

POPULAR COMMUNICATIONS

MAY 2009

Shortwave Listening • Scanning • AM & FM • Radio History

Safeguard Your Investment Lightning Protection On A Budget

**A Visit To Radio's Past—
Atwater Kent
In Maine, p. 21**

**Tech Showcase:
The Software Behind
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**PLUS: Antennas And Lightning
Dissipaters • Online QSLing •
How To Outsmart Interference**

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THE PROFESSIONAL STANDARD

The compact desk-top VR-5000 is Yaesu's most versatile Communications Receiver ever! With ultra-wide frequency coverage and a host of operating features, you'll be on top of the monitoring action with the VR-5000!

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- **DUAL RECEIVE**
- **DIGITAL SIGNAL PROCESSING / BANDPASS FILTER, NOISE REDUCTION, NOTCH FILTER, NARROW CW PEAK FILTER**
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- **WORLD CLOCK WITH UTC/LOCAL SETTINGS**
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- **EXTENSIVE SCANNING CAPABILITY/SMART SEARCH™**
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COMMUNICATIONS RECEIVER VR-5000

0.1~2599.99998MHz*
LSB/USB/CW/AM-WAM/WAM/FM-N/WFM
*Cellular blocked

Enjoy the wide world of communications monitoring with the action-packed VR-5000, available from your Yaesu Dealer today!



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0.1-1299.99995 MHz**
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*1 With optional accessories

*2 Cellular Blocked per FCC rule Part 15.121, may not receive 900 MHz Amateur band

*3 Assuming a duty cycle of 6-second transmit, 6-second receive, and 48-second standby (50 MHz 5 W)

* APRS® is a registered trademark of Bob Bruninga WB4APR.

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Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.



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► Purchase your Eton E1 or E1 XM from Universal and receive a **FREE Grundig YB-300PE**

YB-300PE

The Grundig YB-300PE Professional Edition covers: AM, FM and shortwave from 2.3-7.8 and 9.1-26.1 MHz. Tune via direct keypad entry, 24 memories, band button, scanning plus Up and Down tuning. The YB-300 PE features a large backlit LCD, 24 Hour Clock, DX-Local Switch, sleep timer, external antenna jack and earphone jack. With AC adapter, carrying case & strap, stereo earphones. Operates from three AA cells. Titanium colored case 5.9 x 3.5 x 1.25" 13 oz.



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The **etón E1 XM** combines AM, FM, shortwave and XM Satellite radio into one high-performance unit. The digitally synthesized, dual conversion shortwave tuner covers all shortwave frequencies. Adjacent frequency interference can be minimized with passband tuning and three selectable bandwidths. The sideband selectable Synchronous AM Detector further minimizes adjacent frequency interference and reduces fading distortion of AM signals. All this coupled with great sensitivity will bring in stations from every part of the globe. Organizing your stations is facilitated by 500 user programmable presets with alpha labeling, plus 1200 user definable country memories, for a total of 1700 presets. Whether you are listening to AM, shortwave, FM or XM, you will experience superior audio quality. Stereo line-level output is provided for recording or routing the audio into another device such as a home stereo. The large LCD has 4 levels of backlighting. The E1 has a built in telescopic antenna for AM, shortwave and FM reception plus a switchable external antenna jack. The E1 XM comes with an AC adapter or may be operated from four D cells (not included). 13.1"W x 7.1"H x 2.3"D 4.2 lbs.

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etón E1 Order #0301 \$399.95

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The Eton E1 XM is XM ready, so you may purchase the Audiovox **CNP2000DUO XM** antenna module at any time. It has a 25 foot cable.

Order #0072 \$58.95

Note: The CNP2000 DUO antenna module and XM subscription are sold separately. Activation and monthly subscription fee required for XM.

GRUNDIG Satellit 750

► Purchase your Satellit 750 from Universal and receive a **FREE Grundig M300PE**



The **Grundig Satellit 750** is an exciting portable that brings you the world of long wave, AM and shortwave reception as well as FM and the VHF aeronautical band. Your shortwave coverage includes the S.S.B. mode allowing the reception of ham radio operators, maritime and shortwave aeronautical stations. Tune your favorite stations by the conventional tuning knob, quick keypad entry or via the 1000 memories. Enjoy the fidelity you have come to expect from Grundig enhanced by separate bass and treble controls. The radio features an earphone jack, line output jack plus a 24 hour clock with dual alarm and sleep feature. This radio can simultaneously display the frequency and the time on the large backlit LCD. Long distance AM band reception is possible with the rotatable, directional ferrite antenna. External antennas may also be attached. 14.65 x 7.24 x 5.75". List \$400.00 Order #0750 \$299.95

► Purchase your Grundig G6 Buzz Aldrin Edition from Universal and receive a **FREE Apollo 11 patch**

G6



With the **Grundig G6 Aviator** you can tune in to longwave, AM, FM, the VHF aircraft band or continuous coverage shortwave. The advanced dual conversion circuit also features the reception of S.S.B. (single side band) signals. This radio has keypad entry, manual tuning knob and 700 alphanumeric memories, backlit display, signal strength indicator, a stereo/mono and a mega-bass switch. There are mini jacks for earphones and external antenna. Use the international clock and wake-up alarms to keep you on schedule. Requires two AA cells (not supplied). 5 x 3 x 1.2 inches 9 oz.

This special **Buzz Aldrin Edition** model celebrates 50 years of space travel. It comes with an AC adapter, ear buds, impressive gift box and certificate of authenticity. List \$150.00 Order #0626 \$99.95

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ON THE COVER

Lightning and other causes of huge power surges are a big concern to anyone with an investment in sensitive electronic equipment. And depending on where they live and the time of year, some hobbyists live in dread of that distant rumble. In this issue, *Pop'Comm* shows you how to protect your shack—affordably—against Mother Nature's high-voltage light show. See "Lightning Protection: Taming Thor's Thunder—On A Budget," starting on page 14, and "The Antenna Room" column, starting on page 57 for more. (Cover by Larry Mulvehill, WB2ZPI)

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Tap into secret Shortwave Signals

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

MFJ-462B
\$199⁹⁵

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



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

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

Eavesdrop on the World

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

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

Super Active Antenna

"World Radio TV Handbook" says MFJ-1024 is a "first-rate easy-to-operate active antenna...quiet...excellent dynamic range...good gain...low noise...broad frequency coverage." Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz-30 MHz.

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

Switch two receivers and auxiliary or active antenna. 6x3x5 in. Remote has MFJ-1024 \$159⁹⁵ 54" whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, \$15.95.

Indoor Active Antenna

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

Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as a preselector with external antenna. Covers 0.3-30 MHz. Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.

Compact Active Antenna

Plug this MFJ-1022 compact MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world, 300 KHz to 200 MHz including low, medium, shortwave and VHF bands. Detachable 20" telescoping antenna. 9V battery or 110 VAC MFJ-1312B, \$15.95. 3 1/8x1 1/4x4 in.



MFJ-1020C
\$99⁹⁵



MFJ-1022
\$69⁹⁵

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

Monitor Morse code from hams, military, commercial, aeronautical, diplomatic, maritime -- all over the world -- Australia, Russia, Japan, etc.

Monitor any station 24 hours a day by printing transmissions. Printer cable, MFJ-5412, \$11.95.

Save several pages of text in memory for later reading or review.

High Performance Modem

MFJ's high performance *PhaseLockLoop™* modem consistently gives you solid copy -- even with weak signals buried in noise. New threshold control minimizes noise interference -- greatly improves copy on CW and other modes.

Easy to use, tune and read

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

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

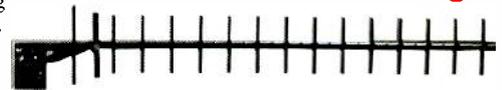
It's easy to read -- front-mounted 2 line 16 character LCD display has contrast adjustment.

Copies most standard shifts and speeds. Has

MFJ *AutoTrak™* Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312D AC adapter, \$15.95. 5 1/4xw x 2 1/2hx 5 1/4d inches

WiFi Yagi Antenna -- 15 dBi 16-elements extends range



16-element, 15 dBi WiFi Yagi antenna greatly extends range of 802.11b/g, 2.4 GHz WiFi signals. 32 times stronger than isotropic radiator. Turns slow/no connection WiFi into fast, solid connection. Highly directional -- minimizes interference.

N-female connector. Tripod screw-mount. Wall and desk/shelf mounts. Use vertically/horizontally. 18Wx2 1/4Hx1 1/4D inches. 2.9 ounces.

MFJ-1800 WiFi antennas to computer.

Reverse-SMA male to N-male, 6 ft. RG-174.

MFJ-5606TR, \$24.95. Same as MFJ-5606SR but Reverse-TNC male to N-male.



Eliminate power line noise!



MFJ-1026
\$199⁹⁵

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

MFJ Antenna Matcher

Matches your antenna to your receiver so you get maximum signal and minimum loss. MFJ-959C

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Select 2 antennas and 2 receivers. 1.6-30 MHz. 9x2x6 in. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.

High-Gain Preselector

High-gain, high-Q receiver preselector covers 1.8-54 MHz.

Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Push buttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.

Dual Tunable Audio Filter

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



MFJ-959C
\$119⁹⁵



MFJ-1045C
\$89⁹⁵



MFJ-752C
\$119⁹⁵

MFJ Shortwave Headphones



MFJ-392B
\$24⁹⁵

Perfect for shortwave radio listening for all modes -- SSB, FM, AM, data and CW. Superb padded headband and ear cushioned design makes listening extremely comfortable as you listen to stations all over the world! High-performance driver unit reproduces enhanced communication sound. Weighs 8 ounces, 9 ft. cord. Handles 450 mW. Frequency response is 100-24,000 Hz.

High-Q Passive Preselector

High-Q passive LC preselector boosts your favorite stations while rejecting images, intermod and phantom signals. 1.5-30 MHz. Preselector bypass and receiver grounded positions. Tiny 2x3x4 in.

Super Passive Preselector

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

MFJ Shortwave Speaker

This MFJ *ClearTone™* restores the broadcast quality sound of shortwave listening.

Makes copying easier, enhances speech, improves intelligibility, reduces noise, static, hum. 3 in. speaker handles 8 Watts. 8 Ohm impedance. 6 foot cord.



MFJ-281
\$12⁹⁵

MFJ All Band Doublet

102 ft. all band doublet covers .5 to 60 MHz. Super strong custom fiberglass center insulator provides stress relief for ladder line (100 ft.).

Authentic *glazed ceramic* end insulators and heavy duty 14 gauge 7-strand copper wire.



MFJ-1777
\$59⁹⁵
Ship Code A

MFJ Antenna Switches

MFJ-1704 \$79⁹⁵ MFJ-1702C \$39⁹⁵

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

Morse Code Reader

Place this MFJ-461 pocket-sized MFJ Morse Code Reader near your receiver's speaker. Then watch CW turn into solid text messages on LCD. Eavesdrop on Morse Code QSOs from hams all over the world!

MFJ 24/12 Hour Station Clock

MFJ-108B, \$21.95. Dual 24/12 hour clock. Read UTC/local time at-a-glance. High-contrast 5/8" LCD, brushed aluminum frame. Batteries included. 4 1/2xw x 1Dx2H inches.



MFJ-108B
\$21.95

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EDITORIAL

Tuning In

Change We Can Delay

by Edith Lennon, N2ZRW
editor@popular-communications.com

Why do in February what you can put off till June? Regular readers of *Pop'Comm* have been following the saga of the analog-to-digital signal conversion of broadcast TV. Those with attentive ears have been exposed to the "education program" since 2006. The planning for the Big Switcheroo goes back to 2005 when Congress first mandated the analog-to-digital-conversion. All you attentive-eared people already know that the mandate for the switch has been moved from February 17 to June.

So what's the holdup? While the romantic in me would like to think it's to better celebrate the return of the mourning warbler to northern meadows, the real answer is found in numbers. Let me cite two figures:

1) \$1.34 billion. That's how much the U.S. Federal Government has spent on a program to provide Americans with discount coupons to purchase digital-to-analog converter boxes. That money has been exhausted.

2) \$650 million. That's the additional amount of funding recently allocated for more discount coupons and a continued education program (ugh).

Just how serious is the problem? The Nielsen Company recently reported that 85 percent of households are ready for the digital transition, 6 percent are not ready at all, and another 9 percent are "partially ready" (not all TVs in a home can receive a digital signal). This translates into about 6.5 million homes that are not ready to make the switch. So it looks like it will take an additional \$100 per household to finish the job.

Many TV broadcasters, of course, are making the jump to digital anyway—the FCC is granting permission to some—as long as some analog broadcasters service the affected market.

The broadcasters are understandably eager to hop on the digital bandwagon, because the ticket to ride is so attractive-

ly priced. Broadcasting with digital rather than analog can save VHF channels significant amounts of dough, and UHF stations could save even more.

