observing stations around the world.

Astronomers examined an east-west zonal wind flow inside the Sun, called torsional oscillation. The latitude of this jet

stream matches the new sunspot formation in each cycle, and the models successfully predicted the late onset of the current Cycle 24. Note, though, this prediction was not accurate regarding the exact timing of the start and rise of Cycle 24, and scientists have been constantly adjusting the model retroactively to better *fit it* to the data, hoping that the models will predict the future cycles more accurately — but we won't know until after the fact.

“We expected to see the start of the zonal flow for Cycle 25 by now, but we see no sign of it,” Hill said. “The flow for Cycle 25 should have appeared in 2008 or 2009. This leads us to believe that the next cycle will be very much delayed, with a minimum longer than the one we just went through.” Hill estimated that the start of Cycle 25 could be delayed to 2021 or 2022 and will be very weak, if it even happens at all.

### The Sun's Magnetic Field

Another study included in the announcement at the AAS annual meeting was that of Dr. Penn, himself. Now, instead of brushing aside the speculations he and his team have made, they feel it could have merit, since the other two studies also indicate the same outcome.

With more than 13 years of sunspot data collected at the McMath-Pierce

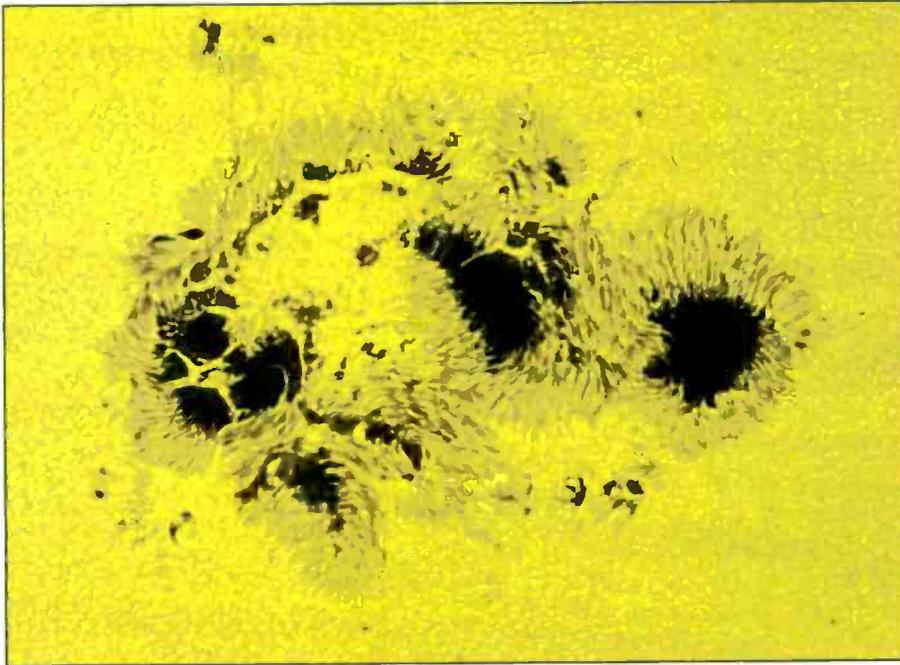


Figure 2: This detailed image of a complex sunspot group shows dark, highly magnetized “umbrae” and structured “penumbrae.” (Courtesy of Southwest Research Institute / Dr. Matt Penn)

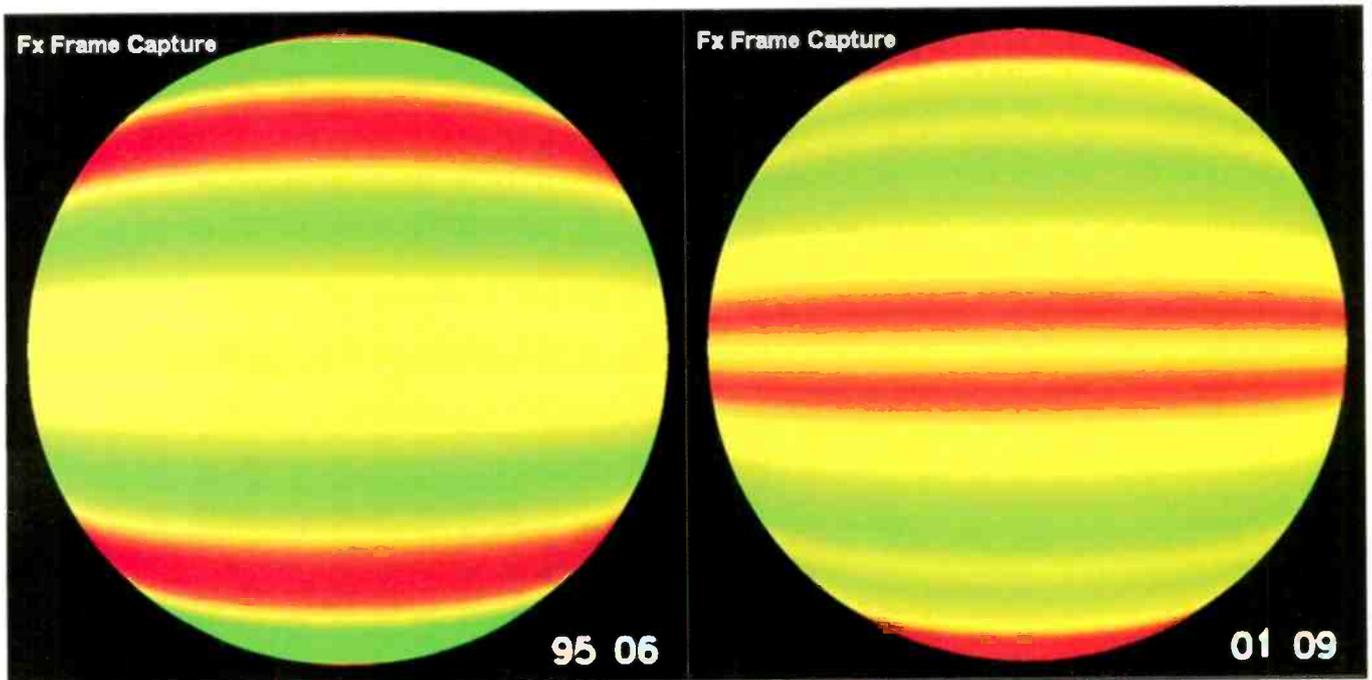


Figure 3: Mobile “jet streams” in the Sun migrate from the poles toward the equator as the solar cycle progresses. At left (solar minimum) the red jet streams are located near the poles. At right (solar maximum) they have migrated close to the equator. The jet streams are associated with the locations where sunspots emerge during the solar cycle, and are thought to play an important role in generating the Sun’s magnetic field. (Courtesy of Southwest Research Institute)

Optimum Working Frequencies (MHz) - For September 2011 - Flux = 120, 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	25	24	23	21	19	17	16	15	14	13	12	12	12	15	19	22	23	24	25	26	26	27	27	26
NORTHERN SOUTH AMERICA	33	33	32	29	26	24	22	21	19	18	17	16	16	17	22	25	27	29	30	31	32	33	33	33
CENTRAL SOUTH AMERICA	33	30	27	25	23	21	20	18	17	17	16	16	16	20	25	29	30	31	32	33	34	34	34	33
SOUTHERN SOUTH AMERICA	34	32	29	27	24	22	21	19	18	17	16	16	17	16	20	25	28	31	33	34	35	36	36	35
WESTERN EUROPE	11	11	11	10	10	10	11	11	10	10	10	10	16	18	20	21	22	22	21	21	20	19	17	14
EASTERN EUROPE	10	10	10	12	15	15	12	11	11	10	10	10	14	17	19	20	19	18	18	17	15	13	11	
EASTERN NORTH AMERICA	28	26	24	20	18	17	16	15	14	14	13	13	13	20	24	26	28	29	29	30	30	30	29	29
CENTRAL NORTH AMERICA	16	15	14	13	11	10	9	8	8	7	7	7	9	12	14	15	15	16	16	16	16	16	16	
WESTERN NORTH AMERICA	8	8	8	7	7	5	5	5	4	4	4	3	3	5	7	7	8	8	8	8	9	9	9	
SOUTHERN NORTH AMERICA	27	26	24	22	20	18	17	16	15	14	13	13	12	12	18	21	24	25	26	27	27	27	27	
HAWAII	23	23	23	22	22	20	18	17	15	14	13	12	12	11	11	10	13	16	19	20	21	22	23	23
NORTHERN AFRICA	13	12	12	11	11	10	11	11	10	10	10	10	16	19	20	21	22	23	22	21	19	16	15	14
CENTRAL AFRICA	17	16	15	14	14	12	11	11	10	10	10	10	16	18	20	21	22	23	23	23	23	21	20	18
SOUTH AFRICA	22	20	19	17	15	15	14	13	13	12	12	12	18	22	24	26	27	28	28	28	28	28	26	23
MIDDLE EAST	11	10	10	10	16	13	11	11	10	10	10	15	18	19	20	21	20	18	14	13	12	12	11	
JAPAN	24	23	23	22	21	20	17	12	12	11	11	10	10	10	10	11	10	10	10	13	18	20	22	23
CENTRAL ASIA	24	23	23	22	21	20	17	12	12	11	11	10	10	10	10	13	17	16	15	14	13	15	20	24
INDIA	17	17	17	17	17	15	11	11	10	10	10	10	10	10	10	9	9	12	14	15	16	16	16	
THAILAND	21	23	22	22	21	19	17	12	12	11	11	10	10	10	15	18	18	17	16	15	14	14	17	
AUSTRALIA	30	31	33	34	33	31	27	25	23	21	20	19	18	17	16	15	19	18	17	16	18	22	25	28
CHINA	22	23	22	22	21	19	17	13	12	11	11	10	10	10	10	11	11	11	10	10	10	15	19	20
SOUTH PACIFIC	35	36	35	35	33	31	29	26	24	22	21	19	18	17	16	16	16	16	18	24	28	30	33	34
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	29	28	26	24	22	20	18	17	16	15	14	14	15	20	23	25	27	28	29	30	30	30	30	30
NORTHERN SOUTH AMERICA	30	30	29	26	24	22	20	19	17	16	15	15	15	18	21	23	25	27	28	29	30	30	31	31
CENTRAL SOUTH AMERICA	32	29	27	25	23	21	20	18	17	17	16	16	18	24	27	29	30	31	32	33	34	34	34	33
SOUTHERN SOUTH AMERICA	33	32	29	26	24	22	21	19	18	17	16	16	16	20	24	27	30	31	33	34	35	35	36	35
WESTERN EUROPE	11	11	11	10	10	10	10	10	10	10	9	17	19	20	21	22	22	22	21	20	19	17	13	
EASTERN EUROPE	14	11	12	13	12	11	11	10	10	10	10	16	18	20	20	20	19	19	18	18	17	17	16	
EASTERN NORTH AMERICA	20	19	17	15	14	13	12	11	11	10	10	9	13	16	18	19	20	21	22	22	22	21	21	
CENTRAL NORTH AMERICA	9	9	8	7	6	6	5	5	5	4	4	4	4	7	8	9	9	9	10	10	10	10	10	
WESTERN NORTH AMERICA	16	15	15	13	11	10	9	9	8	8	8	7	7	8	12	14	15	16	16	16	17	17	16	
SOUTHERN NORTH AMERICA	19	18	17	15	14	13	12	11	10	10	9	9	8	11	14	16	17	18	19	19	19	19	19	
HAWAII	27	27	26	25	23	20	19	17	16	15	14	13	13	12	13	12	16	19	22	24	25	26	27	27
NORTHERN AFRICA	17	16	13	12	12	11	11	10	10	10	10	17	20	21	22	23	24	24	24	24	21	20	18	
CENTRAL AFRICA	18	17	13	12	12	11	11	10	10	10	10	17	20	21	22	23	23	24	24	24	23	21	19	
SOUTH AFRICA	22	20	19	18	17	16	17	18	17	16	15	19	25	29	31	33	35	35	34	33	31	28	26	24
MIDDLE EAST	11	11	11	10	11	11	11	10	10	10	10	17	19	21	22	22	22	21	19	16	14	13	13	12
JAPAN	23	22	21	20	18	14	12	11	11	11	10	10	10	10	11	11	11	10	10	13	18	20	22	23
CENTRAL ASIA	23	22	21	20	18	14	12	11	11	10	10	10	10	13	18	18	16	15	15	14	13	14	20	23
INDIA	12	13	14	15	14	12	11	11	10	10	10	10	15	15	15	14	13	11	10	10	9	9	9	
THAILAND	20	21	21	19	17	13	12	11	11	10	10	10	10	16	18	20	20	18	17	16	15	14	14	16
AUSTRALIA	30	32	33	32	29	26	24	22	21	19	18	17	16	16	17	20	19	17	17	16	19	23	26	29
CHINA	21	21	20	19	17	12	12	11	11	10	10	10	10	12	12	11	11	10	10	10	10	13	18	20
SOUTH PACIFIC	36	35	34	33	31	28	26	24	22	20	19	18	17	16	17	17	16	15	20	26	29	32	34	35
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	23	22	20	19	17	16	15	14	13	12	11	11	14	17	19	21	22	23	24	24	24	24	24	24
NORTHERN SOUTH AMERICA	27	26	24	22	20	19	17	16	15	14	13	13	15	18	20	22	23	25	26	26	27	27	27	27
CENTRAL SOUTH AMERICA	31	28	26	24	22	20	19	18	17	16	16	17	22	25	27	29	30	31	32	33	33	33	33	33
SOUTHERN SOUTH AMERICA	33	31	28	26	24	22	20	19	18	17	16	16	20	23	26	28	30	32	33	34	34	35	35	34
WESTERN EUROPE	11	10	10	10	9	9	9	10	9	10	16	19	20	21	22	22	22	22	21	20	19	18	16	12
EASTERN EUROPE	11	11	10	10	10	10	10	10	10	10	17	19	21	22	22	22	21	20	20	19	17	15	11	
EASTERN NORTH AMERICA	9	9	8	7	6	6	5	5	5	4	5	7	8	9	10	10	10	10	10	10	10	10	10	10
CENTRAL NORTH AMERICA	21	19	17	15	14	13	12	12	11	10	10	10	14	17	19	21	22	22	23	23	23	23	22	22
WESTERN NORTH AMERICA	28	26	24	21	19	17	16	15	14	14	13	13	13	21	24	26	28	29	30	30	30	30	29	
SOUTHERN NORTH AMERICA	23	22	20	18	17	16	14	13	13	12	11	11	12	16	19	20	22	23	24	24	24	24	24	
HAWAII	29	27	26	23	21	19	18	17	16	15	14	13	13	15	14	14	17	21	23	26	27	28	29	30
NORTHERN AFRICA	18	17	16	15	14	14	13	13	13	13	20	24	26	28	29	30	30	30	29	28	26	23	21	20
CENTRAL AFRICA	18	17	16	15	14	14	14	13	13	13	20	24	26	28	29	30	30	29	28	26	24	22	20	
SOUTH AFRICA	22	20	19	18	17	16	17	18	17	16	18	23	27	29	31	33	34	35	34	33	31	28	26	24
MIDDLE EAST	15	14	13	12	12	11	11	10	10	10	10	17	20	22	23	23	24	24	24	22	20	18	17	16
JAPAN	21	20	18	12	12	11	11	10	10	10	10	10	12	12	11	11	10	10	10	11	17	20	21	22
CENTRAL ASIA	21	19	17	12	12	11	11	10	10	10	10	15	18	20	19	17	16	15	14	13	13	19	22	
INDIA	10	10	10	11	11	11	10	10	10	10	15	18	18	18	18	17	17	16	15	14	12	10	10	10
THAILAND	19	18	14	12	11	11	10	10	10	10	13	18	20	21	22	22	20	19	18	16	15	15	14	13
AUSTRALIA	31	33	31	28	26	24	22	20	19	18	17	16	16	21	21	20	18	17	17	16	20	24	27	29
CHINA	20	18	15	12	11	11	10	10	10	10	10	17	19	15	12	11								

Telescope at Kitt Peak in Arizona, Dr. Penn and William Livingston observed that the average magnetic field strength declined significantly during Cycle 23 and now into Cycle 24. Consequently, sunspot temperatures have risen, they observed.