TV seems to have seeped so deeply into our national psyche that it ranks below food and shelter but above clothing as a life necessity. And maybe it's a good sign that even in this challenging economy we can still spend money ensuring that people don't miss an episode of *American Idol*. Or as someone put it on the satirical news website, *The Onion*: "Thank God. This saves me weeks of recapping *House* episodes for my mother over the phone." That would be something to celebrate.

There's certainly more intrigue ahead, though, and the early adoption of digital has not been without kinks. KARE-TV in Missouri reported on February 21 that a 70-year-old man was so incensed that he couldn't get his new DTV converter box to work that he shot his television. According to the man's wife he had been drinking. Fun.

Reading that I recalled my father's frustrations over the simpler technological advances of my early years. He graduated from rabbit ears, to "armstrong" roof antennas, to motorized antennas, and finally to cable, without resorting to violence. But he wasn't a drinker and he didn't own a gun. It could have been worse.

I guess mandates don't make change any easier, constant education doesn't always work (but is still necessary), frustration levels will run high, and someone will always take a shot at a piece of electronics. Some things *never* change.

Issue Note

Apologies to fans of our "Utility" and "EmComm" columns this month. Columnist John Kasupski took a long-postponed and well-deserved vacation (and I actually let him!).

Want to SEE who is watching you?

The **AR-STV** handheld receiver captures hidden video signals!

Now, with the AR-STV handheld wireless camera receiver from AOR, you can see who is watching you on wireless video surveillance cameras. It's a valuable addition to any security operation. This easy to operate receiver features a large 2.5 inch color LCD display, still picture recorder and sensor that captures video signals in real-time. The USB connector makes it easy to download stored images into a computer. And the AR-STV comes complete with an internal clock that allows captured images to be time-stamped. With an optional 4 GB SD memory card, the AR-STV can be used to store up to nearly 2000 images.

Add to the power of your security force with this pocket-sized video receiver from AOR!

- Receives and displays analog video signals on L-band (1.2 GHz) or S-band (2.4 GHz)
- 2.5 inch color LCD display
- Still picture recorder
- Can be set for continuous search between 900 ~ 2800 MHz
- Detects NTSC or PAL analog video signals in real-time
- Built-in clock allows captured images to be time-stamped
- USB connector makes it easy to download stored images into a computer
- Easy to operate
- Powered by four AA size batteries or external DC power
- NiMH batteries, belt clip and battery charger included
- Rubber duck antenna with SMA connector
- Optional 4 GB SD memory card can store nearly 2000 images

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The Weirder Side Of Wireless

by Staff

Shhh...Not So Loud

Turns out it isn't the long lines at airport security checkpoints or having to take their shoes off that's upping flyers' stress levels: it's the shouting between security officers. At least that's the latest thinking in the Checkpoint Evolution Program of the Transportation Security Administration (TSA).

Part of the problem, officials believe, is the high level of background noise at checkpoints, which means that TSA officers often have to communicate with each other by speaking loudly or even shouting. The TSA is planning to change that through its "Wireless Whisper" program. This program will include the purchase of as many as 20,000 very high frequency (162 MHz through 174 MHz VHF) land mobile radios for distribution to officers in over 160 different security checkpoint locations. The radios will be scrambled or encrypted to prevent unauthorized eavesdropping and will come with a receive-only earpiece and microphone that can be attached directly to uniforms.

Wireless Whisper sounds great, now if they could come up with a program for the cell phone users making much of the noise in the first place.

Don't Believe Everything You Hear On The Radio

Radio station KDKA in Pittsburg, Pennsylvania, told listeners that the station was giving away one million dollars as part of a Thanksgiving Day promotion. Host Marty Griffin even insisted that the money was in a briefcase handcuffed to someone in the studio. All listeners had to do was be the 13th caller at a certain time. The "lucky 13th" caller who phoned in response wound up staying on hold for 45 minutes, waiting for instructions on how to pick up the money. Surprise: November Fool's Day! There was no briefcase bursting with cash.

An FCC investigation determined that Griffin misled listeners, even though CBS, KDKA's network affiliate, argued the contest was "preposterous" and obviously a put-on. The station was fined \$6,000 and given 30 days to pay the fine or to appeal the ruling.

Wal-art, A New Business Model

You see a 385-mile-long, 25-foot-high fence made of concrete and steel—a group of Palestinian graffiti artists see the largest blank canvas in the world. This enterprising band of artists/activists/

business people has created a website, www.sendamessage.nl, where you can commission a message to be spray painted on the massive security wall Israel has put up along the West Bank.

For \$40 dollars your message will be written on the wall and three digital pictures will be emailed to you. The messages cannot be obscene, offensive, or filled with extremist hate speech. One example of an appropriate message given on the website is "Elizabeth and Jakob. Forever in my heart."

The venture is run by the Palestinian Peace and Freedom Youth Forum, which says all money received will go to support grassroots social and cultural projects in the West Bank, and none of it to buy weapons or support terrorism. Another aim of the program is to raise awareness of the Palestinian situation and to offer a picture beyond stone throwing and clashes with police through direct communications with the world.

If The Dalai Lama Calls, Don't Pick Up

Can your cell phone ringtone land you in jail? It can if you live in Tibet. A recent story on NPR reported on efforts by Tibetan police to crack down on users downloading ringtones and music that the government considers "reactionary."

Several people have been detained for "offending" ringtones on their cell phones. While there's no official list of banned songs and ringtones, some songs are dead giveaways, like a current popular tune simply titled "Dalai Lama." It's interesting to note that the ringtones and songs causing the uproar are usually done in the style of traditional Tibetan folk music; this may change, however, as more exiles begin to use music to protest the Chinese occupation of Tibet. One Tibetan exile from Queens, New York, for instance, has a new rap protest song called "No Next Time."

For the time being at least, non-activists might be safer setting their phones to vibrate.

Don't Touch It...It Might Be A Radio

In Omaha, Nebraska, a cleanup crew working amid the debris of a house that had recently burned to the ground found what looked to be a bomb. The police were called and attempted to remotely detonate the suspicious device. The sinister pipe-bomb-shaped object turned out to be a ham radio. Now that's a theft-proof design.

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When you buy your Bearcat 796DGV TrunkTracker package deal from Communications Electronics, you get more. The GV means "Great Value." With your BC796DGV scanner purchase, you also get a **free deluxe scanner headphone** designed for home or race track use. Headset features independent volume controls and 3.5 mm gold right angle plug. The 1,000 channel Bearcat 796DGV is packed with features to track Motorola Type I/II/III Hybrid, EDACS, LTR Analog Trunk Systems and Motorola APCO 25 Phase I digital scanner including 9,600 Baud C4FM and CQPSK. Also features control channel only mode to allow you to automatically trunk many systems by simply programming the control channel, S.A.M.E. weather alert, full-frequency display and backlit controls, built-in CTCSS/DCS to assign analog and digital subaudible tone codes to a specific frequency in memory, PC Control and programming with RS232C 9 pin port (cable not supplied), Beep Alert, Record function, VFO control, menu-driven design, total channel control and much more. Our CEI package deal includes telescopic antenna, AC adapter, cigarette lighter cord, DC cord, mobile mounting bracket with screws, owner's manual, trunking frequency guide and one-year limited Uniden factory warranty. For maximum scanning enjoyment, order magnetic mount antenna part number ANTMMBNC for \$29.95. For complete details, download the owners manual from the www.usascan.com web site. For fastest delivery, order on-line at www.usascan.com.

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The Bearcat BCT8 scanner, licensed by NASCAR, is a superb preprogrammed 800 MHz trunked highway patrol system scanner. Featuring TrunkTracker III, PC Programming, 250 Channels with unique BearTracker warning system to alert you to activity on highway patrol link frequencies. Preprogrammed service searches makes finding interesting active frequencies even easier and include preprogrammed police, fire and emergency medical, news agency, weather, CB band, air band, railroad, marine band and department of transportation service searches. The BCT8 also has preprogrammed highway patrol alert frequencies by state to help you quickly find frequencies likely to be active when you are driving. The BCT8 includes AC adapter, DC power cable, cigarette lighter adapter plug, telescopic antenna, window mount antenna, owner's manual, one year limited Uniden warranty, frequency guide and free mobile mounting bracket. For maximum scanning enjoyment, also order the following optional accessories: External speaker **ESP20** with mounting bracket & 10 feet of cable with plug attached \$19.95. Magnetic Mount mobile antenna **ANTMMBNC** for \$29.95.



Bearcat® BCD396T Trunk Tracker IV

Suggested list price \$799.95/CEI price \$519.95

APCO 25 9,600 baud compact digital ready

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Tone Out Paging, Close Call and Dynamically

Allocated Channel Memory (up to 6,000 channels),

SAME Weather Alert, CTCSS/DCS, Alpha Tagging.

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Frequency Coverage: 25,000-512,000 MHz., 764,000-775,987.5 MHz., 794,000-823,987.5 MHz., 849,0125-868,875 MHz., 894,0125-956,000 MHz., 1,240,000 MHz.-1,300,000 MHz.

The handheld BCD396T scanner was designed for National Security/Emergency Preparedness (NS/EP) and homeland security use with new features such as **Fire Tone Out Decoder**. This feature lets you set the BCD396T to alert if your selected two-tone sequential paging tones are received. Ideal for on-call firefighters, emergency response staff and for activating individual scanners used for incident management and population attack warning.

Close Call Radio Frequency Capture - Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. Useful for intelligence agencies for use at events where you don't have advance notice or knowledge of the radio communications systems and assets you need to intercept. The BCD396T scanner is designed to track Motorola Type I, Type II, Hybrid, SMARTNET, PRIVACY PLUS, LTR and EDACS™ analog trunking systems on any band. Now, follow UHF High Band, UHF 800/900 MHz trunked public safety and public service systems just as if conventional two-way communications were used. **Dynamically Allocated Channel Memory** - The BCD396T scanner's memory is



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 - Bearcat BCD396T APCO 25 Digital scanner with Fire Tone Out...\$519.95
 - Bearcat 246T up to 2,500 ch. TrunkTracker III handheld scanner...\$214.95
 - Bearcat Sportcat 230 alpha display handheld sports scanner....\$184.85
 - Bearcat 278CLT 100 channel AM/FM/SAME WX alert scanner...\$129.95
 - Bearcat 248CLT 50 channel base AM/FM/weather alert scanner...\$104.95
 - Bearcat 244CLT 30 channel base AM/FM/weather alert scanner...\$94.95
 - Bearcat 92XL200 200 channel handheld scanner.....\$105.95
 - Bearcat 72XL2 100 channel handheld scanner.....\$89.95
 - Bearcat BR330T handheld shortwave/scanner with Fire Tone out...\$274.95
 - Bearcat BCT8 250 channel information mobile scanner.....\$169.95
 - Bearcat 350C 50 channel desktop/mobile scanner.....\$96.95
 - AOR AR160C Wide Band scanner with quick charger.....\$199.95
 - AOR AR3000AB Wide Band base/mobile receiver.....\$1,079.95
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Bearcat® BC246T Trunk Tracker III

Suggested list price \$399.95/CEI price \$214.95

Compact professional handheld TrunkTracker III

scanner featuring Close Call and Dynamically

Allocated Channel Memory (up to 2,500 channels),

SAME Weather Alert, CTCSS/DCS, Alpha Tagging.

Size: 2.72" Wide x 1.26" Deep x 4.6" High

Frequency Coverage: 25,000-54,000 MHz., 108,000-174,000 MHz., 216,000-224,980 MHz., 400,000-512,000 MHz., 806,000-823,987.5 MHz., 849,0125-868,987.5 MHz., 894,0125-956,000 MHz., 1,240,000 MHz.-1,300,000 MHz.

The handheld BC246T TrunkTracker scanner has so many features, we recommend you visit our web site at www.usascan.com and download the free owner's manual.

Popular features include **Close Call Radio Frequency Capture** - Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. **Dynamically Allocated Channel Memory** - Organize channels any way you want, using Uniden's exclusive dynamic memory management system. 1,600 channels are typical but **over 2,500 channels are possible** depending on the scanner features used. You can also easily determine how much memory is used. **Preprogrammed Service Search (10)** - Makes it easy to find interesting frequencies used by public safety, news media TV broadcast audio, Amateur (ham) radio, CB radio, Family Radio Service, special low power, railroad, aircraft, marine, racing and weather frequencies. **Quick Keys** - allow you to select systems and groups by pressing a single key. **Text Tagging** - Name each system, group, channel, talk group

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News, Trends, And Short Takes

by D. Prabakaran

GAO Report Says Radio/TV Martí Has Only Tiny Audience In Cuba

Congressional investigators recently reported that U.S. Radio and TV Martí broadcasts to Cuba, after nearly half a billion dollars spent, may have only a tiny audience, and they suggested finding better ways to gauge their effectiveness.