If the trend continues, the Sun's magnetic field strength will drop below a certain threshold and sunspots will largely disappear. The field no longer will be strong enough to overcome such convective forces on the solar surface.

In the third study presented, Richard Altrock, manager of the U.S. Air Force's coronal research program at the National Solar Observatory's (NSO) facility in New Mexico, examined the Sun's corona and found a slowdown of the magnetic activity's usual "rush to the poles."

Altrock carefully examined 40 years of observations from NSO's 16-inch (40 centimeters) coronagraphic telescope. The data reveals that new solar cycle activity typically emerges at a latitude of about 70 degrees at the start of the solar cycle, then moves toward the equator. The new magnetic field simultaneously pushes remnants of the past cycle as far as 85 degrees toward the poles.

The current cycle, however, is showing some different behavior. Altrock explains: "Cycle 24 started out late and slow and may not be strong enough to create a rush to the poles, indicating we'll see a very weak solar maximum in 2013, if at all." That's quite a statement, and one that no high-frequency radio communicator wants to hear!

"If the rush to the poles fails to complete, this creates a tremendous dilemma for the theorists, as it would mean that Cycle 23's magnetic field will not completely disappear from the polar regions," Altrock said. "No one knows what the sun will do in that case."

For the radio communicator, we've already had a taste of a spotless Sun for an extended period of time. This past sunspot cycle minimum provided us with incredible insight on the nature of our ionosphere and how we can still communicate around the world even when there is so little solar activity.

If the models prove accurate and the trends continue, the implications could be far-reaching. Not just for radio communications, but in many other areas of our environment.

"If we are right, this could be the last solar maximum we'll see for a few decades," Hill said. "That would affect

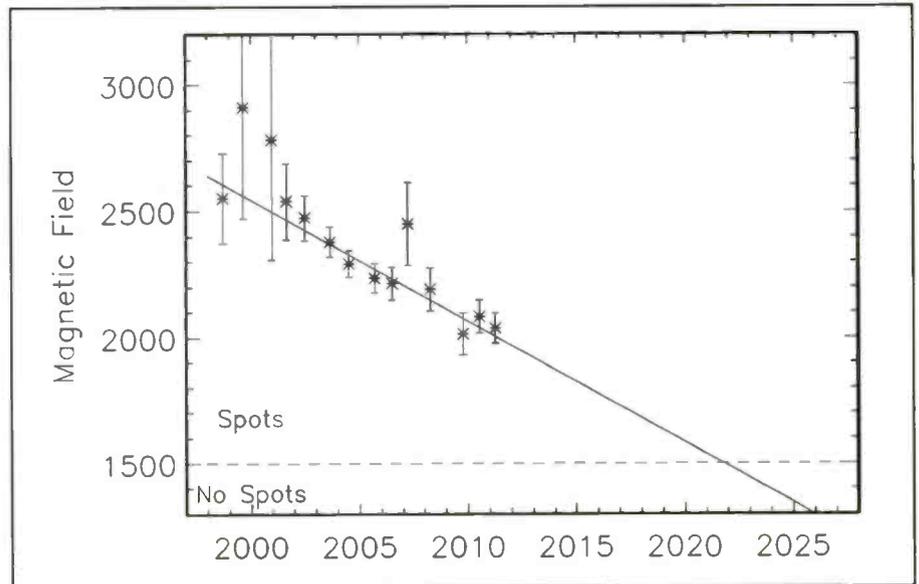
everything from space exploration to Earth's climate."

## No Global Warming? An Ice Age Instead?

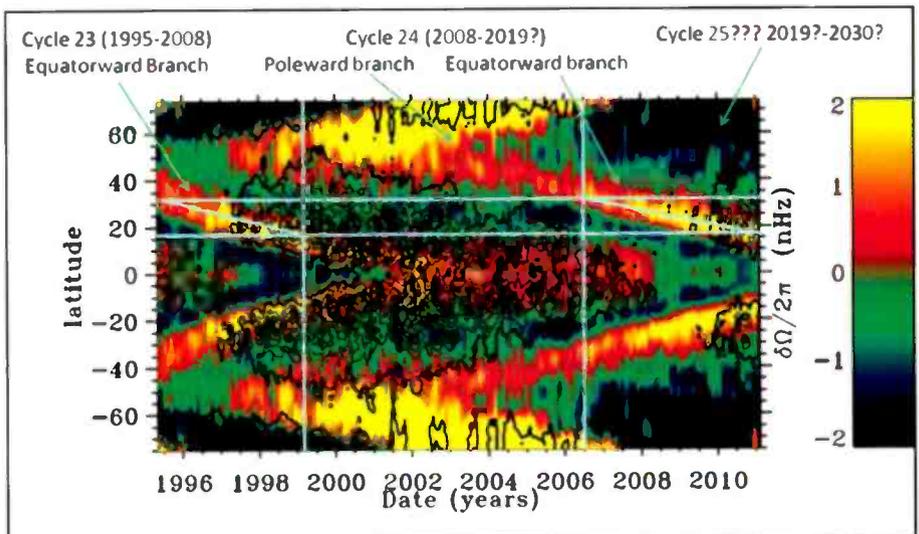
A number of news outlets such as the Daily Mail (in the United Kingdom) ran headlines like: "Earth facing a mini-Ice Age 'within ten years' due to a rare drop in sunspot activity." The "there's no glob-

al warming going on" crowd jumped for joy, hearing this announcement. Could it be true that the Sun is "cooling down" and we're going to see a global cooling, too? Not global warming?

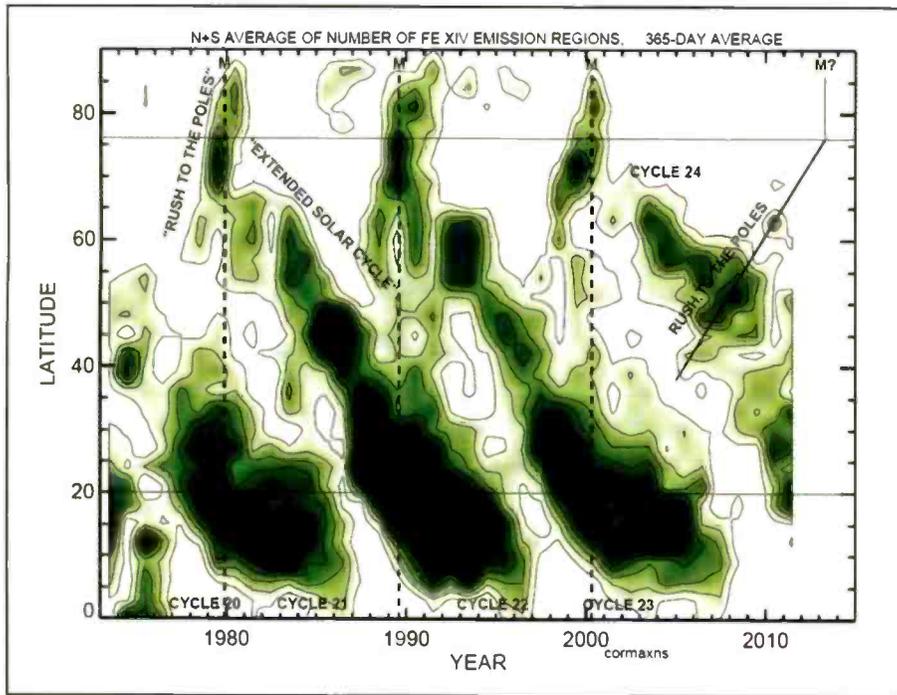
Let's remember some key points as we consider this proclamation by these scientists. Those studying the Sun have been trying to figure out the cycle of sunspots for more than 400 years. More recently, over the last three cycles, we've



**Figure 4:** Average magnetic field strength in sunspot umbras has been steadily declining for over a decade. The trend includes sunspots from Cycles 22, 23 and (the current cycle) 24. (Courtesy of Southwest Research Institute / Dr. Matt Penn)



**Figure 5:** Latitude-time plots of jet streams under the Sun's surface show the surprising shutdown of the solar cycle mechanism. New jet streams typically form at about 50 degrees latitude (as in 1999 on this plot) and are associated with the following solar cycle 11 years later. New jet streams associated with a future 2018-2020 solar maximum were expected to form by 2008 but are not present even now, indicating a delayed or missing Cycle 25. (Courtesy of Southwest Research Institute)



**Figure 6:** Plots of coronal brightness against solar latitude show a “rush to the poles” that reflects the formation of subsurface shear in the solar polar regions. The current “rush to the poles” is delayed and weak, reflecting the lack of new shear under the photosphere. Note the graph depicts both north and south hemispheres overlaid into one map of solar magnetic activity, and that the patterns correspond with the butterfly diagram above. (Courtesy of Southwest Research Institute)

increasingly had better tools and methods by which to study our nearest star. In all honesty, we’ve only had the highly accurate instruments that provide the deep view of the Sun’s internal activity for *one cycle*. That’s not a lot of data upon which to base whole models.

The Sun’s cycles are very complex, but as technology has gotten better, some trends have been found. Now scientists are noticing that these indicators are all pointing to the Sun possibly settling down magnetically.

But do we have enough data, based on a long-enough period of time — dozens if not hundreds of sunspot cycles — to truly be able to forecast the future activity of the Sun? Is the Sun a machine that follows an exact sequence of events, and each cycle follows a set of rules? Or is the Sun a dynamic, randomly active object that is not so predictable?

Regular readers of this column remember that the solar scientists predicted a number of times when Sunspot Cycle 24 would begin and when Cycle 23 would officially end. Each prediction was wrong.

Not once have these scientists been correct with their models. Yet, they still predict when the peak of the current cycle is likely to occur — 2013, or so — and

that it may be weak, or may now not even exist. And, we have this new proclamation that the next cycle may be a complete flat-lined minimum.

*Will they be right, this time around?*

Going back to the global warming question, and whether or not a spotless Sun will cause the temperatures to plummet, climate scientists are all scrambling to assure us that the Sun has no affect on Earth’s temperatures, at least from the stand-point of sunspot activity.

They are claiming that humans have more influence on the rise and fall of global temperatures than the huge ball of plasma that can give us sunburns. They are going to great lengths to assure us that we still need expensive policies to be sure we’re reducing our carbon footprint — in turn saving our planet from certain doom.

Global warming experts tells us that if the Sun ends up spotless and lacks the energy we’ve come to enjoy since the days when the Thames River was frozen over, we’re still in danger of our polar ice caps melting. Therefore, we must be sure that our governments budget accordingly and mandate policies by which industries and civilians operate.

Perhaps the same agenda drives climate scientists that drive solar scientists

as they make their presentations to financiers: They need a cause worth funding. At the same time that the announcement was made in June regarding the disappearing sunspot cycles, the President met with England’s government to discuss the need to fund Space Weather and Solar Science initiatives. *Timing is everything.*

In any case, we radio communicators will be ready. If our weather turns rough and our lakes freeze over, or if the oceans rise and our cities flood, we know how to rise to the occasion and survive, helping our neighbors, providing communications and assistance.

Your columnist, though, is not holding a lot of credence with either group of prognosticators. The Sun is not going to sleep. We are neither going into a Grand Cookout, nor an Ice Age. Perhaps the Sun will not be easily predictable. That’s this columnist’s prediction.

## HF Propagation

With the 10.7-cm flux levels expected to be around 120 during September, propagation on the bands above 31 meters will begin to play strongly, as F-region propagation on paths crossing low and middle latitudes are highly energized.

As we move toward winter, trans-polar propagation on higher frequencies suffers making some parts of the world difficult to hear over these paths. To catch the openings over high latitudes, get on these bands shortly after sunrise or watch for polar signals as they close for the evening.

Sixteen meters, used by a larger group of broadcasters, will be the most reliable higher band. This band will usually supply day-path propagation even over the polar paths. A considerable improvement is expected, with the band opening shortly after sunrise and remaining open until after sundown.

However, 16 meters will not stay open late into the night like it typically does during the Spring season. Openings should be possible from all areas of the world, with conditions best from Europe and the north-east before noon, and from the rest of the world during the afternoon hours.

Openings from the South Pacific, Australia, New Zealand and the Far East should be possible well into the early evening, particularly when propagation conditions are *High Normal* or better.

Look for 19 and 22 meters to open for DX at sunrise and remain open from all directions for a few hours. It should be

possible to hear many areas of the world throughout the daylight hours, with a peak in the afternoon.