The Government Accountability Office (GAO) concluded that best estimates indicate about 2 percent of the island's approximately 11 million people have seen or heard one or more broadcasts since 2003, when the U.S. began phone surveys in Cuba through a third-country contractor.

The Miami-based Office of Cuba Broadcasting has a budget this year of \$34 million, with about \$500 million spent overall since Radio Martí first transmission in 1983. TV Martí began in 1990, and the effort now includes satellite and shortwave transmissions, the Internet, and AeroMarti flights out of Key West beaming TV signals to Cuba. For years, Cuba has jammed the transmissions, which the U.S. says provide Cubans an objective alternative to their country's government-controlled news and other programs. Cuba derides the programs as U.S. propaganda. The U.S. Broadcasting Board of Governors, which oversees federal broadcasting including the Cuba program, agreed that better audience measurements were needed but said the GAO report "does not fully reflect the difficulties in broadcasting to a closed society."

(Source: Associated Press)

UK Government Says DAB To Be Primary Platform For Radio

The UK government released its "Digital Britain" report and once again confirmed its policy commitment to making DAB digital radio the primary means of migrating from analog to digital radio.

The Digital Britain report follows the Digital Radio Working Group's own report, published in December 2008, which recommended steps towards analog radio switch off as soon as 2017. The UK government report endorses these steps

for migration to digital radio and outlines its strategy for DAB to become the primary radio platform in the UK.

The report sets out a number of UK Government decisions, including:

- a clear statement of policy commitment to DAB
- a plan for digital migration of radio and the necessary criteria to achieve this
- the creation of a new Digital Radio Delivery Group to increase the attractiveness, availability, and affordability of DAB receivers and to advise on the Digital Migration Plan
- the intention to expand the BBC's DAB network to match current FM analog coverage

Meanwhile, the Digital Radio Development Bureau announced that sales of digital radios up to the end of 2008 had reached 8.53 million in the UK and the latest official Radio Joint Audience Research audience figures show radio listening via DAB digital radio accounts for 11.4 percent of all radio UK listening, with DAB ownership increasing to 35 percent.

PURE, one of the leading manufacturers of DAB digital radio products, announced record export growth in 2008 to Switzerland, Denmark, and Norway. A study in Denmark released in December shows that 34 percent of Danes now own a digital radio and that it is popular in all age groups.

(Source: Digital Radio Development Bureau)

BBC Suspends FM Broadcasts Via SLBC Following "Interference"

BBC World Service is suspending its FM programming to the Sri Lankan national broadcaster SLBC due to deliberate interference of its broadcasts by the Sri Lankan network. BBC programs and individual news reports in the English, Sinhala, and Tamil languages have been blocked by SLBC and have not been broadcast to listeners in Sri Lanka. The BBC noted 17 instances of interference to BBC Tamil and eight similar instances to BBC Sinhala broadcasts between November 27, 2008, and early January 2009. Sometimes entire current affairs segments of BBC programming were not broadcast on SLBC.

The BBC expressed its concern directly to SLBC Chairman Hudson Samarasinghe in a series of letters and meetings throughout December and early January. The BBC made it clear to SLBC that such interference and blocking meant that BBC programming was being editorially compromised by SLBC's actions and that this was contrary to the BBC's contractual agreement with SLBC.

The BBC's services in all three languages continue to Sri Lanka via shortwave and on bbc.com/news, bbcsinhala.com, and bbctamil.com via the Internet. News bulletins in English are available via the Sri Lankan commercial broadcaster, MBC.

Following are the shortwave schedule and frequencies for BBC services in Sri Lanka:

- BBC Tamil: 1545–1615 UTC on 6135, 7205, and 9540 kHz
- BBC Sinhala: 1630–1700 UTC on 7345 kHz and 9615 kHz
- BBC World Service in English: Radio frequencies for South Asia. Mainstays of the 24-hour-a-day coverage (but mainly day-time) are 17790 and 15310 kHz. Evenings: 11915, 9740, 7355 and 5975 kHz.

(Source: BBC)

Eutelsat And Partners Launch Satellite Broadband In France

Eutelsat Communications and its first partners, Numeo and Sat2Way, have announced the immediate launch in France of broadband access at no more than 35 euros a month, equipment included. This new initiative is consistent with Action No 1 of the "Digital France 2012" Plan announced by the French government in October 2008, which aims to foster the emergence of broadband offers by January 1, 2010, so that all homes in France are guaranteed access to broadband at reasonable cost and irrespective of their location.

(Source: Eutelsat)

Eritrean Opposition Group Starts Shortwave Broadcasts

Voice of ASENA began broadcasting to Eritrea beginning February 2009 on 9610 kHz. The trial radio program, which will have the Eritrean people and army as its target audience, runs three times a week: Mondays, Wednesdays, and Fridays from 8:30 to 9:00 p.m. Eritrean time (1730–1800 UTC). This broadcast appears to be courtesy of Belgian transmitter air-time broker TDP, as the same frequency is used for other Eritrean and Ethiopian opposition broadcasts around this time on other days.

(Source: Media Network Weblog)

HD Radio Trials In Vietnam

Radio the Voice of Vietnam (VOV) and the Asia-Pacific Broadcasting Union (ABU) organized a trial of HD Radio for February. The event, with the rather unwieldy titled "HD-RADIO-VOV-ABU Digital Radio Showcase: Digital Radio Transmission Workshop and Field Measurements in MW & FM Band," took place on February 10–13, tested digital radio HD Radio transmissions using the In-Band On-Channel (IBOC) approach.

The principle objective of the project is to showcase the

feasibility and effectiveness of HD Radio technology broadcasting mediumwave and FM signals. The project aims at equipping the participants with sufficient expertise in the area of simulcasting and helping them carry out similar trials in their own countries. Given that the Asia-Pacific region has some of the largest mediumwave radio broadcasters, the ABU believes that successful trials and measurements will pave the way for easy and cost-effective transition to digital transmissions.

The VOV commenced AM and FM HD Radio transmissions in Hanoi in June 2008, including multicasting, in anticipation of making HD Radio technology a standard.

(Source: Media Network Weblog)

First DAB+ Transmitters Arrive In Australia

The first DAB+ digital radio transmitters arrived in Australia. A total of 16 transmitters are currently being installed at various sites in the five state capital launch cities of Sydney, Melbourne, Adelaide, Brisbane, and Perth. As well as the transmitters, other DAB+ infrastructure, such as monitors and multiplexers, have arrived, and the antennas are under construction in Melbourne.

Australia will have one of the most spectrum-efficient and sophisticated digital radio networks in the world, as a result of the Commercial Radio Australia (CRA) Digital Technical Advisory Committee's efforts over the years and joint industry and government research grants.

With the addition of DAB+ infrastructure, broadcasters will be able to offer more stations, digital-quality sound, a pause and rewind function, plus a new informative visual scrolling news, sport and weather text and the ability to transmit a picture of a radio host, the cover of a CD, a product photo or an animated logo on screen. It's expected that digital radio will roll out in May 2009.

(Source: Current.com.au)

Paul Harvey, 1918–2009

Paul Harvey, the Chicago-based radio broadcaster whose authoritative baritone voice and distinctive delivery attracted millions of daily listeners for more than half a century, died February 28 in Phoenix, Arizona, according to the Associated Press. He was 90 years old.

Born Paul Harvey Aurandt, Harvey's long radio career spanned more than 70 years, and at its peak he reached more than 24 million listeners on over 1,200 radio stations. His "News & Comment" and "Rest of the Story" features became icons of broadcasting, as did his trademark staccato greeting: "Hello Americans! This is Paul Harvey. Stand by! For news!" A Peabody winner, inductee to the Radio Hall of Fame, among numerous other awards, Harvey also received the Presidential Medal of Freedom in 2005.

Jim Robinson, president of ABC Radio Networks, where Mr. Harvey worked for more than 50 years, said in a statement: "Paul Harvey was one of the most gifted and beloved broadcasters in our nation's history. As he delivered the news each day with his own unique style and commentary, his voice became a trusted friend in American households."

Capitol Hill And FCC Actions Affecting Communications

by Richard Fisher, KI6SN

Revised Website Has Details On DTV Switchover

The FCC has a newly revised DTV Internet site with more details on the nation's switch from analog to digital television. The address is www.dtv.gov. The FCC says visitors can check the status of converter box reimbursement applications and there is a troubleshooting guide with a hook-up checklist and tips on the reception of digital signals. The new website also offers DTV reception maps for neighborhoods. In addition there are other links to publications, including the following:

"Use Care When Calling About the DTV Transition" at (www.fcc.gov/cgb/consumerfacts/usecarewhencalling.pdf);

"Remember to Rescan" (www.fcc.gov/cgb/consumerfacts/rescan.pdf);

"Antennas & Digital TV" (www.fcc.gov/cgb/consumerfacts/dtvantennas.pdf).

In Fits And Starts, FCC Set February And June Launch Dates For DTV

The U.S. Congress' concern about a shortage of converter boxes and fear that viewers wouldn't be ready for the change from analog to digital television prompted lawmakers to delay the February 17 nationwide DTV transition until June 12. Several hundred stations, in mostly smaller markets, decided to make the switch in February anyway.

Just days before the original date, the FCC put extra conditions on some stations after learning that about one-third of full-power stations were planning to make the February switch. Those not meeting the revised criteria would have to wait until June.

In published reports, the A.C. Nielsen Co. said 5.8 million U.S. households—5.1 percent of all homes—were not prepared for the analog shutdown, "but it's unclear how many of them are in early-shutdown areas," according to the Associated Press. "Also, the National Association of Broadcasters has taken issue with Nielsen's numbers, saying they exaggerate the

problem by counting households that have digital converters but haven't connected them," the report continued.

Station owners contacted by the wire service were "confident the large majority of viewers [were] prepared for the change, even if the message has been muddled on the timing."

Authorities said a positive aspect of having two switch dates is that the FCC's DTV call center (1-888-CALL-FCC) may be better able to manage calls from viewers unable to capture the digital signal. "Also, the delay provides a chance for the converter box coupon program to catch up," the Associated Press said. "The stimulus bill that President Barack Obama [signed February 17] contains \$650 million in additional funding. Once that's available to the National Telecommunications and Information Administration, it can clear the 4 million coupon backlog in a few weeks."

APCO Praises New Appointee To Public Safety, Homeland Security Bureau

The appointment of David Furth as acting chief of the Public Safety and Homeland Security Bureau by FCC Acting Chairman Michael Copps is being praised by the Association of Public-Safety Communications Officials (APCO) International.

"APCO International looks forward to continuing our work with David during his time in this new role," APCO International President Chris Fischer said. "He has long distinguished himself a dedicated public servant." In a statement, APCO said that Furth was the 2007 recipient of APCO International's Leadership in Regulatory Service Award and that Derek Poarch, outgoing chief of the Public Safety and Homeland Security Bureau, was also honored by APCO with the 2008 Leadership in Advancing Communications Policy Award.

"We also deeply appreciate Derek Poarch's service as bureau chief," Fischer said. "Derek brought real-life public safety experience to the FCC and helped to fashion important public safety policy initiatives."

Sirius XM Radio Avoids Bankruptcy With Loan From Liberty Media

It was announced in mid-February that Sirius XM Radio Inc. is getting a \$530 million loan from Liberty Media Corp., putting it in a financial position to prevent the satellite radio provider from having to file for bankruptcy. The move also blocked a bid by Dish Network Corp. for control of Sirius.

Sirius faced a dual financial threat when credit markets tightened and auto sales plunged, according to published reports. The car industry is particularly important to Sirius because its satellite radio receivers are offered as new vehicle packages in some models.

Sirius XM Radio's 20-plus million subscribers receive music, talk, and sports programming, including the Howard Stern show, which it obtained in a five-year, \$500 million contract.

Commission Announces New Head Of FCC Enforcement Bureau

The much-anticipated replacement for FCC Enforcement Bureau Chief Riley Hollingsworth was named by the Commission, ending months of speculation about who would fill the post—and when.

Laura L. Smith was named to fill the vacancy created when Hollingsworth, K4ZDH, retired in 2008 as Special Counsel for the Spectrum Enforcement Division of the FCC's Enforcement Bureau. Hollingsworth served in that position for more than 10 years as the FCC's enforcement watchdog over the Amateur Radio Service.

Smith, of Pennsylvania, is a 1990 graduate of the Pepperdine University School of Law, and began her legal career with the FCC in the Mass Media Bureau and Wireless Telecommunications Bureau. Additionally she was Deputy Division Chief of the Public Safety and Private Wireless Division.