Nighttime conditions will favor openings from the south and tropical areas, but some openings will also be possible from other areas. Look for polar gray-line propagation from Asia. Long-path is common on 19 meters from southern Asia, the Middle East and northeastern Africa as well as the Indian Ocean region via the North Polar path.

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

After the Autumnal Equinox, (September 23, at 0905 GMT), expect ever-improving nighttime DX conditions on the bands from 41 down to 120 meters as we move into October. This is due to the gradual increase in the hours of darkness and a seasonal decrease in the static level.

Forty-one meters should be best for worldwide DX from sunset to sunrise. Forty-nine and 60 meters are used by a lot of the larger, stronger broadcasting stations, so you can always depend on hearing signals from early evening (from before sunset) to a few hours after sunrise. For exotic regional signals, check 75 through 120 meters during the hours of darkness, especially for an hour or so before local sunrise.

## Mediumwave Propagation

With a possible increase in geomagnetic activity this month, there is a chance for occasional weak-to-moderate geomagnetic disturbances that can attenuate mediumwave DX over northern latitudes. This can be a blessing for those trying to DX tropical AM broadcast stations and mid-latitude medium and low-power stations, since the interference from strong stations on signal paths crossing the higher latitudes is reduced.

Signals below 120 meters will improve after this month as the hours of darkness increases, and because of the decline of noise-producing weather. Seasonal static, which makes it difficult to hear the weak DX signals, is decreasing little-by-little as we move away from the Autumnal Equinox. Stretch out those beverage antennas, and start looking for signals along nighttime paths.

## VHF Conditions

The Sporadic-E season we experienced earlier in the year is pretty much over. There will be a few openings late this year, but this is not the month typically associated with Sporadic-E.

Troposcatter is a real possibility, however. Look for signals on paths crossing through stalled high-pressure zones in the midwest, or along cool, wet air masses.

Additionally, toward the end of September, Trans-equatorial (TE) propagation will begin to occur between southern North America and northern South America. Openings will generally occur in the late afternoon to early evening. F-region propagation activity may occur during the day on the VHF-TV bands, though the 10.7-cm flux levels are not going to support reliable propagation at these higher frequencies.

Don't expect any east-west paths to be open. Tropospheric conditions are generally very good for many of the VHF bands during September with the appearance of different weather

fronts. This will be the primary mode for working up to 300 miles. Continue to expect a high number of coronal mass ejections, possibly triggering Aurora during September and October. Look for days when the  $K_p$  index is above five.

## Current Sunspot Cycle 24 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for May 2011 is 41.6, down from April's 54.4. The lowest daily sunspot value of eight was recorded on May 24. The highest daily sunspot count was 82 on May 30. The 12-month running smoothed sunspot number centered on November 2010 is 26.5, up from October's 23.2. A smoothed sunspot count of 66, give or take about 9 points, is expected for September 2011.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 95.9 for May 2011, down from April's 112.6. The 12-month smoothed 10.7-cm flux centered on November 2010 is 87.7, up from October's 85.3. The predicted smoothed 10.7-cm solar flux for September 2011 is 120, give or take about 9 points. Expect strong openings on higher bands primarily on paths between the northern and southern hemispheres. Expect an abundance of daytime activity on frequencies between 15 MHz up to 19 MHz.

The observed monthly mean planetary A-Index ( $A_p$ ) for May 2011 is 9, as it was for April. These figures still indicate very quiet geomagnetic conditions overall, but June became a much more active month, so this will be seen in the next issue of this report. The 12-month smoothed  $A_p$  index centered on November 2010 is 6.4, the same as October's 6.4. Expect the overall geomagnetic activity to be varying greatly between quiet to moderate storm level during September, since the increased sunspot activity includes flares and related space weather, as well. With this, Aurora is certain, along with the possibility for radio aurora-mode propagation. Refer to the Last Minute Forecast at < <http://sunspotwatch.com> > for the outlook on conditions during this month.

## Connections . . .

Do you have a question you'd like me to tackle in this column? Drop me an email or send a letter, and I'll be sure to cover it. I'd love to hear any feedback you might have on what I have written. You may email me, write me a letter or catch me on the HF amateur radio bands.

If you are on Facebook, check out < <http://www.facebook.com/spacewx.hfradio> > and < <http://www.facebook.com/NW7US> >. Speaking of Facebook — check out the *Popular Communications* magazine fan page at < <http://www.facebook.com/PopComm> >.

I invite you to visit my online propagation resource at < <http://sunspotwatch.com/> >, where you can get the latest space data, forecasts and more — all in an organized manner.

Please come and participate in my online propagation discussion forum at < <http://forums.hfradio.org/> >.

*Until next month,*

73 de NW7US, Tomas Hood

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@NW7US

@hfradiospacewx

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## Meeting Your Match: Antenna Tuner Tips and Tricks

by Kirk Kleinschmidt, NT0Z  
[kirk@cloudnet.com](mailto:kirk@cloudnet.com)

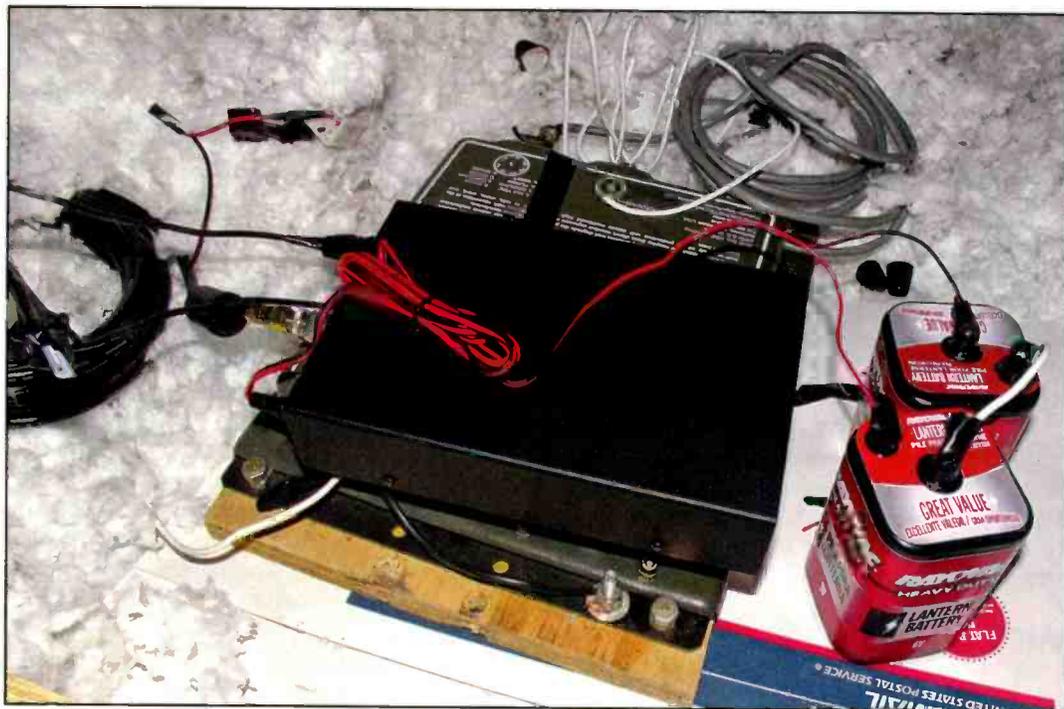
*“When I tested one particular 300-watt antenna tuner on 160 meters, a plastic insulator on the main inductor would burst into flame in time with the transmitter keying — at a mere 100 watts!”*

**W**arning! Some of the stuff I’m going to tell you this month is *technically wrong*. So why am I even bothering? Because, although it may be inaccurate from a scientific point of view, in the *real world*, it’s worth its weight in gold.

You might not pass a physics exam by following my advice, but you will stand a good chance of putting out a good signal from your wire multiband antenna, which I’m hoping is more important!

Except for antennas themselves, few facets of amateur radio are more misunderstood than antenna tuners. Figuring out how and when to use them — and which type to use in any given situation — often confuses even more-experienced operators. Misleading information abounds, as do myths and legends.

Try to keep this in mind as we move forward — and don’t waste time writing any hate mail! If you keep a copy of Walt Maxwell, W2DU’s,



Lurking just inside my attic access hatch and floating on a foot of fluffy insulation is my trusty LDG Z-11 Pro II automatic antenna tuner. It is designed to be shack mounted (see the other photo), but many operators use the tuner remotely because, well, *it's possible!* The lantern batteries keep the tuner powered for more than a year. Mine is fed with about 60 feet of RG-6 coax and, although it's difficult to see from this view, instead of using a length of coax at the output connector, I connected a 20-foot run of open-wire line instead. My horizontal loop runs around the attic perimeter, but the tuner is mounted right inside the attic hatch for convenience. This tweak makes the Z-11 work like an *autocoupler* designed for remote mounting. It's protected from the weather inside the attic, so I didn't have to get creative with the weatherproofing. Just beneath the Z-11, and serving as a shelf of sorts, is my partially-functional SGC *autocoupler*, which needs servicing after 15 years in the field. Using one *autocoupler* as a shelf to support another? *Now that's luxury.* (Actually, it's laziness. When the SGC unit became flaky I simply set the Z-11 on top of it for testing. As you can see, it's still there!) Both units make short work of tuning the loop on 160 through 6 meters, but the Z-11 will tune with just 0.1 watt of power, making it a bit more QRP friendly to my 5-watt signals. (Courtesy of NT0Z)

*Reflections* < <http://bit.ly/ltkyR4> > under your pillow or you've memorized everything ever written by Kurt N. Sterba in *WorldRadio Online* magazine < <http://www.WorldRadioMagazine.com> >, you need not bother showing me the error of my ways.

As I mentioned up front, I already know that some of this stuff is technically *wrong*. It just feels so right because it works so well.

As you can imagine, this is a big topic that can't be completely addressed in one column (or 20 columns), so let's get started.

## Antennas and Feed Lines Are Joined at the Hip

Feed lines are so important that we can't even discuss antennas or antenna tuners without considering them. Most hams use simple antennas such as dipoles or inverted Vs fed with 50-ohm coax, and that's primarily the configuration we're assuming this month. Some antennas are fed with 450-ohm, open-wire line or ladder-line window line (generally superior), which I often recommend.

When you installed that dipole antenna in the backyard, you probably used a length of 50-ohm coaxial cable to connect the antenna to your radio, which is located somewhere in your house.

In the simplest sense (which is already technically *wrong* in so many ways), your transceiver is designed to transmit into an antenna that has a feed point impedance of 50 ohms.

When your antenna is properly matched to your transmitter, most of the power sent through the transmission line reaches the antenna and is radiated into space — which is what you want.

If the antenna isn't properly matched, some of the energy in the transmission line is wasted as heat and isn't radiated. Severe mismatches can *greatly* reduce your transmitted signal and might even damage or destroy your transmitter or transmission line. The greater the mismatch, the less power your antenna radiates.

The term for measuring the quality of the match or mismatch is called SWR (standing wave ratio), and it's measured with an SWR meter. Simply: A ratio of 1:1, or close to it, is best; 2:1 is usable; and 3:1 or greater probably indicates a serious mismatch — for antennas fed with 50-ohm coax, anyway.

If you're using an antenna on only one amateur band, trimming a wire (or

adjusting the element lengths of a beam antenna) so it presents a good match to your coax is the easy part. If you want wider coverage from the same antenna, you can insert an antenna tuner between your rig and your antenna. This is where things can get complicated.

## Enter the Antenna Tuner

By adjusting the antenna tuner you can *trick* your radio into happily putting out full power, even on frequencies where your antenna isn't anywhere near resonant.

When properly adjusted, a nearly-perfect match exists between your rig and the

tuner (1:1 SWR). There's *still* a mismatch between the antenna tuner and the antenna, but if you're using a high-quality transmission line, most of your precious RF energy makes it to the antenna and is radiated into the ether.

The antenna tuner is a handy, adjustable *transformer* that, within reason, lets you use a single antenna over a wider range of frequencies — or frequency bands.

Most beginning hams have the rig and the antenna tuner in the shack and the antenna in the backyard. With such a setup, a single antenna can be used on multiple bands, with the antenna



The front-panel view of the tiny-but-powerful LDG Z-11 Pro II automatic antenna tuner. Designed for shack mounting, the Z-11 can be used remotely if indoors or if weatherproofed. For more information see: < <http://www.ldgelectronics.com> >.



If teeny tuners don't float your boat, you want to run full legal power or you require the utmost in tuner efficiency, Palstar's massive AT4K (and AT5K) manual antenna tuners may give you the *diesel big rig* feel and performance (at a cost of \$800 to \$1,200). Check out all of Palstar's antenna tuners at: < <http://www.palstar.com> >.



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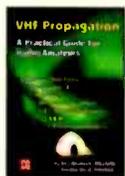


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tuner taking care of any unsightly SWR issues — *or so the mythology goes!*

This typical arrangement works best on the lower HF bands because coax losses increase with frequency. For best results, the antenna being tuned should be nearly resonant at your intended operating frequencies (meaning that the antenna's feed point impedance should be close to 50 ohms, which is often a difficult proposition).

Using your antenna tuner to adjust the match for a dipole that's resonant at 3.5 MHz to work at 3.9 MHz is a great idea. So is using an antenna tuner to load a 40-meter dipole on 15 meters, or an 80-meter dipole on 10 meters, because the bands are harmonically related in a way that results in reasonably-good feed point impedances for feeding with 50-ohm coax.

Using your shack-mounted tuner to load an 80-meter dipole on 160 meters, for example, is a *terrible* idea. Although the SWR between your rig and your tuner might be 1:1, the SWR on the coax that runs between your tuner and your antenna will be extremely high, which can result in *staggering* losses.

This is where most of us have problems. We think that because the antenna tuner presents a 1:1 match to our rig, which is now happily putting out full power and working like a charm, that plenty of RF is getting to the antenna and out into space.

If your antenna's feed point impedance is noticeably higher or lower than the expected 50 ohms at your operating frequency, you may be using your rig mostly as a space heater. Your transmitter may be pumping 100 watts into your antenna tuner, but because of SWR losses in your coax — plus internal losses in your antenna tuner — you may actually be radiating only 40, 20, 10 or even 5 watts or less.

## Tuner Secrets

To avoid the punishing SWR losses that result from high feed line SWRs, you'll have to do a bit of re-engineering.

Be sure to use shack-mounted antenna tuners with 50-ohm coax *only* for minor adjustments to antennas that are already *mostly resonant*.

If you try to go too far afield impedance-wise, your results will suffer dramatically. If your coaxial feed line is only a few feet long, feel free to disregard this bit of advice. If you're feeding an antenna that's in the same room as your transceiver, or just outside your bedroom window, etc., feed line losses will be minimal no matter what — unlike RFI, perhaps!

If your tuner must remain in your shack, consider changing your feed line to 450-ohm ladder line or open-wire line. Compared to coax, 450-ohm line is essentially lossless. It takes more care to install, however, which is why coax became so popular in the first place. This stuff far outperforms coax when it comes to SWR losses. In settings where coax losses might reach 3 to 30 dB, ladder-line losses might be 0.3 to 3 dB.

Conventional antenna tuners — primarily designed for coax-fed antennas — rarely handle ladder line effectively. A balun transformer is required to accommodate ladder line feeds and keep it electrically *balanced* — which is critical to overall performance and minimizing RFI. If you're making the move to ladder-line feeds (*one of my favorite "secret weapons"*), be sure to build or buy a tuner designed expressly for balanced lines.

For maximum convenience, put the antenna tuner at the feed point of the antenna. The need to have an antenna tuner in the shack is driven mostly by convenience and tradition — because it's completely the *wrong* place to have it for top performance.

Remember, an antenna tuner tweaks the impedance match

between your radio and the tuner itself, and if the tuner is located *at the antenna*, the entire run of coax between the two is matched, which results in the lowest possible SWR losses even when the antenna is being used on a variety of bands.

Antenna tuners designed for this kind of service are often called *autocouplers* to differentiate them from the *autotuner* that might be built into your transceiver. They're wide-range antenna tuners built into weatherproof — or weather-resistant — enclosures. And when you transmit, an internal circuit measures the SWR and automatically configures capacitors and inductors inside the coupler to maximize the power transfer to the antenna.

Aside from mounting and powering the *autocoupler* in the first place, you don't have to do anything but transmit. Hop from band to band as fast as you can. *Autocouplers* typically take a quarter of a second to five seconds to match impedances. Some remember multiple *tuning solutions*, which eliminates tuning time entirely.

These extra-handy devices used to be quite expensive, but for installations that can benefit from them, they now cost only a bit more than conventional units and are probably the best way to use a single antenna on multiple bands.

Remote-mounted autocouplers are available from several manufacturers, including MFJ, CG Antenna, SGC, ICOM and others.

## Tuner Efficiency

When considering antenna tuners it's easy to focus excessively on SWR losses, which is what an antenna tuner is supposed to minimize.

The other losses I'm referring to are *internal losses*, which are usually expressed as *tuner efficiency*.

Even if a particular tuner can find a match on a certain frequency with a certain antenna, the losses *inside the tuner* can be pretty discouraging. The ratio between tuner input power and tuner output power defines its efficiency (its internal losses).

Good tuners usually have losses in the 5 percent to 15 percent range, but losses can soar to 50 percent and even 60 percent in certain models under certain conditions.

These losses often peak when matching antennas on 160 meters or when matching extreme load impedances. When I tested one particular 300-watt antenna tuner on 160 meters, a plastic

insulator on the main inductor would burst into flame in time with the transmitter keying — at a mere 100 watts! On all other bands, where the efficiency was much better, the tuner worked fine and had reasonable losses. *It's something to think about.*

## Tuner Tips

- If your SWR is 2:1 or less on the frequencies at which you operate, you don't need an antenna tuner. Most modern rigs will tolerate an SWR of 2:1 or less with no difficulty and still put out full power.

- As with linebackers and hamburgers, beefy is better. Matching certain loads can produce extreme RF voltages (*remember the burning tuner?*), so don't be afraid to use a 100-watt tuner for QRP work or a 300-watt tuner for *barefoot* operation, and so on. Bigger is usually better in terms of efficiency, component quality, etc.

- The automatic antenna tuner that may be built into your transceiver proba-

bly can't match wide-ranging loads — and after reading this month's column you know why you wouldn't want to use it that way even if it was.

- Unless you're using an antenna-mounted *autocoupler* on 6 meters, don't use antenna tuners at VHF/UHF. Feed line losses increase rapidly at these frequencies and antenna tuners are almost never useful. The only real remedy above 6 meters is to use high-quality feed lines and properly matched antennas.

- Antenna tuners don't usually remedy RFI problems. Many designs reduce *harmonic radiation*, but most RFI is caused by RF overload at the fundamental frequency. Tuners do nothing to reduce this — and may actually make things worse by helping you radiate an even stronger signal.

All tuners introduce some loss, so don't use one if it's not necessary. And if it is, use the right tuner and feed line for the job. There's nothing technically — or practically — wrong with that advice!

## Washington Beat (from page 8)

### Head of FEMA Gives Hams a 'High Five'

In a speech at an FCC forum on earthquake communications preparedness in early May, FEMA Administrator Craig Fugate listed amateur radio as one of four broad areas, "all equally important," that are critical to the mission of meeting the needs of disaster survivors.

The other three are public safety communications, broadcast radio and TV and personal wireless communications.

Calling radio amateurs "the ultimate backups" and "our last line of defense," Fugate noted how amateur radio often provides the first communications out of stricken areas, "getting the word out in the critical first hours and first days as the rest of the systems come back up."

There is a tendency, he said, to dismiss hams because other communication systems generally are very reliable and "that we can never fathom that they'll fail. *They do. They have. They will.*"

Fugate urged including "a strong amateur radio community" in emergency planning because, "when you need amateur radio, you *really* need 'em." (Source: *CQ Newsroom* < <http://www.cqnewsroom.blogspot.com/> > )

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# Testing 1, 2, 3: The New AvMap Geosat 6 With Kenwoods

By Gordon West, WB6NOA

**Y**ou may have seen the Italian AvMap color GPS (Global Positioning System) map alongside the Kenwood mobile TM-D710 and portable TH-D7.

Well, it also drives the new Kenwood TH-D72 handheld, with the TH-D72's built-in GPS turned off. The AvMAP charting system has its own GPS built-in.

New is the AvMap Geosat 6 touch screen navigation unit with several new features over last year's AvMap G5:

- The switch from TeleAtlas color cartography to NAVteq cartography
- Windows CE software, no longer proprietary C-Map software
- Ublox 50 channel GPS chip
- New mount attaches G6 magnetically, enabling faststowing
- Dramatically higher pixel count resolution screen for exquisite detail
- Text messaging using Byonics Tiny Track 4 accessory
- Plays music MP3 music files and MPG4 video files
- Simplified screen prompts

"Proprietary Kenwood format sentences (data packets) add to features between the G6 and Kenwood equipment with a built in TNC," Don Arnold, W6GPS, said.

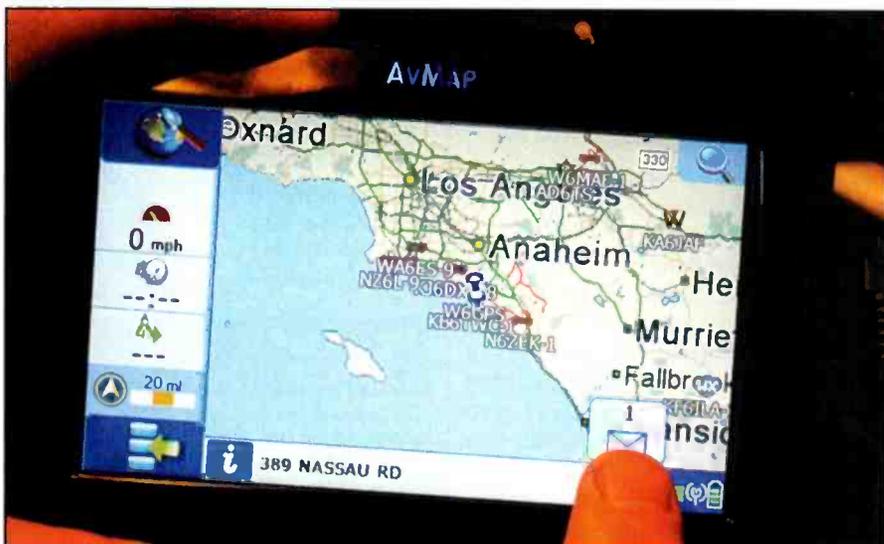
AvMap has added a time stamp capability to see when a displayed screen call-sign popped into view.

In the APRS folder screen you see a full page of stations in your local area. Another screen — called Target — will allow you to select an APRS callsign, and show navigation to that callsign.

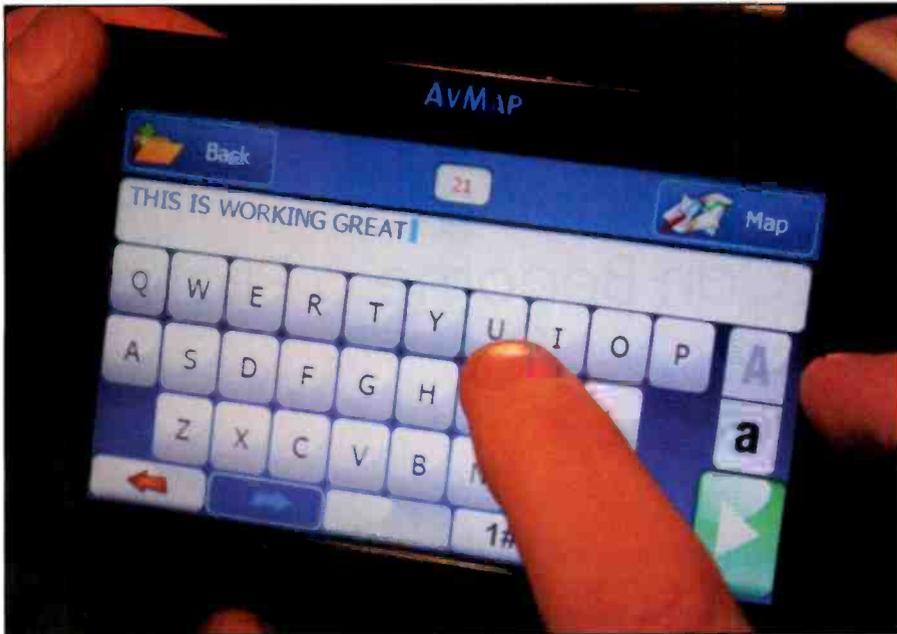
Another screen, GoTo, will set the navigation command for a selected APRS contact, and works great if routing changes, such as going off road. You will



Kenwood mobile TM-D710, Byonics Tiny Trac 4, and AvMap G6, all tied together for APRS and the added texting feature.



The new AvMap GPS map display also takes output from the Kenwood and shows local APRS hams sending their positions, real time!



With the added Byonics interface the AvMap/Kenwood gear allows for rapid texting — but *not* while driving, of course.

always get an updated distance and course-over-ground to that target callsign.

More good news on the AvMap G6: A new built-in battery system allows up to four hours of operation — great for

tracking a geocache when you pull the G6 from your vehicle and want to go portable.

“The G6 now supports text-to-screen audio, so the unit will say the names of the streets when giving direction

prompts,” Arnold said. “The G6 APRS operation is similar to what we had with the G5, but the screen image is much easier to read due to the increased resolution and contrast.”

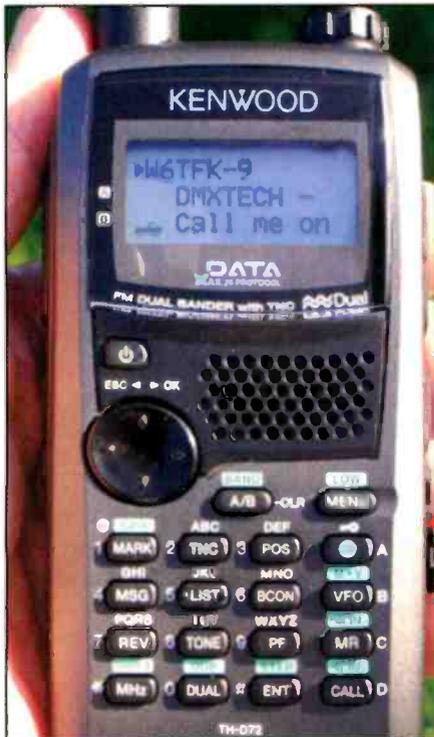
The new G6 screen is just slightly smaller than the previous G5 screen.

In my test of the G6 with my Kenwood TH-D72, the small four-section plug into the G6 was not making a solid connection, resulting in APRS stations not showing up on the AvMap screen. Here’s an easy fix: Take a sharp knife to the plug’s rubber insulation and remove 1 millimeter of rubber at the metal plug, allowing it to push in a bit further in the slightly-recessed jack on the G6. *Problem solved!*

“The metal case shields RFI from the LCD, so there will be no problem of any birdies leaking out of the G6 chassis,” Arnold said. He says the retail price will be under \$500.

W6GPS emphasizes the additional features you pick up using the G6 with Kenwood APRS equipment and the proprietary Kenwood language. It lets you home-in on moving targets — a favorite trick among balloon trackers using APRS to find the payload on descent.

For more information, visit: < <http://www.geosat.us/> >. — Ed



The Kenwood TH-D72 handheld plugs right in to the AvMap. Be sure and turn off the TH-D72’s built-in GPS, though, as the AvMap has GPS output.



Don Arnold, W6GPS, left, and Leo Fahmie, KJ6HI, at the Kenwood facility checking out the new AvMap with Kenwood APRS radios.

## Part 15 Broadcasting: How You Can Become a Pilot of the Airwaves

by Bruce A. Conti  
[contiba@gmail.com](mailto:contiba@gmail.com)

Over-the-air broadcasting is fast becoming a popular segment of the radio hobby. Until recently there wasn't much support available for the broadcast hobbyist.

For many of us it never went beyond a modified Radio Shack Science Fair AM transmitter kit or FM wireless speaker hooked up to an outdoor antenna to broadcast to neighborhood kids.