According to the American Radio Relay League's *ARRL Letter*, in 1998, "Smith left the FCC to become Executive Director of Governmental Affairs for the Industrial Telecommunications Association (ITA) now Enterprise Wireless Alliance." The Letter continued:

In that role, she monitored FCC and legislative proceedings and participated in all regulatory proceedings relevant to the private wireless industry. In 2001, Smith became ITA's President and Chief Executive Officer. While in that position, she was instrumental in the formation of the Consensus Group, a group of public safety and private wireless entities responsible for drafting the "Consensus Plan," a proposed resolution for interference in the 800 MHz band; this was adopted by the FCC in 2004.

In a letter to then-FCC Chairman Kevin Martin in October 2008, ARRL President Joel Harrison, W5ZN, called upon Martin to name a replacement for Hollingsworth. "The appointment of a replacement Special Counsel in this position is of critical importance to the Amateur Radio Service," he wrote, "as the delay in finalizing the appointment stands to undermine in very short order an exceptionally successful and low-cost program of enforcement in the Amateur Service."

FEEDBACK

Our Readers Speak Out

More On The Never-Ending Transition

Dear Editor:

As I write this, we are a bit more than a month away from the switch to all HD Television broadcasts. I am already having problems with it.

I'm old school, as I am using back-of-the-set "Rabbit Ears" on three different TV sets in as many areas of the house. We have not had a roof- or chimney-mounted antenna since the last one blew down when Hurricane Donna hit New York City in 1960.

Without having to purchase a new HDTV unit and recorder/player device, and continue using the older TV sets, I have spent, so far \$80, with the government coupons, for two converter boxes, \$30 for one (so far) HDTV antenna, and \$20 for an extension coax cable for between the antenna and the converter box, which due to necessity, are set several feet apart.

The converter box is only able to "watch" one channel at a time. Because of that, I cannot watch one channel, and use my still viable but technologically obsolete VCR to record another, through the converter box. Also, there is the issue of recording two shows on different channels consecutively, for example, *CSI* on CBS, followed by *ER* on NBC. Someone would have to be there to manually switch the devices, which defeats the purpose of using timed recorders in the first place.

I live in an area of New York City that always seems to be the last to get anything. We were the last area to get touchtone telephone service, caller ID, cable television, and fiber optical computer cable hookups. We have already been told by Verizon, the local phone company that also runs the area's FiOS, that as a community, we won't be wired for HDTV until months after the HDTV signal becomes the norm.

Per documents I have read, when color TV signals started becoming the norm, they changed the signal so both older "black and white" and modern color TVs could co-exist, by law. Indeed, we got the first color TV in my house in 1986, and retired the B&W it replaced to a different room.

While HDTV signals are probably going to improve what I watch, I must question, especially at this time of economic setbacks on a national scale, why we, the viewing public, must be forced into spending so much money, either for the accessories, or for totally new viewing units and recorders? Cannot those in power slowly phase in the HDTVs, as the analog TVs they are replacing become so obsolete they would eventually be replaced anyway, due to the electronic mechanics no longer wanting to repair them, as happened around 1965 to our old 1947 RCA-Victor console model TV/radio/phonograph?

I think it was the late George Carlin who said, "I'm not buying anything else until they stop inventing, and I can catch up!"

Richard C. Berger
Belle Harbor, NY

What I Wish My Radio Did

by Rob de Santos
commhorizons@gmail.com

“While many of us have found ways to make radio audio listenable away from our shacks (such as with short-range FM transmitters), what if we could control and listen to the radio anywhere in range of our home networks?”

What do you want your next receiver to do that it doesn't do now? What features do you wish it had that it doesn't have? I've got a list to share, and not all of my wishes would be in a \$99 portable but some sure should. A few of the features I'd like to see currently exist only in professional-grade receivers, others not at all. But, with tongue slightly in cheek as I assert my right to prior art if you try to patent my ideas (wink, wink!), here's my wish list:

Completely configurable filtering. I'd like to intuitively define the filters (shape, bandwidth, notches, etc.) that sound good to me or meet my listening needs. On the top-end radios with DSP chips you have some of this control, but I'd like to be able to do this on my laptop and load it in my handy portable, too. This would be particularly valuable to those with hearing problems or who need to fight interference. With all the computers at hand, the radio wouldn't need to host the editing initially, just be able to accept the filter definition and execute it.

Setting retention. How about our radios keeping their settings and memories semi-permanently so you don't lose them when you lose power or when the batteries run down? Given the price of memory chips, it shouldn't be hard. Reprogramming all those memories and settings requires much more effort than it should. (You could also extend that to all kinds of electronics: Why can't my microwave remember the time when the power blinks off and on for two seconds?)

Automatic identification of transmission modes. If my radio can decode a variety of transmission modes it should have a feature (which can be disabled for purely manual tuning) that recognizes the incoming signal as AM, LSB, RTTY, DRM, etc., and puts the radio and filters into the preferred settings to tune it without my needing to tweak the knobs. It's fun to twirl knobs and punch buttons, but sometimes I want the radio to use its smarts so I can have my hands busy elsewhere. Used in a band-scanning mode, this would allow hands-off monitoring with no interaction until I heard something of interest.

Wi-Fi and Bluetooth capability. This is becoming common in some car radios, so why not in a communications receiver? While many of us have found ways to make radio audio listenable away

from our shacks (such as with short-range FM transmitters), what if we could control and listen to the radio anywhere in range of our home networks? It would also facilitate capturing the audio for later listening or post processing. Now that would be useful.

Modernized connections. I'm thinking here of things like USB and IEEE 1394 (“Firewire”) connections. Serial ports are outdated and few computers even come with them. They're also space consuming in a way that a mini-USB port is not. Modern radios should have something like this standard, just as many other electronics do. I should also be able to back up memories and settings to (or read them from) a USB device, allowing me to use them on another similar radio.

More handicapped-friendly. Radio has always been the “window” for so many people, but all the new and fancy technology shouldn't be a substitute for making radios friendly to blind listeners. Tactile controls and voice announcements and commands should be an option even if it requires another “black box” to make it work. These things benefit sighted listeners, too. Ever try to adjust your bedside radio in the dark? Many receivers are simply impossible to operate without vision.

What was that again? If you have a DVR you can probably guess what I want with this feature. You're listening to the radio and you don't quite get one or two words. The answer to your quandary is a small memory-based buffer that lets you repeat the last 30 seconds. It wouldn't offer full-fledged recording capability, as Tivo does, but just enough of a buffer for listeners to go back when they didn't quite get that one part of the address for Radio Pottsylvania.

Smart power usage. I value my sleep button, but I have several radios that have well-lit displays that cannot be dimmed or have no adjustments to alter power consumption. I really try not to think about how much power my electronic devices use in a year (friendly to my electric bill they certainly are not). Even my tiny Kaito consumes power constantly when connected. I want my future receivers to have smart power usage abilities to minimize their energy consumption when I'm not actively tuning them around the bands.

So, what's on your wish list? Drop me a line and let me know.

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- 11 different steps plus an automatic-step mode
- Palm-fitting, lightweight, easy-to-carry compact body
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Wide Band Communication Receiver DJ-X7

Standard Features

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Five scan modes are available including preset frequencies, VFO, memory scan, programmed scan or tone scan to search for unknown CTCSS tones. The Timed/busy modes are selectable on all modes except the tone scan mode.
- **Power options keep you in control**
The DJ-X7 comes with a standard adapter that charges the Lithium ion battery. AT THE SAME TIME it powers the radio with AC power. So you can listen while the unit is charging. The long-lasting, lithium ion battery delivers approximately 19 hours of operating time



Wide Band Communication Receiver DJ-X30T

Standard Features

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- Five scan modes: Preset, programmed, memory, VFO and tone scan operating modes
- Priority receive
- Three different antenna modes - earphone, internal bar, and external SMA.
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Lightning Protection: Taming Thor's Thunder— On A Budget

*Learn How To Affordably Safeguard Your Valuable Radio
Equipment—And Maybe Something Far More Precious*

by Kenneth J. Meyer, K9KJM, K9KJM@ARRL.net



If you're a radio hobbyist, your radio equipment is extremely valuable to you. It's an investment, and like all investments it needs protection. One way to protect that investment is by making sure that you have adequate lightning protection in place. There are plenty of sources explaining how to protect your radio shack from lightning damage, but few people implement the proper protection because of the perceived high cost of (copper) supplies. While this article certainly isn't the "last word" on the subject, it will show you that you don't have to take an expensive approach and provide you with tips on how to properly protect your station—without breaking the bank.

First, let's dispel some old wives' tales regarding lightning. For starters, it is possible to take a direct lightning strike to your antenna mast, tower, or other support without your equipment suffering damage. Commercial, police, fire, and ambulance systems, cell phone towers, broadcast stations, etc. take direct lightning strikes during most large lightning storms, and when they're properly protected they don't suffer any damage. True, that equipment does have extensive ground systems and shiny copper straps that cost a lot of money to have installed, but it's possible to add protection on a budget. Don't listen to those misinformed folks who say "Nothing can protect from a direct lightning strike." Radio equipment survives lightning strikes all the time.

But wait, you say, doesn't a typical lightning bolt have millions of volts and many thousands of amps of power? Well, yes, they can. But lightning bolts, like lots of other things, come in all different sizes. While a large, powerful lightning strike of several "strokes" of longer than normal duration can have lots of power, even the largest strikes can be handled with large low-inductance conductors because of the very short duration of even the longest and largest strikes.

Indeed, part of the confusion over the years about lightning stems from the fact that lightning strikes can be large or small. So when someone tells you that his sta-

Kenneth J. Meyer, K9KJM, is an extra class amateur radio operator who has actually used all of the cost-saving ideas in this article to install lightning protection systems on a low budget. He has supervised many commercial tower installations.



A worker "Cadwelding" (see text) #2 solid copper wire with 4-inch-wide flat copper strap. The dark material around the copper strap is Harger "ground enhancement."

tion was hit with a direct lightning strike and suffered no damage, despite having only minimal grounding with small-size conductors, that may be true—but he may have been extraordinarily lucky and taken only a minor hit.

In these tough economic times, why take chances with your valuable equipment, especially when it can be safeguarded inexpensively?

Proven Approaches For The Frugal Hobbyist

The first order of business for properly protecting a station—or home for that matter—is to make sure you bond (that is, electrically connect) all ground points together with a low-inductance conductor, such as a flat copper strap or a heavy gauge wire. This means that your electric power entrance ground, cable TV entrance, telephone landline entrance, hamshack ground, mast or tower ground, etc. all need to be bonded together.

Think of your equipment like a boat on a rough sea: When a large wave—a lightning strike, in our case—causes everything to move up and down together, the equipment is safe. Damage happens when there is a potential difference between ground paths; bonding eliminates that difference. Bonding is of extreme importance and we'll get back to it shortly.

The actual device used (lightning arrestor, grounding coax switch, etc.) is much less important than the proper bonding and grounding of coax shields before they enter the building. It's also important to understand that damage from lightning to most home stations comes in via surges to the electric AC power system, and not from direct antenna strikes, except in rare cases.

A VERY important step in protection is to install a "whole-house"-type of surge suppressor at your electrical power entrance panel. Such protectors are available from most electric shops, home supply stores, or companies specializing in these devices. A suitable device should cost between \$50 and \$100 or so retail, although I've found whole-house protectors (Delta LA 302-R) on eBay for only \$35. Such protectors must be installed in the main breaker panel. If you are not comfortable working in this way, hire a professional electrician to install it.

When lightning strikes the power line in your neighborhood, the power company arrestor on the pole (or underground pedestal) will divert much of the surge to ground, but there will still be a very large spike of energy entering your home. It's the job of this whole-house protector to dump much of that to ground right at the entrance panel. Then the familiar surge suppressor outlet-type

strips have a much better chance of getting the surge down to a level that won't damage your devices.

The Ties That Bond

Now let's get back to bonding your grounds together. Just hooking a light-gauge wire between the grounds is not enough. You need a low-resistance, low-inductance conductor (in this case, low inductance means having lots of surface area; see <http://members.cox.net/pc-usa/station/inductance.htm> for more). This is where many hobbyists throw up their hands in despair as they check out the prices of #2 stranded copper wire, or similar. Copper prices recently surpassed \$4/pound, making it beyond the means of many of us. While prices have come down since, retail copper products remain fairly expensive, but a little legwork (or phone work) can pay off in a big way here.

A flat copper strap of between 2 to 6 inches wide by about .025 inch thick is the material of choice, but it can be quite steep if bought from a lightning protection company at full retail. In most cases, you can go right to your local home supply store and buy (or order) copper roof flashing for much less. An even better low-cost source could be an upscale roofer or roofing company that installs copper flashing. All will have "scraps" that can be purchased for just above scrap prices. The seamless roof gutter installation companies are another good source. They mostly use aluminum, but usually have copper available. (Note: Do make sure you watch out for the really paper-thin copper,

which is nothing more than decorative. It looks and feels like copper "tin foil," and that material is much too thin for grounding. You want copper that is about .020 inch or so thick, or about the thickness of both sides of a paper matchbook cover).