Some were lucky enough to graduate to high school and college radio stations upon which careers in broadcasting were launched. Such is the story of Bill DeFelice, a broadcast hobbyist who went on to become a school district technician, chief engineer at "McMahon FM" and former chief engineer at WMMM and WCFS in Connecticut:

"It all started in my teen years when I became involved with the then 330-watt FM radio station at my hometown high school. My experience as

student chief engineer prepared me not only for later becoming chief engineer at a commercial AM station but also as a freelance engineer for various AM and FM stations in the region," he said.

"I was fortunate to have a wonderful mentor — that being the gentleman who not only founded the high school station but also served as its technical director and engineer. Little did I know my engineering background would come into play years later, allowing me to *pay it forward* by mentoring today's students in the art of radio broadcasting.

"A high school renovation in the district where I worked as an electronics and computer technician would lead me on a mission. The building renovation included a two-studio radio station to be constructed. Like many school projects, it was grossly under funded and inadequately planned for. Nevertheless, I was up for the challenge.

"It would be impossible to obtain even the lowest class of licensed radio facility — a low-power FM (LPFM). The radio spectrum was fairly congested due to proximity with the Manhattan-New York City and Long Island radio markets.

"With that in mind I knew I would have to build up the student station for campus-limited broadcasting utilizing FCC Part 15-compliant radio technology. (*The elements of Part 15, which regulates Radio Frequency Devices, can be viewed on the Internet at: <<http://bit.ly/j72VEC>>. —Ed.*)

"Having been a broadcast engineer for decades, I knew what had to be done and my primary goal was to give the students a station that would resemble something closer to a typical commercial radio station instead of an over-glorified audio/visual closet," DeFelice, recalled. "I had a plan for the studios. A couple of engineers helped me get started with some equipment donations. I donated a \$5,000 studio furniture system for the station's master control room in addition to some audio and transmission control equipment.

"As far as transmitters go, I wanted to give students a well-rounded experience. To give them



Here is the master control room for the campus radio station "McMahon FM" at Brien McMahon High School in Norwalk, Connecticut. Pictured is District Technician and Station Engineer Bill DeFelice, right, with students Anna Rae Newland and John Charles Moritz. (Courtesy of Bruce A. Conti)



A Hamilton Rangemaster Part 15-certified, 100-milliwatt AM transmitter sits atop the McMahon campus, fitted with short whip during initial campus field strength testing. (Courtesy of Bill DeFelice)

something they could listen to in the parking lot during free periods as well as before and after school, I opted for a free-radiating AM transmitter operating under FCC Part 15.211(b)(2), a regulation specific to low-power radio on a campus of an educational institution.

"Many students would obviously be more accustomed to FM radio for music and entertainment. With that in mind I engineered an in-building FM presence for the station utilizing radiating or *leaky* coaxial cable for an antenna and connecting it to a professional FM transmitter.

"This was performed by utilizing materials obtained by the now-defunct LPB (Low Power Broadcasting) Inc. Part 15.239 in the FCC regulations specifies the allowed field strength for an FM transmitter at  $250 \mu\text{V/m}$  (microvolts per meter) measured at a distance of 3 meters. LPB's reference stated this mea-

## This Month in Broadcast History

**75 Years Ago (1936):** Setting a milestone, CBS radio aired live reports from the front lines of the Spanish Civil War, the first-ever live broadcasts from a battlefield.

**50 Years Ago (1961):** "Private Eye," by Bob Luman, topped the *Big Ched Parade Accurate Area Music Survey* on 630 AM, CHED, Edmonton, Alberta, Canada.



**25 Years Ago (1986):** The Oprah Winfrey Show television talk program went into national syndication.

surement could be made at 3 meters from the exterior of the building for the leaky coax FM.

"Both our campus AM and FM transmitters were measured and documented using Potomac field strength meters — the standard used in the world of commercial AM and FM broadcasting."

Bill DeFelice continues to *pay it forward* as the webmaster at HobbyBroadcaster.net < <http://www.HobbyBroadcaster.net> >. There you'll find a directory of Part 15 stations, broadcaster profiles and technical resources.

"While I was able to perform this project with little assistance, it was when I sought out information on the Web [where] I found that there was a lack of information for those wanting to build an on-campus school radio station. It was this need that inspired me to create the HobbyBroadcaster.net family of web sites, later combining my resources formerly known as CampusBroadcaster.net and BusinessBroadcaster.net — the latter dealing with Part 15 low power radio used in business/marketing applications.

"Together, my site serves as an online resource for the low power radio enthusiast as well as those wishing to use Part 15 radio for campus radio and specialty business applications."

## What Is Part 15 Broadcasting?

According to the Audio Division of the FCC Media Bureau, "The Commission receives tens of thousands of inquiries annually from individuals and groups wishing to start a *low-power* or *micro-power* radio station for local broadcasts."

Part 15 radio broadcasting is legal and license-free as defined by Part 15 of the FCC Rules under Title 47 of the Code of Federal Regulations (47 CFR). Typical applications beyond the school campus might include a real estate agent's talking house, a retirement community information station, movie audio at a drive-in theater or even broadcasting nostalgia at an antique car show.

For a growing number of broadcast hobbyists, it's an opportunity to provide a level of local community service and alternative entertainment no longer available from commercial outlets.

Per the rules, unlicensed AM and FM broadcasting is limited to a range of 200 feet. Furthermore, input power at the final RF stage of an AM transmitter is limited to 100 mW with the total length of the transmission line, antenna and ground lead not to exceed 3 meters.

FM is limited to  $250 \mu\text{V/m}$  measured field strength at 3 meters distance with bandwidth limited to a maximum of 200 kHz.

Unauthorized higher power *pirate broadcasting* over greater distances can be subject to FCC fines ranging from \$10,000 per day of violation up to \$75,000 and confiscation of equipment.

Regardless of whether or not unlicensed transmitter equipment is operated within FCC specifications, absolutely no harmful interference to licensed services is allowed.

Coverage can be improved by the implementation of synchronous transmitters or more than one transmitter operating on the same frequency from different locations. Although the FCC had issued a proposed rulemaking to prohibit the use of multiple transmitters, the rule was never adopted. The Commission decided that multiple transmitters would be allowed as long as each transmitter complied with the existing rules for unlicensed operation.

Unlicensed AM/FM radio broadcasting is also allowed in Canada under Radio Standards Specification RSS-210 for License-Exempt Radio Apparatus. Regulations are comparable to the FCC rules except that RSS-210 specifies a maximum of 250  $\mu$ V/m field strength measured at 30 meters distance for AM broadcast transmissions.

The FCC makes several distinctions between different types of transmitters and services. Hobbyists and experimenters are allowed to operate up to five *homebrew* — home-built — unlicensed transmitters without specific FCC authorization, provided that good engineering practices are employed.

Manufacturers of unlicensed Part 15 transmitters are required to document compliance with FCC rules through self-verification or certification processes. Self-verification allows the manufacturer to conduct its own tests, while certification is performed by the FCC or an approved test lab.

In some applications, self-verification is not an option. Over-the-air AM radio transmitters for specific use on the campus of an educational institution and carrier-current systems can be self-verified. FM broadcast transmitters must be certified. Unlicensed Part 15 transmitters are not permitted to operate in the TV broadcast bands.

## Part 15 Broadcast Equipment

Years ago, options for starting an unlicensed radio station were limited by a general lack of information and resources. The Radio Shack Science Fair AM transmitter kit, or illegally-modified amateur and CB radios, were often what got beginning unlicensed broadcasters on the air.

In fact, before the advent of computer automated transmitter logs, an FCC Third Class license demonstrating some technical knowledge was required to be on the air at commercial radio stations without an engineer present. Today, thanks in part to the Internet and especially websites such as HobbyBroadcaster.net, the airwaves are much more accessible to budding unlicensed broadcasters.

Manufacturers, in turn, have responded to the rising popularity of home-grown broadcasting by providing a wide range of Part 15 transmitting equipment.

Ramsey Electronics < <http://www.ramseyelectronics.com> > is a familiar name in AM/FM unlicensed broadcast equipment, best known for providing electronics in kit form for radio hobbyists. Ramsey offers several AM and FM transmitter kits, plus FM broadcast antennas.

Some kits, such as the FM100B Super Pro FM Stereo Radio Station, are available fully assembled. Ramsey also sells transmitters for licensed LPFM broadcasting.

Radio Systems Inc. < <http://www.radiosystems.com> > manufactures and supplies equipment for Part 15 unlicensed AM radio broadcasting. The company's flagship product is the i.AM.radio® Part 15 AM transmitter with two models available — a high-fidelity transmitter and a low-bandwidth, voice-only, talking house model.

Radio Systems also manufactures ruggedized higher-power outdoor transmitters for highway advisory-traveler information applications.

AM Stereo fans love the ASMAX-1 AM PLL Part 15 transmitter from ASPiSYS < <http://www.aspisys.com> >.

The ASMAX-1 broadcasts in C-QUAM AM Stereo with up to 15 kHz audio bandwidth and left-right channel separation of more than 35 dB. Wireless audio input allows the transmitter to be remotely located at the antenna, without a transmission line for maximum output efficiency.

Rangemaster Transmitters Inc. manufactures the Hamilton Rangemaster AM1000 < <http://www.am1000rangemaster.com> >, is considered the leader among Part 15 AM transmitters. The AM1000 is described as professional grade and is enclosed in a heavy-duty, weatherproof fiberglass chassis with an 8.5-foot, stainless-steel whip antenna and an RS-485 interface for remote synchronous transmitter installations.

The website includes a station directory.

C.Crane Company < <http://www.ccrane.com> > has always been a favorite choice for FM transmitters to relay audio from Internet-streaming audio, mp3 players or any device with a headphone output, as well as for Part 15 broadcasting.

C.Crane literature cites that health clubs have found their FM transmitter useful for broadcasting music to motivate workout routines. As of this writing, C.Crane was clearing out its *original* FM Digital Transmitter in anticipation of introducing a new model.

## Broadcast Loggings

**Denmark** is the latest nation to leave the AM dial. The 250-kW signal at 1062 kHz was taken off the air over the summer. This lone AM station from Denmark was a favorite target with a distinctive interval signal broadcast at sign-on. All is not lost though, as 1062 was replaced by the reactivation of the long-wave transmitter at 243 kHz. The departure of **Turkey** on the longwave frequency was cited as the reason behind the change, as the clear 243-kHz signal would be free of co-channel interference. You'll find 1062 kHz is a busy frequency, with stations in Czech Republic, Italy and Iran often logged in North America.

This month's selected broadcast loggings from readers are aimed south, including some catches from last month's tropical TNT target list. All times are UTC.

**612 4QR Brisbane, Australia**, at 1200 ABC news theme, National Radio world and national news; faded out 1207-1211. Subject to lightning noise and deep fades. (Park-HI)

**630 WUNO San Juan, Puerto Rico**, at 0100 Puerto Rico and NotiUno mentions; mixed with WPRO Rhode Island. (Connelly-MA)

**690 XEN Mexico City**, at 0300 under Radio Progreso Cuba; *XEN... desde la ciudad de México*. (Conti-NH)

**760 HJAJ Barranquilla, Colombia**, at 0129 *¡Mejor en Colombia!* mention, sportstalk shouting with slight reverb; over WJR Detroit and others. (Connelly-MA)

**790 Radio Reloj, Pinar del Río and Holguín, Cuba**, at



A look inside the Rangemaster AM1000 Part 15 transmitter. (Courtesy of Rangemaster)

0100 over-under WAEB; minute marker and RR code with about two seconds delay between stations. Radio Reloj also noted on 870, 950 and 960 kHz. (Conti-NH)

**840 CMKC Radio Revolución, Palma Soriano, Cuba**, at 0100 Spanish talk with Cuba mentions. Radio Revolución slogan, a bit of jazz, then talk about Habana; over others. (Connelly-MA)

**910 Radio Cadena Agramonte, Camagüey, Cuba**, at 0300 fair; ascending four-note time marker, theme music, *Desde la cuna del mejor, transmite Radio Cadena Agramonte, Camagüey, Cuba*. (Conti-NH)

**939.879 XEQ Mexico City**, at 0915 *XEQ nueve cuatro*, then Mexican ballad and another *XEQ nueve cuatro*. Poor under co-channel interference. (Black-MA)

**1050 XED Mexicali, Mexico**, at 0720 with ID into local news items, many mentions of Mexicali and Calexico. Suddenly bubbled up out of soup at local sunrise. Not first time heard, but first time ID'd for legit logging. (Barton-AZ)

**1130 XEHN Nogales, Mexico**, at 0200 suddenly overpowering XEMOS Los Mochis with *K-Buena* slogans and *Nogales, Sonora* identification. (Barton-AZ)

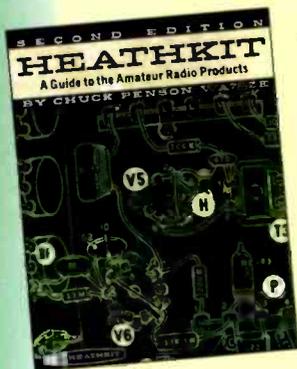
**1260 XESA Culiacan, Mexico**, at 1230 band music into break with numerous IDs including slogan *La Mexicana* and reference to Sinaloa. Unusually strong signal, putting it up there with local AMers. Signal lost at local sunrise with *Retro 1260 KGIL* Beverly Hills, California, and *KBSZ* Apache Junction, Arizona, battling it out. (Barton-AZ)

Thanks to Rick Barton: Chris Black, N1CP; Mark Connelly, WA1ION; and Dale Park. Some long-range solar activity forecasts are indicating the possibility of a record-breaking quiet period after this sunspot cycle peaks.

*Now's the time to listen for tropical signals across the AM broadcast band while the solar numbers are up — 73 and Good DX!*

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## Restore or Rehab — The HT-32A Project Grinds Ahead

### Careful Planning, Preparation and Painting Pay Off — Beautifully

This is the second of a four-part series

by Peter J. Bertini  
[radioconnection@juno.com](mailto:radioconnection@juno.com)

*“My goal was to return the transmitter to a clean, presentable and reliable condition to be enjoyed on the air — not make it a museum piece.”*

At the conclusion of Part I of the restoration of the classic Hallicrafters HT-32A we had finished the tedious task of rust removal on the main chassis and on the chassis for the SSB Generator assembly.

Unfortunately, to return the chassis to a new-from-the-factory appearance, it would be very difficult, short of completely removing all parts and having it commercially electroplated. Perhaps it might be best to call our *restoration* a *rehabilitation* effort, instead.

My goal was to return the transmitter to a clean, presentable and reliable condition to be enjoyed on the air — not make it a museum piece. I'll cover the mechanical considerations in this col-

umn, and we'll continue with the electronics in the following two columns.

A sad result of the aggressive rust removal described in Part I was the loss of chassis decals indicating tube numbers and alignment points. These are well documented in the HT-32A manual, so the loss is mostly cosmetic.

There are generic rub-on electronic decal lettering kits that could be used to recreate these, if desired. The rust removal also left the chassis with areas of missing plating, these blotchy sections can be seen on the main chassis in **Photo A**, and on the SSB Generator chassis, shown in **Photo B**.

I decided to paint the chassis surfaces with gray primer to hide the damage — this hopefully will



**Photo A:** Once the main chassis was stripped of the larger, removable assemblies, whatever remained that wasn't to be painted had to be protected. Even the rivet heads were carefully covered with masking tape, which was trimmed using an X-acto hobby knife.  
*(All photographs courtesy of K1ZJH)*



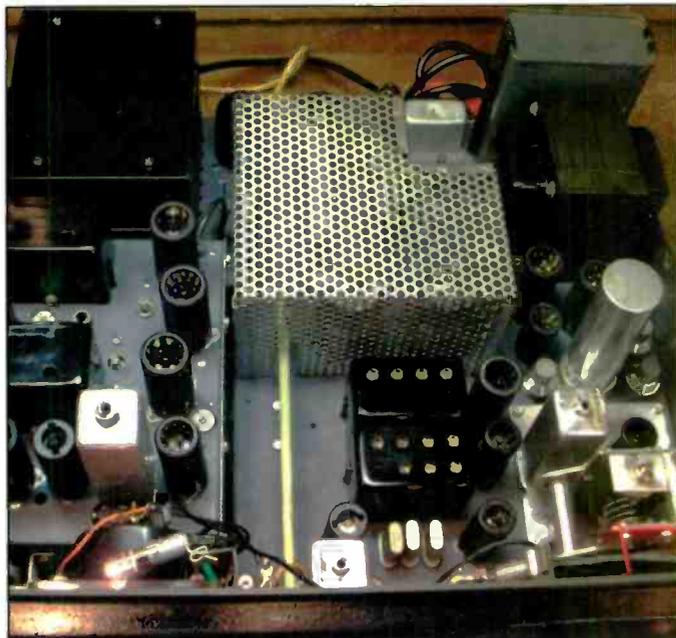
**Photo B:** The SSB Generator subchassis receives the same protective treatment as the main chassis before painting.



**Photo C:** Here's the main chassis, after three coats of gray primer. The metal surfaces must be clean to ensure good paint adhesion.



**Photo D:** After three coats of gray primer spray paint, the SSB Generator takes on a whole new look.



**Photo E:** The restored chassis is shown here — emphasizing the difference from the original *as found* condition of the chassis shown in **Photo F**.

seal and protect the bare steel against future rusting. This involves a bit of preparation.

First, I covered all of the chassis openings with masking tape or sections of cardboard.

Rivet heads, sockets and other items that weren't to be painted were covered with the tape. Around the rivet heads, it was trimmed carefully using an *X-acto* hobby knife. There is no harm in painting over any screw or rivet head, except that it makes it more obvious that the chassis was painted.

I also carefully cleaned the chassis to remove any grease, dirt or oil and gently hand-sanded the exposed chassis areas with fine sandpaper. The paint will adhere better to a surface prepared in this way.

I found it was better to give several lighter coats over a period of several days, rather than to attempt a heavier first coat. I also suggest giving the paint ample time to fully cure and harden before the remaining restoration work continues.

The prep work took a full day. **Photos C and D** show the main chassis and SSB Generator chassis after the final coat of paint was applied and allowed to cure.

## Painting the Chassis

Neither of those pictures is particularly exciting, but let's compare **Photo E** (the finished transmitter) to **Photo F** (the transmitter's main chassis in *as found* condition).

**Photo E** lets the cat out of the bag a bit early in that it shows the end product way too soon, but it validates that the technique I used produces the results I had desired. There are some caveats. The paint easily chips, especially at the chassis corners and edges. Remounting larger components, such as the oil filled filter cap, filter choke, power transformer and the SSB Generator subchassis all risked some degree of nicking or paint damage.

Small chips were inevitable, but I found they were easily fixed using a small artist's brush. A small amount of primer was sprayed into the paint bomb's plastic cover, and then the small artist's brush was dipped in and used to apply touch-ups on the

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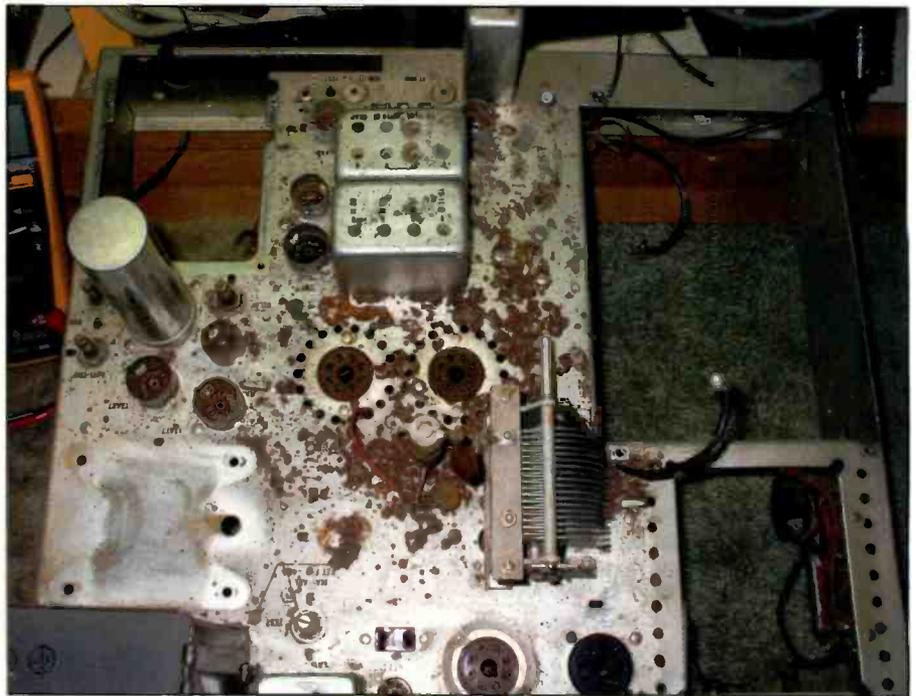


Photo F: Here's where we started! Once the major subassemblies, shields and transformers were removed, the extent of the rust damage was more evident.



Photo G: The cast-metal black front panel bezel contributes greatly to the transmitter's aesthetic appeal.

chipped areas as needed. This worked quite well.

Once the restoration is completed and the transmitter is safely ensconced in its cabinet or rack, the likelihood of future damage is greatly reduced.

I'm not claiming this is the best solution, but it is one that can be considered. If it saves a radio from becoming a *parts donor*, or worse, then it is worth the effort.

I've seen too many radios stripped and sold for parts that were less damaged. I was able to clean the VFO subassembly. Its chassis was buffed to a nice shine and didn't require painting or rust removal.

## Meter Bezel Damage

After reassembly — and, yes I am jumping *way ahead* again — I noticed that

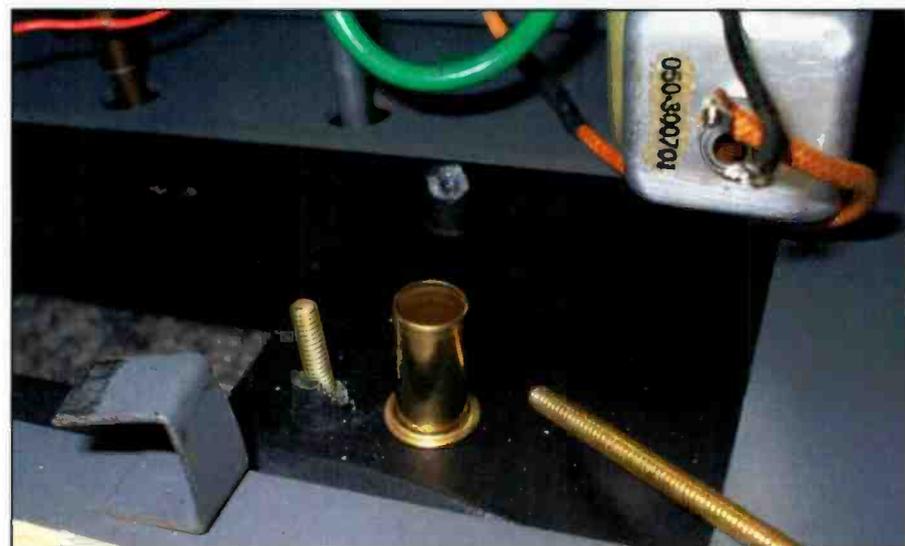
the meter bracket was loose on the front panel bezel — a large metal casting — and the meter mounting bracket was affixed to the panel using four 6-32 screws.

The meter and most controls are on this bezel. Its presence adds to the aesthetic appeal of the radio. This was lost on the later HT-37 models, and was most likely a cost-savings measure.

The transmitter front-panel can be seen in **Photo G**. Meanwhile, **Photo H** shows what happened. The bezel stand-off posts that support the meter bracket are drilled and tapped. After time, the screws stress the brittle metal resulting in fractures and failure. I noted that there was enough thread deep within the casting to at least hold a 6-32 threaded rod in position, albeit lacking mechanical strength.



**Photo H:** These posts were drilled and tapped for 6-32 machine screws, but after five decades the metal has fatigued and fractured leaving few remaining threaded areas.



**Photo I:** First part of the repair involves cutting the heads off long brass 6-32 machine screws to make 6-32 threaded studs. The studs are screwed into whatever thread is remaining in the tapped meter bracket supports.

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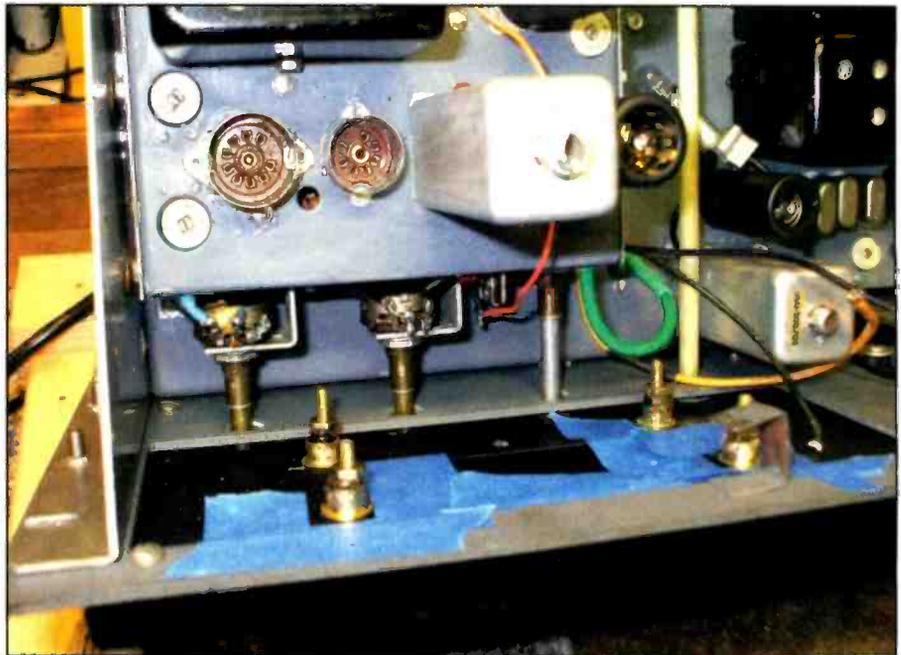
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**Photo I** shows a short length of 6-32 brass-threaded shaft — cut from a long brass screw — inserted into one of the damaged standoffs. After cutting the screw head, a 6-32 nut is run over the length of the 6-32 threaded shaft to serve as a die to restore the damaged threads.

Note the brass metal sleeve — known as a ferrule. These were found in the plumbing section of the local hardware store. The brass ferrules were trimmed to the same height as those of the meter standoff posts on the casting. A cutoff blade on a *Dremel* tool will do the job, but please wear eye protection while doing this operation!

**Photo J** shows the finished repair. The brass-threaded rod has been inserted into what remaining thread is left in the casting, and the trimmed brass ferrule was placed around the four meter-support posts.

Next, a metal epoxy was mixed and used to fill the void between the exposed threaded rod and damaged areas of the posts until level with the top of the ferrules. Once the epoxy had hardened, the repair was as strong as the original casting.



**Photo J:** Brass ferrules surround the studs and posts, and the void is filled with a strong metal epoxy. Once hardened, the repair is as strong as the original piece.

**Photo K** shows the meter bezel installed on the four 6-32 threaded studs. Instead of screws, brass nuts now secure the meter bracket in position.

radio during restoration. It will be used on my SX-28 and SX-42 restorations that I'll cover in future columns. As you can see, building the jig was a worthy endeavor.

**Photo L** shows the jig in action. The outer-wood frame surrounds the outer edge of the 19-inch, rack-mount-style front panel, while an inner, recessed lip supports the edges of the panel. There's enough clearance so the control knobs and shafts are clear of the edges and bench surface.

## Hallicrafters Work Jig

You may notice some wood trim at the bottom of **Photo J**, along the edge of the front panel. Early on I discovered that some sort of jig was needed to support the



**Photo K:** The meter bracket is attached to the repaired posts using 6-32 machine nuts instead of the screws originally used.