Speaking of aluminum, it's usually not a good idea to use aluminum as a bonding conductor—at least outdoors and certainly not underground. Although aluminum is a great electrical conductor, there are serious corrosion problems associated with transitioning between copper and aluminum, and aluminum turns to a white powder in many soil types. Spend the extra effort to find copper.

If you have to run wire instead of flat copper strap because you were unable to obtain enough of a good wide strap, use the largest size wire you can get. Here again, old, used copper wire will work every bit as well as shiny new stuff, and outdoors or underground no one will know the difference! Check with local scrap yards for some nice heavy copper wire. Other sources include construction or wrecking companies that tear down buildings. Offer to pay more than they could get at the scrap yard for some of the heavy copper wire.

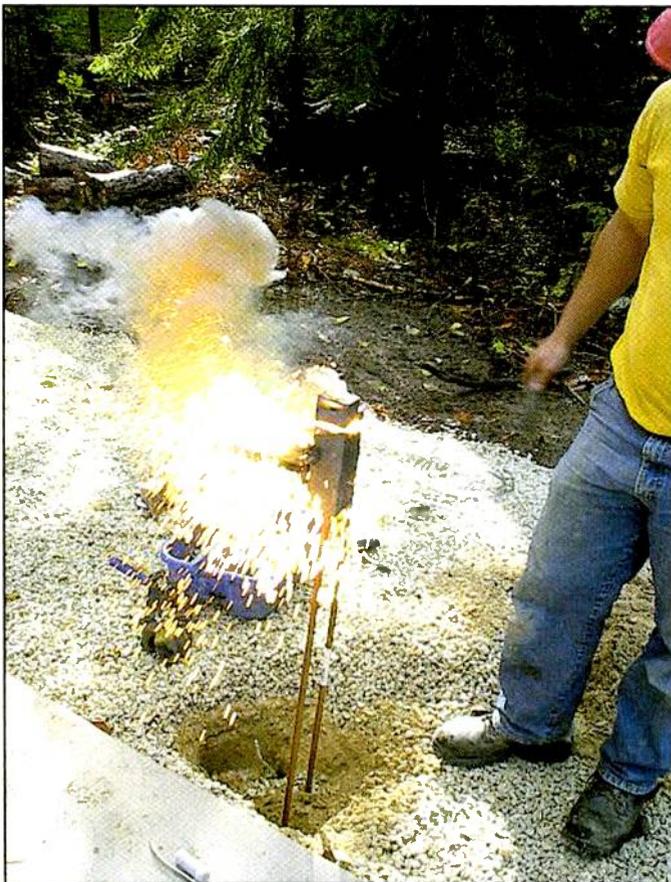
Even plain household copper wire can be used with a little planning. Common #12 or #14 gauge plastic insulated home wire can be stripped of its insulation easily with a knife. It's then an easy matter to attach a number of strands of that wire to an electric drill motor on one end and to a vise on the other and twist them into a larger size wire. Another possible low-cost conductor is flexible (soft) copper tube. A good size is 3/8 inch, and even new on sale this costs less than a dollar a foot. As an electrical conductor, tubing is almost as good as solid #2 copper wire.

It is important to keep a fairly large radius on all bends in the wire or strap (no sharp bends!). And try to keep your conductors always pointing downward—don't have them point down and then back up, then back down, etc.

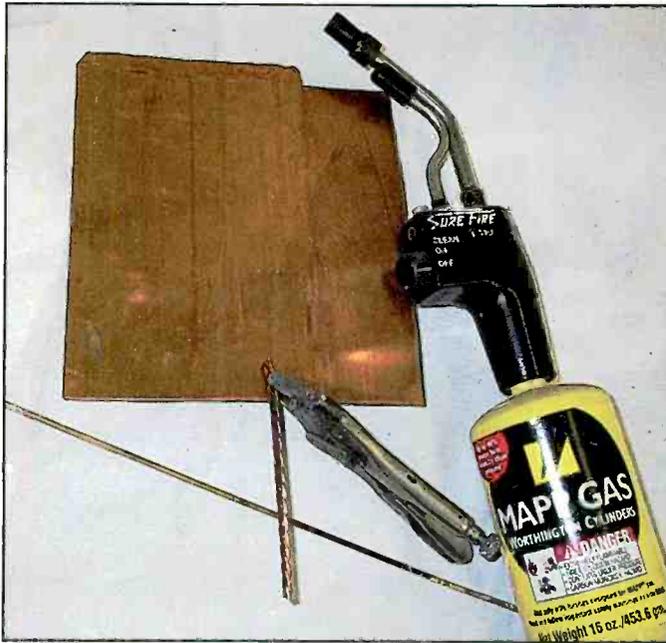
Grounding Rods

Most hobbyists know that ground rods need to be driven for an effective ground system, but many don't know that those rods should be spaced about twice as far apart as their depth. For instance, you should space rods that are eight feet deep about 16 feet apart; if you space them closer, they lose effectiveness. Again, bond the rods together with copper wire or strap. Power company research has shown that #6 copper wire can handle approximately 96 percent of all direct lightning strikes without fusing open. (Research also found that it was much more economical for the power companies to just replace material damaged by those very rare "huge" lightning bolts that overwhelmed #6 wire rather than use heavier gauge wire at each power pole. Typically, only critical locations that simply cannot be allowed to fail, like tall tower sites or electric power substations, will use much larger diameter wire.) Nice, shiny new 5/8-inch heavy copper-clad steel rods sell for about \$10 each in home supply stores.

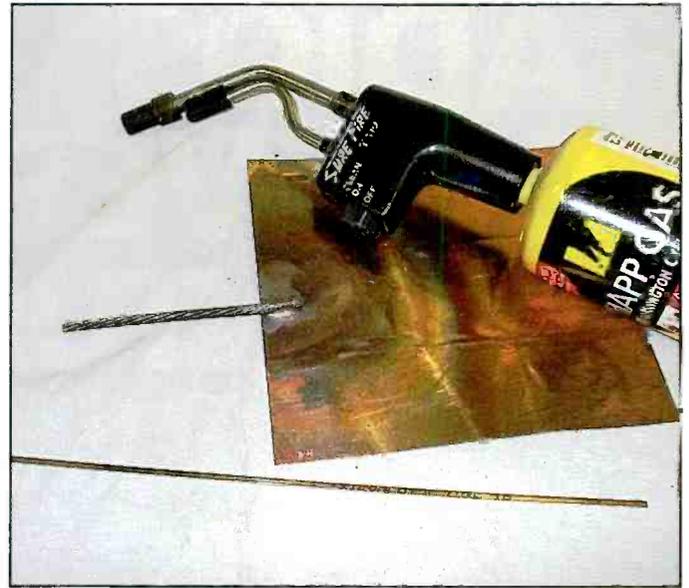
Most installations should have at least six driven rods, depending on surrounding soil type. For instance, if you have wet, swampy soil you may get by with fewer ground rods than if you're on top of a sandy, dry soil hill. If deep rods can't be sunk, additional shorter rods, or a large radial wire system will work to provide a good ground. In extreme cases, where it's hard to drive in rods of any depth, a homebrewed ground enhanced rod can be made up of a section of used copper pipe that's drilled full of holes and filled with rock salt. Bury it as deep as you can, placed vertically, horizontally, or whatever.



A spectacular shower of sparks as the Cadweld exothermic material burns, producing the weld between a #2 copper wire and a 5/8-inch copper-clad ground rod. The black color graphite mold containing the molten weld metal is clearly seen.



Ready to weld. A flat copper strap (scrap from a copper roof gutter installation that the author straightened out) with a stranded #6 copper ground wire. Locking-type pliers holding the wire in place, Silvaloy Excel 15 rod, and small handheld torch using MAPP gas are also shown.



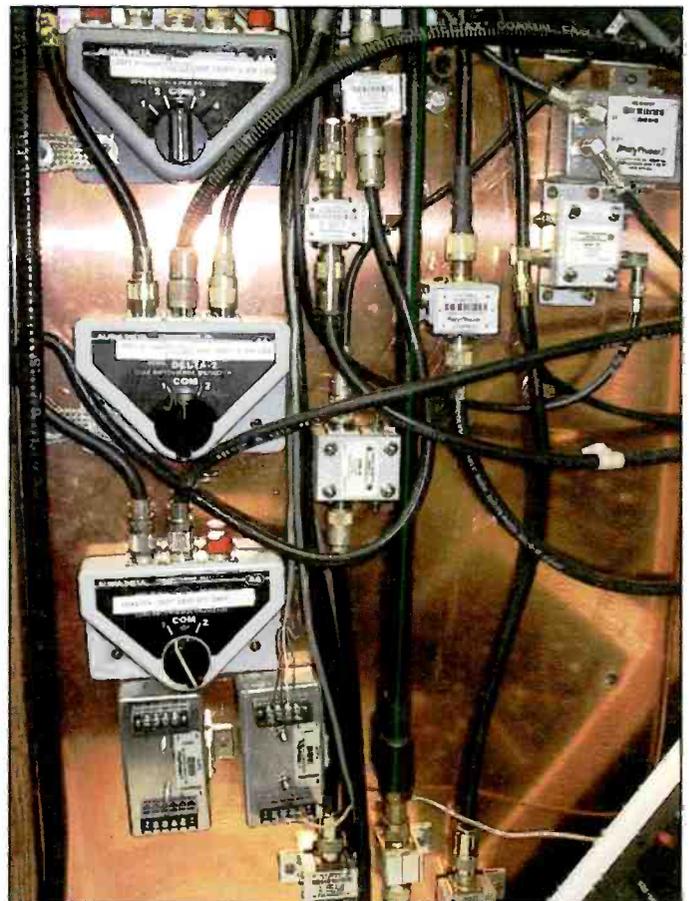
Completed weld. It took only a few drops of the welding rod to make a very secure weld. Note the change in color of the copper. To make the rod flow, the copper needs to be brought up to an almost red color.

A very low-cost source of high-quality ground rods can be as close as your local utility. Check with the power company or telco parts manager for used “pull out” ground rods. As these rods are just copper-clad steel, there’s practically no scrap value to them. Often such old rods will be given to you, especially if you mention that you’re a ham radio operator, member of ARES, REACT, or associated with any other type of emergency communications service. Yes, the rods will be bent up beyond recognition, but can be straightened between two trees. Or if they’re bent too badly, cut them in half to make two good four-foot-deep rods. A bonus to using these old rods is that most of them will come complete with a commercial-quality wire clamp still attached to them, and hours soaking in some penetrating oil should make those old clamps function as good as new (and those clamps are expensive brand new!).

While you’re talking to the person in charge of disposing of those old rods, it doesn’t hurt to also ask if he can sell any used copper wire that would be suitable for grounding. Avoid the small 4 feet deep by 3/8 inch diameter “ground rods” sold in discount stores. This is not so much because of their size but because they’re normally just copper plated, not heavily copper clad, and will turn to rust in a very short time.

Putting It All Together

Now, how do you join all these parts together, or more properly, how do you actually join the copper strap and wire to the rods? Nowadays the “pros” mostly use exothermic welding, like Cadweld, to do the job. (Exothermic welding uses several chemicals that burn at a very high temperature to “weld” metals together.) While that type of bonding is very good, it’s far from low cost. You either have to buy or have access to many molds of the various types, or buy the “one shot” weld kits, and both approaches are fairly costly. Good-quality mechanical clamps are also pretty expensive.



This photo, taken in the author’s ham shack, shows a “single point ground” panel with various coax switches that put unused antennas to ground, along with several brands of lightning arrestors. The copper sheet is “bonded” with the outdoor ground system with a 6 inch wide copper strap. The sheet is .022 inch thick copper screwed to a 3/4 inch thick plywood panel.

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FIELD RADIO GS3500L

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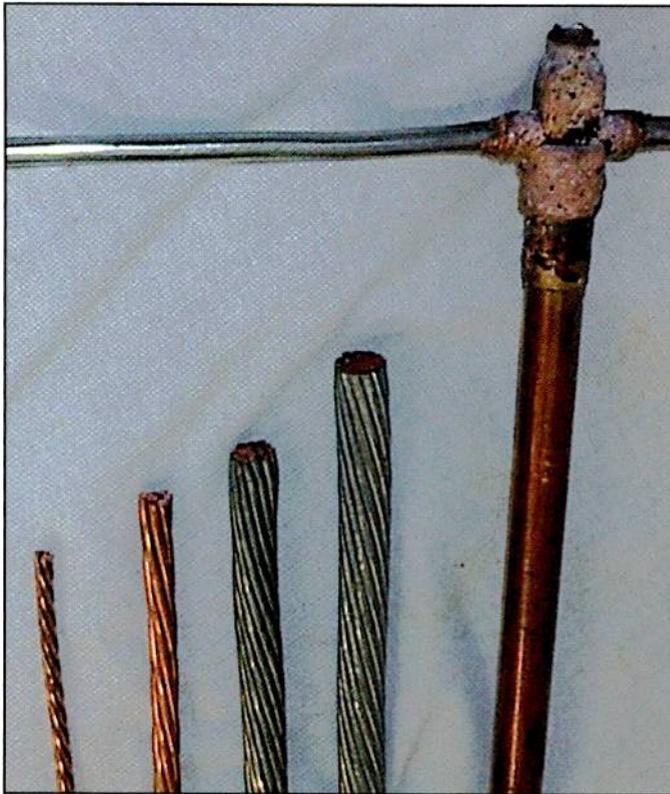
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Close up of a completed "Cadweld" exothermic weld of a #2 solid copper wire to the top of a 5/8-inch-thick ground rod and examples of ground wire relative sizes. From left, #6 stranded copper ground wire, #2 copper wire, #2/0 wire, #1/0 wire, Cadwelded 5/8-inch ground rod.

A good low-cost approach to connecting all the elements is to obtain some of the welding "braze" rod used in the air conditioning trade, which goes by the name of Silfoss, Silvaloy, among others. These are "hard" braze rods with a silver/copper/nickel content. A small handheld propane torch will flow and weld them together under most conditions with light or fairly heavy gauge wire (the actual brazing process is very similar to plain old soft soldering; it just requires more heat to "flow" or melt the rod).

To do a good job in the real world with heavier gauge wires, you can use MAPP gas. This comes in a small container, just like propane, for a handheld torch but burns at a much higher temperature than propane and will work in flowing the weld in most cases. If you don't already own a small propane/MAPP gas handheld torch assembly, one can be purchased at a reasonable price from most home supply or hardware stores. They have many uses besides welding a ground system and would be a good investment. Or borrow one from a friend if your budget's really tight.

The hard silver solder sticks, or brazing rods, cost around \$2 each, and one stick can make lots of connections. They can be purchased at most larger welding supply stores, and you can also check with your local air conditioner/refrigeration repairman. If some of your copper is really old and oxidized, a light sanding to clean it up will help the rod flow more easily. I use a small vise-grip-type pliers to hold conductors close while welding. DO NOT use any type of soft solder for these connections! This includes all types of lead/tin and the newer so-called plumbing "silver solder," which is still a very low temperature solder. Such solders will turn to a white powder

underground in most soils and will blow apart if subjected to a direct lightning strike of any large magnitude.

Single Point Grounding

One of the most important concepts to remember is to have what is known as the "single point" ground, usually close to where all I/O (Input/Output) lines like coax, rotor wires, etc. enter the building. Commercial towers with a large bankroll to spend on lightning protection use a heavy copper plate, usually about 1/4 inch thick by 4 inches tall by 24 inches wide, to bolt all the lightning arrestors to. You can save lots of money and have just as effective a system by simply using some .025-inch-thick copper sheet, screwed to a piece of 3/4-inch-thick plywood.

Make this plate whatever size it takes to fit all of your coax switches (the ones that connect all unused antennas to your ground system) and attach whatever lightning arrestors you plan to use. Bond that panel to your outdoor ground system with as wide a copper strap as you can manage to get through your wall or window, and keep that interconnecting strap as short and as free from bends as possible.

Lastly, install the actual lightning arrestors themselves. Industrial Communications Engineers (I.C.E.) makes a good-quality one. Polyphaser also makes good arrestors, which are usually used at the public safety and commercial communication tower sites. I also like Alpha-Delta and similar constructed "strip line" grounding coax switches for VHF and UHF, and I use older ceramic rotary coax switches that ground unused ports for HF.

I personally run antennas that I have *no* intention of operating from during a thunderstorm to the grounding coax switch, and I run antennas that I *do* plan to use while a storm is raging overhead through a quality arrestor.

Now, Do Your Research

In well over 30 years of operation with my personal systems and also in overseeing commercial repeater tower sites with antennas at the very top of tall towers, I have NEVER had damage to radio equipment—and these antennas and towers *were* hit by direct lightning strikes numerous times, as measured by Polyphaser LSC-12 Strike counters.

While nothing in life is 100 percent certain, following the correct bonding and grounding procedures will go a long way toward protecting your station. Even if you can't follow through with all the recommendations, taking some of the steps along the proper path will reduce damage—and, more importantly, the odds of personal injury—over having nothing in place at all.

There is no cookie cutter formula for effective lightning protection. Each site and installation has enough variables to make it unique. Soil conditions, equipment layout, and other parameters combine to make all situations different. You need to do plenty of research (see some suggested resources below) before you can decide what's the best way to protect your station.

Again, this article was not intended as a definitive source on how to install an effective system, but to provide you with a good starting point on how to do a proper job on a low budget.

For additional information, I suggest visiting the following sites for starters:

ARRL: www.arrl.org/tis/info/pdf/0208053.pdf

Polyphaser: www.comm-omni.com/polyweb/appendixA1.htm

I.C.E.: www.iceradioproducts.com/

A good resource can also be found at

<http://members.cox.net/pc-usa/station/ground0.htm>. ■



Atwater Kent Island: In Maine, An Oasis Of Beauty...And Radio History

*The Man Behind These Classic Radios Has Left His Mark—
And Plenty Of His Radios—On One Of The Several Places
He Called Home*

by Rich Moseson, W2VU

You won't find Atwater Kent Island in an atlas, or—for the more technically advanced—on Google Maps or MapQuest. The actual geographic name is Mount Desert Island in the State of Maine, home to Bar Harbor and Acadia National Park. But if you spend any time poking around beyond the Main Street stores that cater to the island's thousands of annual visitors, you will discover a legacy left behind by this pioneer of early radio manufacturing who was also one of Mt. Desert's most flamboyant residents.

I stumbled onto the legacy two summers ago in the Bed & Breakfast where my family and I stayed on our summer vacation (see **Photo A**). The place was just full of 1920s and 30s vintage broadcast radios, in the common living room, the dining room, in hallways and even on stairway landings. Most of them were Atwater Kents. Owner Joe Paluga¹ said he'd been collecting old radios for years, and he talked about not only his own collection but also the impact of Atwater Kent on long-time residents.

A Little Island History

Mt. Desert Island has gone through three distinct phases in its development as a tourist destination, starting in the mid-1800s when artist Thomas Cole discovered the island and began painting landscapes. His paintings popularized the island among other artists, as well as writers, naturalists, and adventurers who collectively called themselves "rusticators"². While these early visitors rented rooms from local farmers and fishermen, the island's popularity grew to the point that, by the 1870s, several large hotels were built to accommodate them.

Rich Moseson, W2VU, is the editorial director of *Popular Communications* and the editor of our sister magazine, *CQ*. He can be reached at w2vu@cq-amateur-radio.com.

This was followed in the early 1900s by an infusion of very wealthy families from major eastern cities who built mansions—which they called "cottages"—for their summer vacations. A movement by several of these wealthy residents, principally George B. Dorr and John D. Rockefeller, to preserve the beauty of the land for future generations led to the creation of what is now Acadia National Park. The "cottage era" lasted until 1947, when a huge fire wiped out many of the mansions in Bar Harbor itself. In ensuing years, the island reinvented itself



Photo A. Moseley Cottage was built in 1884. A newspaper account at the time noted that the house is "a model of brightness and comfort" and that it "will be lighted by electricity." (Unless otherwise noted, photos by the author)

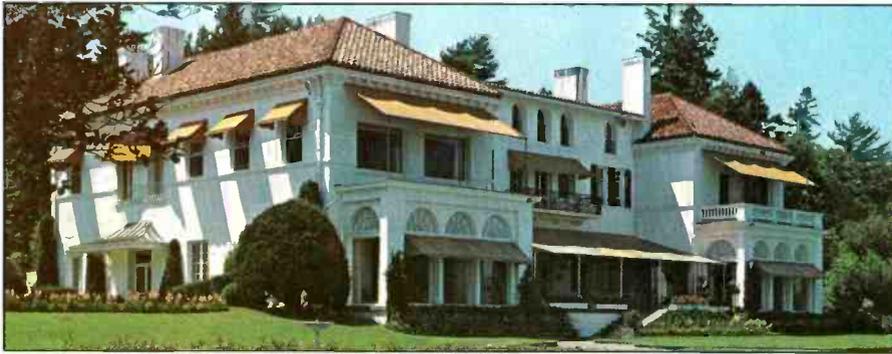


Photo B. Picture postcard of Sonogee, once the “cottage” of radio manufacturer Atwater Kent, before it was turned into a nursing home in the mid-1970s and had its second story removed. (Photo © by Win Sommerfeld; used with permission)

“Regardless, Atwater Kent was held in high esteem by the “locals” who...returned his loyalty by purchasing his radios. Until recently...you could find Atwater Kent radios in every antique shop, every junk shop, and very likely in many attics around Mt. Desert Island and surrounding communities on the mainland.”



Photo C. Sonogee today is a nursing home and rehabilitation center with a (non) distinctively institutional look from the front.

yet again as a destination for middle-class as well as upper-crust tourists. Some of the surviving cottages have been turned into Bed & Breakfasts, such as the Moseley Cottage, where I discovered Joe Paluga and his radio collection.

Atwater Kent

Arthur Atwater Kent was an inventor, engineer, and manufacturer. Born in 1873 in Burlington, Vermont, he secured his first patent—for an electric top—at age 10. Kent started in business by manufacturing automobile electrical systems and components, including the ignition system that became the industry standard. He began manufacturing radios in 1922.

With his newfound wealth, Kent purchased a Bar Harbor “cottage” where he enjoyed entertaining on a grand scale. But Bar Harbor is just one of several communities on which he left a mark.

Kent grew up in Worcester, Massachusetts, where he attended but never graduated from, Worcester Polytechnic Institute (he flunked out twice). However, he later served on the college’s board of trustees, received an honorary doctorate from the school in 1926, and the building housing the university’s school of electrical engineering is named the Atwater Kent Laboratories. His radio manufacturing plant was built in Philadelphia, where the city’s main history museum bears his name. Bar Harbor was his summer home, and his extravagant parties were said to epitomize the “Roaring Twenties.” But according to Paluga, Kent felt more of a kinship with the island’s working people than with the other wealthy summertime visitors.

“Atwater Kent was not accepted by Bar Harbor society,” Paluga said. “During (World War I), meat was scarce. So he had cattle shipped up and he had a huge barbecue for all the workers, the common



Photo D. If you’re looking for a therapy room with a view, this is it! Patients and residents at Sonogee may look out over Frenchman Bay while having therapy or eating in the dining room.



Photo E. Looking at Sonogee from the facility's huge rear yard gives one a hint of the building's past luxury.

folks. That didn't get him in any better with the society folks."

I haven't seen this story in any of the "official" biographies of Kent that I've read, so it may just be island folklore or, more likely, one of those events that actually happened but was never recorded by "official" biographers. Regardless, Atwater Kent was held in high esteem by the "locals" who, according to Paluga,

returned his loyalty by purchasing his radios. Until recently, said Paluga, you could find Atwater Kent radios in every antique shop, every junk shop, and very likely in many attics around Mt. Desert Island and surrounding communities on the mainland. It also explains why a



Photo F. The lobby of today's Sonogee recalls its past with advertising posters for Atwater Kent radios.



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Joe Paluga's Radios

Author's Note: Paluga is more of a collector than a radio hobbyist, so his main interests were the radios' artistic value and whether they worked (most did), as opposed to technical details about them. Therefore, I depended heavily on the knowledge and expertise of longtime Pop'Comm contributing editor and old-radio guru Peter Bertini, KIZJH, for help in identifying these radios. Many thanks, Pete.

"My dad fixed radios when I was growing up," recalled Joe Paluga as he showed me his old radio collection that was on display at his Bed & Breakfast in Bar Harbor, Maine, the Moseley Cottage Inn. "The first one I got was up in Canada, an Eastman (Photo G)," he said.

Actually, the radio in question was a Gold Star by Clapp-Eastham, not Eastman, attested to by both the label on the inte-



Photo G. Clapp-Eastham "Gold Star" battery radio, circa mid-1920s. This was Joe Paluga's first old radio.



Photo H. Interior of the Clapp-Eastham, including nameplate showing proper spelling of the company's name.



Photo I. Silvertone model 7463 from the mid-to-late 1930s, featuring both AM broadcast and shortwave bands and a "tuning eye."



Photo J. 1930-vintage Atwater Kent AK-70 is one of four old radios that were on display in the Moseley Cottage's living room.