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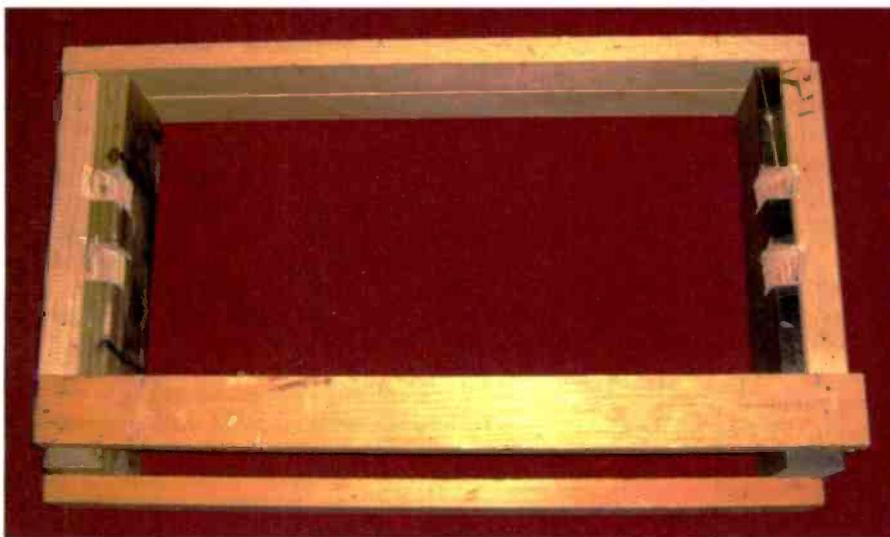
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**Photo L:** Since I have several older Hallicrafters receivers and transmitters in the restoration queue, I came up with a simple chassis support jig. It provides stable support for the front panel and chassis without placing stress on the knobs or shafts.



**Photo M:** The jig was made from scraps of lumber laying about in my woodshop. While I don't have exact plans, it should be easy to construct one from the photos. Note that the panel rests on the inner lips, while the outer lip edge keeps the panel from shifting. The jig is essentially two frames — one inside the other, with the inner one having a lower height.

The jig was built using scraps of wood laying about my woodshop. I don't have detailed plans, but it should be easy to fabricate one in your woodshop by following the photos as a rough guide.

**Photo M** gives a bit more detail. Notice the notches on the tops of the inner lips, these provide clearance for the four screws that hold the panel to the side supports on the chassis. These are normally not removed unless the front panel is removed.

## Next Month

In October's *Pop'Comm*, I'll be getting into the nitty-gritty of the HT-32A power supply section. This is an important step in the success of the restoration and continued longevity of this vintage transmitter.

*Until next time, keep those soldering irons warm, and those old tubes glowing!*

## 'Rick,' 'Melinda' and Hurricane Honeymoon DX

by Shannon Huniwell  
[melodyfm@yahoo.com](mailto:melodyfm@yahoo.com)

*"Her index finger perfectly targeted the tip of my nose. The playful gesture pushed a button that uncorked uninhibited conversation which continued well after the snack bar cashier kicked us out at five past 11."*

**D**ear Shannon: *If you promise to metaphorically change my call letters, emailed a Pop'Comm subscriber who shall be identified simply as Rick, I'll share a radio-related memoir that your readers might enjoy.*

His attachment read more like a made-for-TV movie than a radio history or band-scan article, but it kept me glued to my iMac screen well into the witching hour and drew me into the briefly happy lives of a perfect pair of DXers whose little burst of clear signal would never otherwise be known.

Here now, in his words with just a few edits, is Rick's story:

Coming home from Vietnam in 1975 was a much different experience than is the appreciative welcome often received by today's returning veterans. Add to that the embarrassing misfortune of having been shot in the leg and posterior while being helicoptered *in-country* on my first and only day of combat. Truth be told, less than 30 seconds after clumsily exiting the Huey and getting hit by a sniper's bullet, I was tossed right back into that chopper. My disgusted lieutenant just shook his head, then darted off to join the more-skilled members of the platoon.

I hazily recall hearing the *whomp, whomp, whomp* sound of the rotor blades increasing and the surrealistic scene below dissipating into the jungle canopy. Several months later, I was back in the States, walking with a limp, and feeling rather aimless. That's probably why I ended up at the small Boston area college where I'd been drifting from major to major before having been drafted.

There, a patriotic professor who understood the therapeutic value of one finally being able to accomplish closure, took me under his wing as academic advisor and figured out a way for me to cobble together enough related classes to leave with a generic bachelor's degree the following May.

### And Our Next Caller Is . . .

A few of the credits resulted from a so-called *independent study* course for which I was assigned to host a three-hour, weekly talk show on our pip-squeak campus radio station.

With the exception of a couple of punk middle school kids who apparently got a bang out of hearing themselves utter hastily-shouted, over-modulated and virtually undecipherable expletives before getting cut-off, the only regular caller was a young woman. She not only possessed a friendly voice imbued with classic girl-next-door wholesomeness, but could spark and carry on genuinely interesting conversation on most any topic I could suggest.



Debuting in April 1960 as a simulcaster to sister WCCM Lawrence, Massachusetts 1,000-watt daytimer, WGJH (FM) 93.7 megacycles ran just 1.35 kilowatts. One source says the FM was originally such an afterthought that'd when sunset occurred, the WCCM announcer on duty cut the frequency modulation transmitter's high voltage along with that of the AM. A few years later, it was redubbed WCCM-FM and treated to 5 kilowatts, though with a modest antenna that took virtually no advantage of the 500 feet above average terrain positioning that such a Class B facility was entitled to build. By the early 1970s, group owner and renowned sportscaster Curt Gowdy got the message that the FCC expected FM licensees in major markets to make full use of their authorizations. The July 1973 result was a 50,000-watt upgrade with antenna bays raised to the WCCM tower. *Ka-Boom!* The new WCCM-FM blasted the Boston and southern Maine/New Hampshire area! Within a year, Gowdy agreed that relegating such a flamethrower to also-ran/AM sister status (with a 10 p.m. sign-off) was a waste of signal, so he had the calls changed to WCGY (**Curt GowdY**) and installed TM corporation's automated Stereo Rock format. This Rock Garden quickly became the old faithful favorite for a wide swath of Boston area listeners who liked the *pair of current chart toppers and then a couple of oldies* consistency that was neither too rocky or schmaltzy.

A month or so into my talk show tenure, the unidentified co-ed made sure she preempted the potty-mouth eighth graders and phoned while my opening theme song (The Doors' *Riders on the Storm*) began spinning. I kept her on the line for the full three hours. We chatted about everything from oldies records to current events. And she seemed to know the eastern New England radio scene remarkably well — call letters, formats and personalities.

Though conventional wisdom around the dormitory claimed that *nobody* listened to the college station, I began overhearing candid comments that surprised me into believing otherwise.

"They just shared their thoughts with each other as if no one else existed," somebody told a friend in the cafeteria line. "When is this couple on the radio?" another wondered after hearing her classmates in the library say, "there's a guy doing a talk show on the college station who is clearly falling in love with the girl who always calls him."

No matter how heady the gossip, I continued feeling like a misfit — so I was glad that no one realized that the quietly awkward guy with the gimpy leg had any connection to what was reportedly developing into a radio romance.

The anonymity allowed me to be an observer rather than a participant. This came in handy during my nightly visit to the campus snack bar. A little past 10 o'clock, it represented a safe haven for somebody needing a milkshake nightcap and an inconspicuous booth from which he could occasionally glance at a beautifully-proportioned lass wearing sunglasses.

She sat alone sipping ice water, leisurely nibbling a toasted cheese sandwich, and enjoying the FM music flowing from a pair of speakers mounted on either side of the lighted menu board. If whomever was working behind the counter got the idea to fool with the snack bar radio's dial, the pretty brunette would quickly issue a good-natured protest, "Hey, please leave it on The Rock Garden 94, WCGY!"

Once, when a prominent member of the college soccer team (our college was too small to fund a football program) was unenthusiastically chipping away at his work/study scholarship via snack bar duty and ignored her initial protest about his switching to some heavy progressive stuff on a big University station, the girl called him over to her table and asked pointedly what he had against legendary sportscaster Curt Gowdy. "Nothing," he noted, "I think Curt Gowdy is the best, why?"

"Well," she declared, apparently glaring at him through her sunglasses. "Curt Gowdy owns WCGY, and has invested lots of money to make it better . . . So don't you think that he'd be pleased with somebody on a sports team if that somebody didn't deprive others of listening to his *little station that could*?"

"BRAVO!" I cheered to myself, as the soccer star shrugged and kept clear of the tuner. However, that decisive victory and her incredibly pretty face — even though partially obscured by those jazzy shades — had me convinced that such a woman wouldn't look twice at an instantly undistinguished Vietnam vet who limped around with a misfit lonely heart.

Two nights later, I found out I was right — *technically* anyway. As had always been the case, when I entered the snack bar, she was already seated in the booth furthest from the counter. WCGY could barely be detected in the background. I got my customary chocolate shake, sat safely several booths away from her, mustered up the brand of adrenaline present on my chopper ride away from the Vietcong shooter, and offered, "Miss, would you like me to have them turn up the radio volume for you?"

"Maybe it'd be more polite for me to just move closer to the

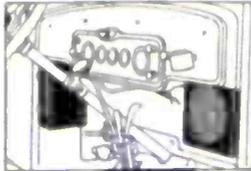
speakers," she smiled and then stood up without really looking my way. She was busy reaching for an umbrella stowed beside her on the bench — only it wasn't an umbrella, but turned out to be a white cane which she unfolded and then deftly maneuvered herself into the seat across from mine. "You're Jim, correct?" the girl stated more than asked.

"Uh, yeah, I'm Jim," came my startled reply. "How did you know?"



Rick found this image on eBay and briefly wondered if it might be Melinda's folks' old truck. "The darn thing sure looks like the one," he noted, but then remembered that the guy he sold theirs to was intent on doing an immediate restoration.

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Dept. A-111 Cincinnati, Ohio

He was not the first to pioneer radios in cars, but Powel Crosley — who founded Cincinnati's giant WLW — was an early proponent of listening while driving. Here's an ad for a 1920s version of his electronic product. The receivers in his tiny post-war vehicles were typically built by Motorola or Zenith (such as the 5MX080), as Crosley had sold his radio/appliance business during his late 1940s car-making heyday.

"Well, I'm Melinda," she explained. Without seeing my incredulous expression, she sensed my mind drawing a blank. "It's Melinda," the beauty emphasized as if she thought I had known her for years. "You know, *Melinda*, the female-type person who talks with you on your radio show every week!"

It was one of those moments for which the three-letter expression, *Duh!* was invented. She shook her head like my lieutenant had and pointed at me, "Wait a minute, I'm the one who is supposed to be blind here!"

Her index finger perfectly targeted the tip of my nose. The playful gesture pushed a button that uncorked uninhibited conversation that continued well after the snack bar cashier kicked us out at five past 11. We didn't stop until both of us confessed our life stories. I went for broke and hoped to be a part of her future. "OK," she simply promised, "but I've got baggage."

## Cupid's Quiver Filled With Arrows in the Shape of Lightning Bolt Radio Waves

I figured she meant the memory of the car accident when she was six that took her parents and her sight. "Not so much anymore," Melinda considered in the light of a strong faith in God's ultimate goodness, and her determination to move ahead. Rather, it was a devotion to DX and radio listening that she was referring to.

"Please don't ever come between me and my AM or FM," she teased while achieving another bulls-eye on my nose. "Hearing stations from places I'll never see — even one from another part of the state — is my way of getting around."

Mine was a 10-year-old 65cc Honda motorbike, which I bought at a garage sale for a dollar per cubic centimeter. After convincing Melinda to be a passenger, she declared it to be "the closest thing to flying," and happily dubbed herself my "motorcycle mama," a nod to the 1972 top-40 hit by Sailcat.

I'd always laugh and say that she couldn't claim such a title until we hit the jackpot and could afford a real motorcycle, like a Norton 750 *Commando*. No doubt most couples wouldn't find our outings to be romantic, but sometimes we'd pack a lunch and then putt-putt to a small suburban station and finagle a visit.

The little AM in Newburyport even interviewed us on tape for playback on its early Sunday morning public affairs program. Along with the kid who racked-up the 7-inch reels and ran the control board, we were probably that show's only serious listeners.

The Sunday after graduation in May 1976, we were the only ones at our wedding, except for the college chaplain and his wife. Melinda wanted to go to Nantucket Island for our honeymoon. I sold the Honda for about what it'd cost me. That netted us bus and ferry fare. My bride assured me that we wouldn't have to spend much on lodging, but was rather vague about how this could be accomplished. "I've got some more baggage," she whispered. As we were walking off of the ferryboat, an elderly lady parked nearby in one of those station wagons with wood-trim, called out, "*Melinda! Melinda, honey, over here!*"

"This is our ride home," my wife assured me. "She's an old family friend." Within a few minutes, we'd been chauffeured to a cute little cedar shingled cottage that the senior citizen referred to as the *doll house*. No wonder, as it measured only 20 feet square.

Out back, a makeshift lean-to barely covered what I later discovered was a cantankerous 1948 Crosley pickup truck. Melinda fished a tarnished brass key out of her travel bag, hand-

ed it to me, and suggested I make quick work of the lock so she could be carried over the threshold.

She astutely translated my silence to mean I was still trying to put the story pieces together, so she explained that her parents had bought the place for a song right after World War II. When they were killed in a car wreck, the property was rented with the profits being deposited into a small trust fund. Their will stipulated that Melinda could sell the cottage when she reached 21. "I always thought it would be nicer, though, to fall in love and live here for a while," she smiled. "Besides, this island offers some great night time DX listening . . . Just the pastime for a newlywed couple in case they run out of other things to do!"

Within a few idyllic days, we had the doll house looking pretty good. "I'll take your word for it," Melinda would joke if I commented on how neat and *ship-shape* the ocean view place appeared. A bit of beach combing netted us a driftwood pole that facilitated a simple end-fed long wire antenna that terminated up in the sleeping loft.

Besides an AM/FM Westinghouse clock radio confined to the kitchen counter, we had our choice of a late 1930s Zenith chair-side console AM/Shortwave set (there since Melinda's folks acquired the cottage) or a then-brand-new Radio Shack *Realistic* long range AM portable I'd given Melinda as sort of an engagement present. Some evenings, we would DX by candlelight and power the *Realistic* tuned RF circuit receiver with

## The Norton experience

You probably first saw this masterpiece of shape and pace through the glint of plate glass, or in a magazine, maybe being handled by a friend or even worse by someone you don't know. Long before your eyes told her you knew that somewhere sometime you would meet for that never surpassed experience. Not for you the fussy, the temperamental, the Dresden touch or the big flashy bore. You wanted a high flyer with scintillating looks, superb performance capabilities, that could hold on tight even during the wildest inclinations. Of course she can also be easy and gentle like a

purring cat, as smooth in motion as a sled on virgin snow — but only if you're man enough to move fast with her when you both get turned on. Most experiences are dulled by time and repetition, they become indistinguishable in a world of mediocre happenings. Only a few remain fresh and exciting as on the first encounter — admittedly they are hard to acquire but well worth waiting for.