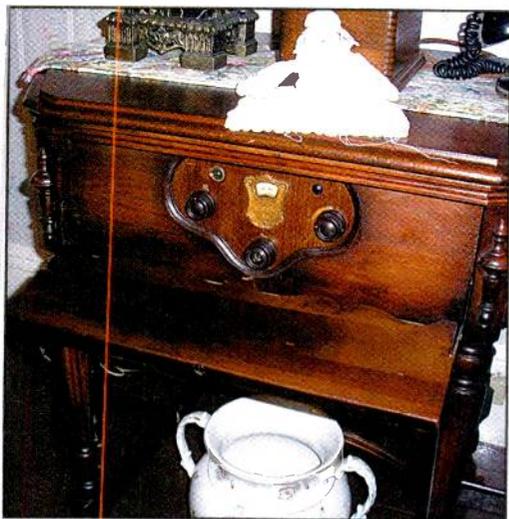


Photo K. This was the coolest radio of them all: an AK-55 concealed in a table (called a Kiel cabinet). The AC power cord is hidden in one table leg.

rior (Photo H) and *Radio Manufacturers of the 1920s* author Alan Douglas. Douglas says that despite what you may find on the Internet, there never was a Clapp-Eastman company, just a well-ingrained mispronunciation and misspelling of Clapp-Eastham, a 1920s radio manufacturer based in Cambridge, Massachusetts. (A thank you to Alan as well.—rm)

Paluga's Clapp-Eastham was on display in the inn's dining room, along with a Silvertone model 4763 from the mid-to-late 1930s (Photo I). It has a tuning eye and covered both the AM broadcast and shortwave bands. The common living room of the Bed & Breakfast featured four old radios—all Atwater Kents. They included a circa-1930 AK-70 with a low-boy style cabinet (Photo J) and the most interesting radio in the house (Photo K), an AK-55 in a Kiel cabinet. The radio is built into the table and the AC power cord is hidden in one of the legs.

Also on display in the living room (but not shown here) were two metal-cased AKs, including one with a Model H horn speaker. There were more radios scattered around the house, including a 1935-vintage AK Model 735, an RCA Radiola 80 in a highboy cabinet and a Zenith 6S361 from 1939. Unfortunately for old-radio fans, the Moseley Cottage Inn and Town Motel is now under new ownership, and Paluga took his radios with him, so these photos are now all that is publicly available.

majority of the radios in Paluga's collection (see sidebar, "Joe Paluga's Radios") were Atwater Kents.

Sonogee

Another one of Kent's legacies to Mt. Desert Island is his former "cottage," Sonogee...or, at least, the lower half of it. Sonogee (Photo B) was built in 1903 for Henry Eno, a poet and author who also became chief ornithologist for Acadia National Park (then called Lafayette National Park). According to a website devoted to Atwater Kent (atwaterkent.info), the "cottage" was well known for its formal gardens, vaulted ceilings, marble staircase, and views of Frenchman Bay. Kent entertained lavishly at Sonogee, perhaps more than any other Bar Harbor resident of the time. His parties reportedly had thousands of guests, multiple orchestras, and launches carrying guests back and forth to his yacht in the bay. Kent is reported to have once told a reporter for *Time* magazine it was his goal to enjoy "the simple life on a grand scale."

He sold Sonogee in 1937, and since 1976, it has been a nursing home and rehabilitation center. Perhaps it was a matter of economics or the cost of adding an elevator was too great, but the new owners had Sonogee's second story removed and two wings added for patient/resident rooms. The remodeled front of the house (Photo C) looks quite institutional, but glimpses of the building's former grandeur remain, including the marble staircase in the foyer (which now leads nowhere), various pieces of sculpture, the magnificent ocean view from a therapy room (Photo D) and the view of the building from the expansive back yard (Photo E).

The administration of the Sonogee Rehabilitation and Living Center is quite

proud of the property's heritage. Advertising posters for Atwater Kent radios line the lobby walls (Photo F), and then-Administrator Dane Rank filled me in on additional history while showing me around the facility and grounds (and putting in a pitch for Sonogee's various services; see www.northcountryassociates.com/sonogee.htm if you're interested).

A Radio-Active Island

Atwater Kent is not Mount Desert Island's only link to radio history. A barely readable plaque along the Loop Road in Acadia National Park commemorates Allesandro Fabbri, whose radio station atop Otter Cliffs provided vital communications and intelligence during World War I. This was the first station to receive a message announcing Germany's intention to surrender and calling for an immediate cease-fire (see "The Most Important...Station in the World," *Pop Comm*, July 2006).

So if you're looking for a family vacation that combines natural beauty with great shopping and "just a little bit" of radio, I'd suggest a visit to Atwater Kent Island (okay, so the signs say Mt. Desert Island), and be sure to check out all the antique shops (your wife will love it!).

Notes

1. The Moseley Cottage Inn and Town Motel in Bar Harbor has new owners as of the summer of 2008, so Joe Paluga's radio collection is gone. It's still a beautiful Bed & Breakfast for those so inclined—with a regular motel attached for the non-B&Bers—right in downtown Bar Harbor. See www.townmotel.com.

2. See *The Rusticator's Journal*, Tammin Coffin, ed., Friends of Acadia, Bar Harbor, ME, 1993.

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ICOM IC-RX7

Wide-band Receiver Part II— The Software Component

by Ed Muro,
K2EPM

The complexity of modern radio communications devices, whether we're talking scanners, shortwave receivers, or amateur radio equipment, has made the marriage of radios and computers almost a necessity. I've been using my computer to program various radios for over a decade now and at this point I don't know how I ever did without it. The ICOM IC-RX7, which we first took a look at in March in Part I of this review, is one of those devices hobbyists now can't imagine living without.

While the IC-RX7 in and of itself is a fantastic radio to use in the field for motor-sports, air shows, and similar events, you'll be doing yourself an injustice if you don't purchase its CS-RX7 PC Cloning software. If you're using the radio for local scanning or scanning at the track, for the most part, once you have programmed the radio the first time it's going to pretty much stay that way. However, if you're likely to use the radio to listen to geographic-specific listening as you travel then certainly it would behoove you to have the programming software at hand. Also, while most of the racing frequencies will remain constant for the season, there are times when drivers and teams change and you might find your favorite driver on a new frequency.

Getting Started

According to the ICOM literature, the CS-RX7 software will run on PC-based computers running Windows 2000, XP, or Vista (I don't know how it will function with older versions of Windows). The software comes packaged with two cables that are used in conjunction with each other: an OPC-478UC cloning cable and an OPC-1637 USB cable. An optional RS-232C-type cable, model number OPC-478, is also available.

The literature that comes with the software is geared more towards installing the software and drivers, and is not very helpful in teaching you how to use it, which will require a trial-and-error process or

Ed Muro, K2EPM, has been a radio hobbyist since his early teens. He served three terms as vice-president of the Long Island Mobile Amateur Radio Club and is a public information officer and VE for the ARRL.

The ICOM IC-RX7
Wide-band receiver.



the use of the "HELP" feature that is built in to the software. Once you have the drivers and software installed, I suggest you go right to the help menu and familiarize yourself with the software's operation and functionality.

There's one spot in the literature included with the CS-RX7 software and associated cables that might appear a bit confusing. Under "System Requirements" the pamphlet states :

"PC-Microsoft Windows 2000/XP or Microsoft Windows Vista is installed."

In the next section of the pamphlet, titled "USB driver installation (Step1)," there is a NOTE that states:

"The USB driver for OPC-478UC is not supported for Microsoft Windows Vista 964 bit."

Good To Know

For those interested in checking out this scanner, you should also know that the Japan Industrial Design Promotion Organization (JIDPO) recently announced ICOM's IC-RX7 Wide-band Receiver as the recipient of a Good Design Award 2008. The award is Japan's only comprehensive design evaluation and commendation system.

While we'd suggest that this wording be clarified in a text revision at some point, you just need to know that the latest USB drivers and Vista drivers are available from the ICOM America website under this rather long knowledge base location:

www.icomamerica.com/en/support/kb/Article.aspx?ArticleNumber=812A2A454A

Once the software and drivers are installed, navigating the software is pretty straightforward, which is a good thing. The first step is choosing and setting up your COM port; after that you're ready to roll. There's a page for programming your memory channels, your programmed search feature, basic search, and search linking. There's also a section, which ICOM calls "Common Settings" for programming your radio settings. This is where you program your personalized features, including RF gain settings, auto power on and off settings, antenna settings (for AM you have a choice of the internal bar antenna or an external local or DX antenna; for FM the choice is using an external antenna or the ear phone as an antenna), back light information, LCD contrast, font size, keypad beep on/off and volume level, weather alert on/off, priority on/off, and so on.

You have the ability to import and export data, but I would also like to see a direct import feature from one of the online

frequency database websites that have become very popular over the years for us hobby-minded folks. ICOM has informed us that it will once again be partnering with PerCon, which supports its other receivers, to provide free frequency downloads for the RX7 (look for them at www.icomreceivers.com when they become available).

What's Missing

I have numerous higher-price point scanners and amateur radio HTs (handi-talkies) in my collection, and for the most part one thing they share is that there seems to be no shortage of software available to control the radios, whether it's commercial software sold for a profit or shareware/freeware put together by enthusiasts within the hobby. The ICOM IC-RX7, a brand new radio retailing at considerably less than higher-end competitors (MSRP \$364.00; street price \$299.95), doesn't currently enjoy that status. While the IC-RX7 CI-V control commands are listed on page 88 of the manual, the CS-RX7 software package for programming and cloning is the only game in town, until third-party software developers step in with their offerings.

Bottom Line

To reiterate, the ICOM IC-RX7 is an attractive radio at an attractive price that is quite easy to use, with or without the optional software. Yet this is 2009, and I like to be "with the times" if not ahead of them, so I want all the latest tools in my scanning arsenal. If you plan on purchasing an IC-RX7, I'd definitely recommend planning on adding the CS-RX7 PC Cloning software and making life easy on yourself. ■

CH	Name	Number	Skip	Frequency	DUPLEX	Offset Freq	TS	Mode	ATT	SCAN	PRIID	STOP BEEP	TONE	TSQ/DTC	DICS	DTC	VSC
0-0	David Reutiman	00		463.212500				Auto FM	ON								
0-1				469.112500				Auto FM	ON								
1-0	Martin Truex	1		466.687500				Auto FM	ON								
1-1				457.600000				Auto FM	ON								
2-0	Kurt Busch	2		451.825000				Auto FM	ON								
2-1				463.887500				Auto FM	ON								
2-2				464.825000				Auto FM	ON								
3-0	Mark Martin	5		468.212500				Auto FM	ON								
3-1				467.037500				Auto FM	ON								
4-0	David Ragan	6		460.950000				Auto FM	ON								
4-1				466.750000				Auto FM	ON								
5-0	Casey Mears	07		469.237500				Auto FM	ON								
5-1				464.462500				Auto FM	ON								
6-0	Robby Gordon	7		469.450000				Auto FM	ON								
6-1				462.250000				Auto FM	ON								
7-0	Boris Said	08		462.250000				Auto FM	ON								
8-0	Eric Almerola	8		463.725000				Auto FM	ON								
8-1				464.950000				Auto FM	ON								
9-0	Brad Keselowski	09		469.312500				Auto FM	ON								
10-0	Kasey Kahne	9		451.850000				Auto FM	ON								
10-1				452.650000				Auto FM	ON								
11-0	Denny Hamlin	11		467.475000				Auto FM	ON								
11-1				462.425000				Auto FM	ON								
12-0	David Stremme	12		457.787500				Auto FM	ON								
12-1				466.212500				Auto FM	ON								
12-2				468.887500				Auto FM	ON								
13-0	Tony Stewart	14		469.737500				Auto FM	ON								
13-1				464.637500				Auto FM	ON								
14-0	Greg Biffle	16		468.450000				Auto FM	ON								
14-1				465.025000				Auto FM	ON								
15-0	Matt Kenseth	17		458.475000				Auto FM	ON								
15-1				462.450000				Auto FM	ON								
16-0	Kyle Busch	18		467.450000				Auto FM	ON								
16-1				462.500000				Auto FM	ON								
17-0	Eliot Sadler	19		456.850000				Auto FM	ON								
17-1				462.450000				Auto FM	ON								
18-0	Joe Logano	20		462.525000				Auto FM	ON								
18-1				462.475000				Auto FM	ON								
19-0	Bill Elliott	21		462.200000				Auto FM	ON								
19-1				461.725000				Auto FM	ON								
20-0	Mike Skinner	23		463.725000				Auto FM	ON								
20-1				463.187500				Auto FM	ON								

A screen shot from the CS-RX7 PC Cloning software's programming for the Daytona 500.

Mobile Radio Over The Top!

by Ken Reiss
radioken@earthlink.net

Mobile scanning, and mobile radio in general, can be a lot of fun. It can also be tricky to get things installed into cars. In fact, finding a place for even a small radio seems to be getting more and more difficult in today's compact vehicles. But there's another side to this mobiling challenge—one that apparently brings out the best in the diehards (and I don't mean batteries!).