0-60 m.p.h. in 4.8 seconds.  
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Top speed 125 m.p.h. plus.

### The Norton Commando 750 Roadster with the isolastic super-ride

Write or call to find one of the 800 dealers in the U.S.A.  
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No. That's not *Melinda* modeling near this early '70s Norton motorcycle. Rick says she was much cuter than that blow-dried blonde, but the bike sure looks like a dead ringer for the British iron horse they rode on their tower-hunting adventures.

C-cell batteries due to the thought that this might completely isolate us from any AC interference.

Of course Melinda wasn't affected by the dim, flickering ambiance, but it sure made jotting down programming details tough for me. More than a few times, I couldn't decode my own note taking when, the following morning, I'd endeavor to write an accurately presentable reception report.

We were always excited to get a QSL. The verification cards had a wall-of-fame in the little living room, while the letters rated plastic sleeves in a three-ring binder proudly parked on the old Zenith's glass top. The latter correspondence is what Melinda most enjoyed. She loved it when I'd announce that a DJ (who maybe voluntarily took on the title of promotions manager or station relations director) or devoted engineer at the verifying station had typed up a personal message laced with nuanced technical details about the facility.

It made the listener/broadcaster relationship seem much more authentic than simply being mailed a 4- by 6-inch card-stock preprinted template noting: *Our records show you heard us at (time/date). You're invited to listen again, 73s.*

## Here's The Stormy Part Of The Honeymoon

On August 9, 1976, we were eating breakfast and tuned to semi-local WCOD (FM) Hyannis when *Hurricane Belle* first came to our attention. Actually, we'd heard about her a day or so earlier when she was only supposed to be a tropical storm and stay down south.

Lots of tourists and some year-rounders were leaving the island, but Melinda and I decided to stay. She fired up the Zenith and plied me with weather updates, as I shuttered the windows.

"It's blowing 120 mph near Florida. Better get down pronto!" she yelled during my trek up some questionable ladder rungs, all the while attempting to batten down the hatches — so to speak — outside, over the loft panes.

In retrospect, it wasn't very smart for me — once back inside — to help Melinda upstairs so we could cozily ride out Belle and track her on our *Realistic* #12-655 via DX from WSB Atlanta to WBZ in Boston.

Things could have been pretty shaky had Belle's breeze not stayed well off of our Nantucket coastline. It did impact a portion of Long Island in the wee hours



Melinda found this 1920s novelty postcard at a roadside flea market and gave it to Rick on Valentine's Day 1977. It's still tacked to their cottage's QSL wall-of-fame.

1000 WATTS  
DAYTIME  
TELEPHONE R24-7528  
AREA CODE 617

**RADIO STATION** **WPEP**

---

1570  
ON YOUR  
DIAL

*Studios and Business Offices*  
49 BROADWAY  
TAUNTON, MASSACHUSETTS - 02780

Dear

Thank you for your letter detailing your reception of WPEP during our night broadcast during the hurricane emergency of Aug. 9, 1976. Your report was correct, and this letter confirms your reception of WPEP. We operate by remote control, the transmitter is located approx. 3 miles from our studios. The main transmitter is a Gates Vanguard II, the aux. transmitter is a Gates BC-1F. The tower is a guyed, series excited antenna, with a height of 191 feet. We have been on the air for 27 years.

We stayed on the air until 2:15AM that night, then of course the emergency passed. You didn't mention being a member of the NRC, or IRCA, but if you are interested in BCDX, perhaps you should look into joining, I am not a member of either, my interest being in ham radio. They are a good group to belong to. I have run tests for them this past year, to help their members log the stations that I work for.

Again, thank you for the reception report, and the best of DX.

Sincerely,  
*Eugene R. Jaltus*  
Eugene R. Jaltus  
WALETM  
Chief Engineer, WPEP

With Rick and Melinda's Nantucket address covered, here's the WPEP *Hurricane Belle* emergency verification letter that sparked this story. In it, the station's chief engineer stated that his signal originated from a Gates Vanguard II main transmitter (or older Gates BC-1F backup box) into a 191-foot stick some three miles from the daytimer's downtown studios. He also kindly suggested Rick and Melinda might consider joining a DX club to add punch to the broadcast band dialing hobby.

of August 10, though began diminishing quickly after encountering land.

Once we figured the excitement was over, our DX focus relaxed to a concentration of possibly snagging a daytimer with emergency authorization to provide night service for its community-of-license. This was long before any post-sunset power for daytime AMs was normally allowed. Such a catch could generate some rather uncommon loggings and perhaps a keepsake verification letter. *It did.*

Melinda typically found a signal on 1600 kHz (usually the old WBOS out of Brookline, Massachusetts) and backed down in 10kHz twists. She stopped on 1570 where kilowatt daytimer, WPEP, Taunton, Massachusetts, was still on the air at about 11 p.m. The special programming had already been taken off high alert, as the DJ on the board resumed playing middle-of-the-road records interspersed with non-urgent-sounding announcements that WPEP would continue broadcasting until authorities were sure that *Belle* posed no more threat.

Even for a couple on an extended honeymoon, the day's excitement had tired us out . . . I really wanted to hear them do an official sign-off, but I believe my last program notes were scribbled at least an

---

Used only for hosting communications radio antennas today, the unpainted WPEP tower is surprisingly invisible even from Route 140 just a hundred yards or so away. The station got its start on paper in 1948 as WTRN @ 1570 kilohertz, though flipped to *WPEP* — a nod to being full of energy prior to its 1949 debut three days before Christmas. For decades it served as the faithful local outlet of the Bay State's Silver City. Taunton — 40 miles south of Boston and about 20 miles east of Providence, Rhode Island — earned this nickname from being home to famed silversmiths, Reed & Barton. Along with many other American daytime AMs, WPEP got an FCC nod in the early '70s to sign-on at 6 a.m. year-round. In the mid-'80s, the Commission granted it a respectable 227 watts of post-sunset power. Longtime licensee, Silver City Broadcasting, sold WPEP in 1997 to a firm that owned a very directional daytimer in Beverly, some 15 miles north of Boston and also on 1570 kHz. Three years later, WPEP was again sold, this time reportedly with the proviso that it go dark if the Boston area 1570 was granted a CP to jump power. This OK occurred and WPEP was silenced in 2007. →

hour prior to the 2:15 a.m. cessation of emergency operations. Melinda was in dreamland well before me.

## A QSL And Camelot Joy

WPEP's chief engineer was kind enough to write us the type of verification we happily added to the binder. And, when it arrived a week before Labor Day, Melinda read it *to me*.



Preparing for a routine run into town a few days after the storm, I had just coaxed the Crosley pick-up to run on at least two of its four persnickety cylinders, when I realized I'd left my wallet on the kitchen counter. This inconvenience suddenly lost all significance as I discovered my wife sprawled out unconscious at the bottom of the steep loft stairs.

She'd lost her footing and was petite enough to have slipped between the steps and the railing on the side of the ladder-like staircase open to the living room, hitting her head multiple times during the descent. We had never gotten around to getting a phone, so calling for help there was not an option.

I carried Melinda to the truck and prayed it'd get us the mile or so to the summer home of a doctor whom I helped with property maintenance. He and his nurse wife then helped me get Melinda into his Mercedes-Benz for surer transport to Nantucket Cottage Hospital.

The news he later delivered was more shocking than if I'd received Pasadena, California's old 100-watt local Class IV KPPC AM peanut whistle on a cheap Japanese two-transistor radio in Massachusetts . . . in the daytime! "She's OK," the physician nodded with a grin. "Really OK!" he nodded in amazement while motioning me to go into her room.

"You must be Rick," Melinda smiled. "I sure can pick a good husband in the dark because you're even better looking than I imagined. Not quite as tall as I thought, though."

The doctor, who by this time was joined by several other young physicians, two teary nurses and a volunteer from the hospital gift shop all anxious to witness my reaction, explained that the fall apparently jarred loose whatever had been pressing against a nerve and causing Melinda's loss of sight. It was a reversal of whatever took place in the long-ago car crash. "And what about the, *you know*," one of the tears-of-joy RNs urged.

"Oh that," my wife playfully dismissed. "They think we're pregnant."

I brought her home the day that the WPEP verification was in our mailbox. There were some others from the hurricane night, though the personal note from the Taunton technician was by far the most memorable.

Melinda remembered the WPEP storm broadcast fondly because she'd dialed in the hard-working town crier *after* we knew *Belle* wouldn't harm us. It was nice to be together in the loft and

breathe a sigh of relief with WPEP's innocuous music being played in the background — a little like the comfortable normalcy of hearing WCGY just below the chatter in our college snack bar.

Anyway, we continued to make good use of our Zenith and Realistic receivers. Plus, with the assistance of a six-volt power supply, even the surprisingly sensitive radio from the Crosley added to some notable QSLs to our wall of fame.

The automotive restorer who saw the truck in town one day and just *had to have it*, let us remove its six-tube Motorola model CY8. We used the Crosley's proceeds to purchase a gently-used Norton motorcycle on which the *two and a half of us* (as Melinda called our fledgling family) toured Martha's Vineyard, Cape Cod, Southeastern Massachusetts and a bit of Rhode Island. The bike provided us access to a bunch of the region's growing number of small stations.

At WPEP, we even met Eugene Faltus, whose amateur radio callsign was WA1ETM, the engineer who'd authored our keepsake verification. Melinda and I were also scouting out the mainland and began making plans to become normal working people after the baby was born. It was our Camelot accented by a personal soundtrack of 1970s live, local radio.

## Epilogue

Rick requested the alias for himself and the young woman we called *Melinda* because he wanted to keep his time with her as close to his heart as possible.

He became a newspaper columnist with enough name recognition to invade his space. Rick left it for me to convey that a few months after their little girl made her debut, Melinda suffered a fatal aneurism.

One afternoon, after making a grocery run into town, he found her on the bed next to their baby. For a long time afterwards, he stayed away from the cottage and concentrated on being a father and building a career. These days, however, Rick says he feels at peace with the past. At least twice a year, when he flies into Logan Airport to visit his daughter and son-in-law in suburban Boston, she'll drive him down to the Nantucket-bound ferry. Though WPEP is now silent, he can still hear it in his dearest memories that come alive each time he unlocks the cottage door.

*And so ends another day of radio recollections at Pop' Comm...*

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## Rule No. 1: The Boss is Always Right

by Bill Price, N3AVY  
[chrodoc@gmail.com](mailto:chrodoc@gmail.com)

I got a nice letter (a real letter, on paper!) from Philadelphia reader Joe Gudenis, K3DUX, who sent me a picture of a model of a radio-controlled 1929 Coast Guard boat he has built.

The picture hangs on my refrigerator and to this day, it's hard to tell that it's not a full 75 feet long. Not only that, but it's tied up in a (lake? pond?) beside a perfectly-scaled dock. Even the ripples in the water seem to be right to scale.

Things are never uneventful in the high-tech world of my HPJIE\*, and the past weeks have been no exception. Trying to transmit and receive useable signals using the smallest possible antennas (got to watch that weight and wind load) is a constant challenge, and this time we enlisted the services of a custom filter manufacturer to make sure that our *gozowta* stays out of our *gozinta* (forgive me as I lapse into the high-tech jargon of the industry).

So the boss was high on a mountaintop in a neighboring state watching the deer play (no antelopes, though) and trying not to inhale too many gnats as I arrived with the new filter, which would solve all his problems. I watched as he put it in line with his spectrum analyzer and saw the entire signal vanish to the bottom of the screen. I told him he probably had it in backwards, and he looked knowingly at me and showed me how it was installed.

After trying the filter backwards, upside-down, and replacing the jumper cable several times for good measure, I called the manufacturer.

He was embarrassed. We asked for one to pass *cable* channel 41; their tech tuned it to pass *UHF* channel 41. *Oops*. That's a couple megalohertz difference.

This particular company is indeed some of the "good guys" in the industry and I don't remember them ever making a mistake in all the 30+ years I've dealt with them. Also, as a person who has made a few mistakes (most of them well-hidden) I just asked for a return authorization and shipped it back for retuning. As you read these words, it will be humming along just nicely, filtering everything but the desired channel, and doing it well. Those guys in Syracuse are aces!

The boss was also pleased to hear that he wasn't crazy after all. Of course — that's a separate issue for another time.

So, all of you who diagnose things for a hobby or as your HPJIE\*, I ask: *Have you ever had two*

*"The boss was also pleased to hear that he wasn't crazy after all. Of course — that's a separate issue for another time."*

*things — part of a single system — fail at the same time?*

So it was at one of our remote camera locations, which has grown to five cameras, character generators, synch-generators, distribution amplifiers, battery backups, time-base correctors and about a thousand feet of wire and cable.

I swear, all I did was replace the batteries in one of the UPSs. Nothing more, nothing less. The computer-based video switcher (with every built-in accessory known to man) required rebooting, and I was assured by the manufacturer that it was just a simple reboot. Simple is my middle name. I would be home free.

*Wrong-o*. You knew it wouldn't be so simple or I wouldn't be telling you this. There was no video coming out of the switcher.

I've had pet rats for something like 15 years, and believe me, none of their nests ever looked like the back of these racks. Being a good techie, I immediately referred to the system drawing taped to the wall, only to find that it hadn't been updated since my great-great uncle Noah Price was a spark-gap transmitter operator on the ark.

I must pay tribute to my boss, who only comes to work each day because he likes me. He arrived in the control room to find me sitting cross-legged (no easy feat) behind the rack, babbling about all the wires being the same color, and asked if the power light was lit in the new video distribution amplifier.

"What new video distribution amplifier?"

"The one I installed a couple months ago. It's right there by your foot."

I saw nothing. He reached into the mass of wires — the way Marlin Perkins would reach into an alligator infested swamp — and his hand came out holding a tiny rectangle.

We're back on the air. He's either very good at what he does, or he's trying to push me over the edge. Time will tell; if not, check *Newsweek*.

\* High-Paying Job In Electronics

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