I recently received an entry from Scott Heath for our Frequency of the Month contest on 118.4 (on which he heard nothing), but he included a link to pictures of his "mobile station." I took a look and...well...wow! I couldn't resist sharing some of the highlights with you, and Scott kind-

ly agreed to let us showcase his mobile station. Perhaps it will be an inspiration—it's certainly awe-inspiring.

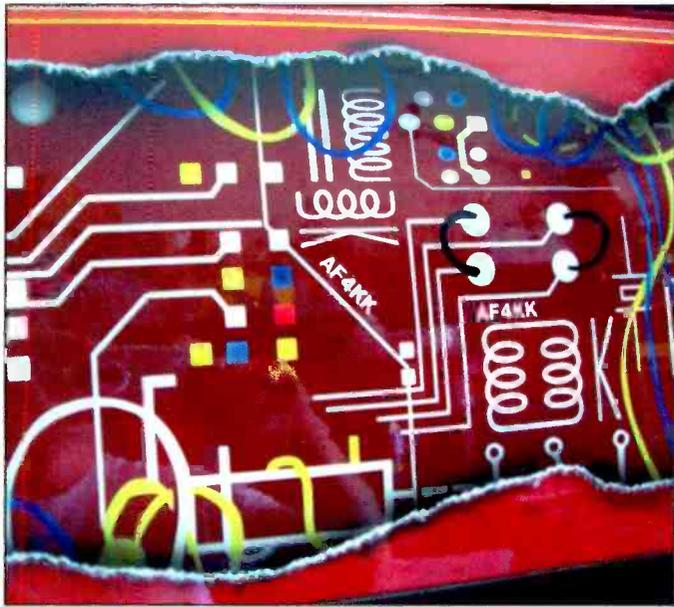
Scott writes:

I've been a ham since 1993 and an Extra class since 1998. I am heavily into ham radio, scanning, CB radio, and even include some shortwave listening. My car is the centerpiece of my radio hobby. The list of equipment includes:

- 2 ICOM IC-7000 HF/VHF/UHF radios, each with an LDG AT-100Pro tuner
- 1 Kenwood TS-480SAT with a Heil Goldline microphone



At least from a distance it looks like a fairly normal car, other than the antenna farm, of course.



As you get closer, you start to notice some strange things, like this electronic circuit on the door...



...and on the hood.



And then there's this display unit on the bumper. How many times have you thought something like this would be handy so you could tell the guy tailgating you what you really thought?



Even the sides of the car are lit with "Radio Active" symbols.

Frequency Of The month

Each month we ask our readers to let us know what they're hearing on our "Frequency Of The Month." Give it a listen and report your findings to me here at "ScanTech." We'll pick a name at random from the entries we receive and give that lucky winner a free one-year subscription, or extension, to *Pop'Comm*.

Our frequency this month will be **855.7125**. Scott should hear something on that one, as it's his local frequency. Have a listen and see what you hear. Send in your notes and we'll enter you into the contest for a one-year complimentary subscription, or extension, to *Pop'Comm*. Send your entries to radioken@earthlink.net or via more traditional methods to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126. Please put the frequency in the subject line or on the front of the envelope for correct routing. And don't forget that address!

Our winner of a free subscription for this month is **Ron Honig of Levittown, Pennsylvania**, Congratulations, Ron!

- 1 Kenwood TM-942A tri-band radio
- 2 Yaesu VR-5000 receivers with all the options
- 1 ICOM IC-706 with an AOR digital voice modem
- 1 ICOM IC-2820 dual-band with the D-Star optional board and GPS
- 2 Kenwood TM-710A APRS radios: one with a Garmin GPSMap 183 and the other with an AvMap Geosat 5
- 1 Kenwood TM-700A APRS transceiver hooked up to the Garmin GPS
- 1 Yaesu FT-857D HF/VHF/UHF radio with the upgraded Yaesu mic
- 1 ICOM IC-208H VHF/UHF radio
- 1 AOR AR8600 MKII with all the slot cards in it
- 1 AOR 8200 MKII receiver (no slot card yet but soon)

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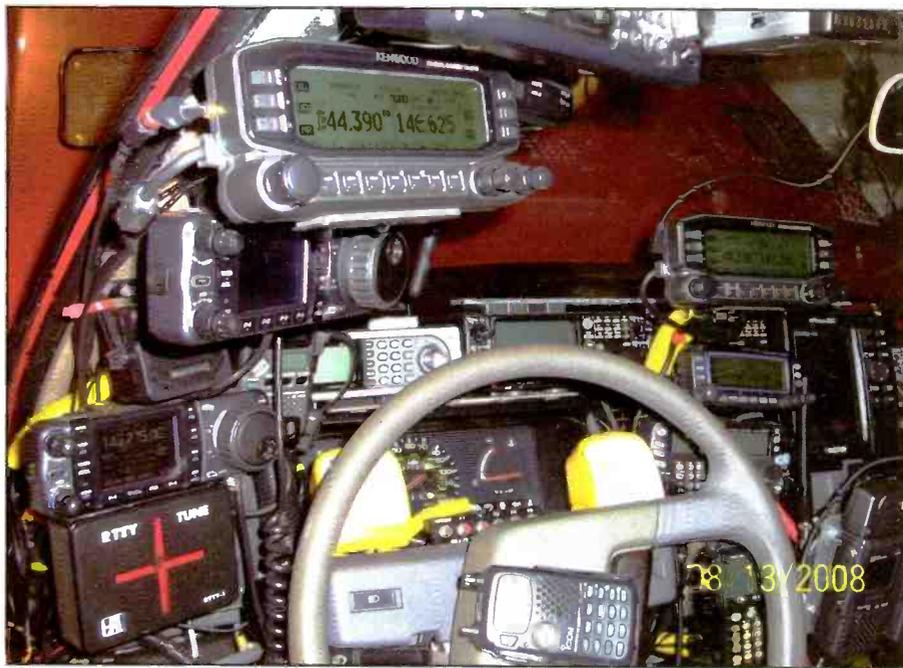
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Once you open the door, any semblance of a normal car is totally lost. Here are all kinds of control heads lurking around the steering wheel. There's a little room left to see around all this, but it looks tricky.



The necessary automotive instruments are visible in the lower left of this shot, but everything else is literally wall-to-wall radio.

- 1 additional LDG AT100Pro for the ICOM 706
- 1 Galaxy DX 959 CB radio with an Astatic power mic
- 1 Cobra 148GTL-DX CB radio
- 2 BC-996 scanners (with remote heads)
- 2 BCT-15 scanners (also with remote heads)
- 1 Uniden BC-796 scanner
- 1 Uniden BC-780 scanner
- 6 (yes, 6) Kenwood VC-H1 Slow-scan units—I LOVE SSTV!! (Slow Scan Television)—and an assortment of other gizmos and gadgets

like the laser projector, SWR, and field-strength meters, XM radio, backup camera, etc., etc. I also have an HP laptop in the car to remote-control some of the radios and for the digital modes such as PSK-31 or SSTV (analog or digital).

All This In A Dodge Colt!

Scott's understandably quick to thank his very tolerant wife, Debbie, for her support, as well as his 11-year-old son Joshua



A collection of handhelds to the right of the steering wheel helps fill in any pesky empty space that might be left.



The door-mounted microphone makes it easy for Scott to keep the conversation going while he's on the move.



One of the two GPS units in the mix, this one featuring an AvMap display and located in the visor space overhead.



Here's the laptop, which is situated for the convenience of the driver (and probably not passenger comfort, but that's just a guess). An AOR AR-7000 receiver is positioned below that.

who's also a licensed ham. He also says this isn't a car he drives every day, as he can't really go get groceries with it since there's no place to put them. That's a slight understatement, I believe.

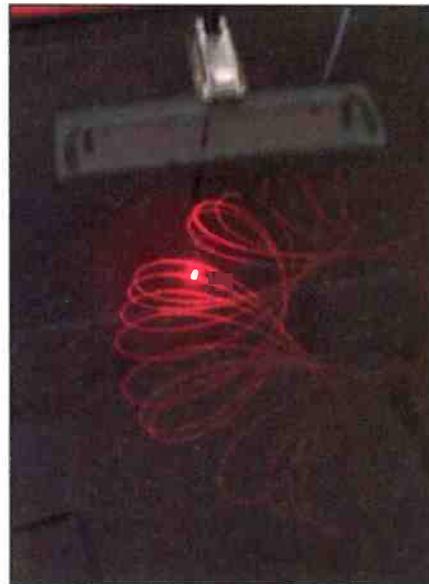
The power for all this cool stuff comes from three connections. There are four extra car batteries in the trunk. There's a 12 volt system and also 9, 6, 3 and 1.5 volt lines (done with volt-

age regulators, I assume), all in shielded wires running through the car. Scott says most of them run through a fuse area under the driver's seat, but it's not much to look at. My guess is that it looks a lot like a telephone trunk line.

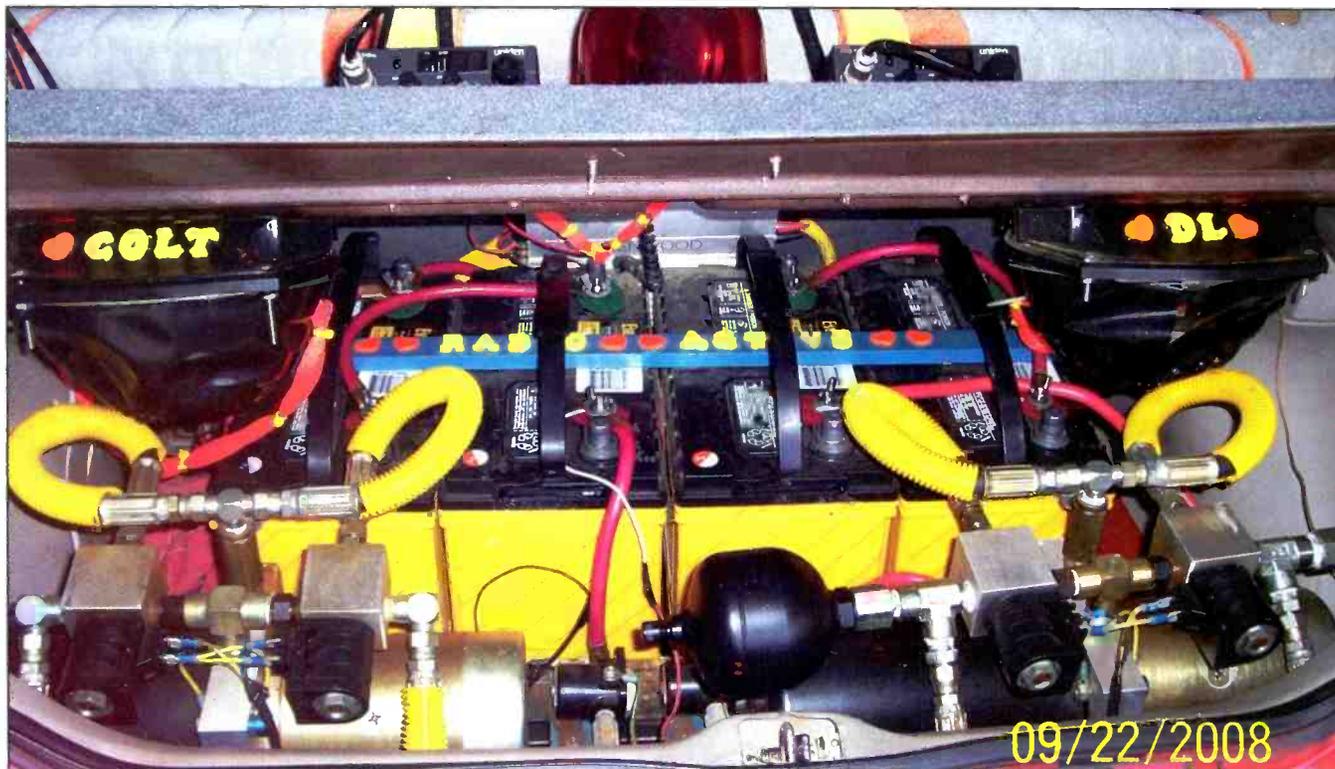
Anyway, we hope you've enjoyed this look at the glorious heights that can be achieved when the impulse is love of mobil-ing. Until next month, good listening (and driving!). ■



It's a bit hard to tell, but this shot is looking down on the passenger side door, which is open. Several miscellaneous gizmos are located here.



In a car full of unusual items, one of the most unusual is the laser projector that's used to project images like this one onto the window.



Here's where it all connects. Four batteries provide the power to all the electronics. There's also a "cushy hydraulic system" for a smooth ride, as Scott puts it. Nice.

Pop'Comm

May 2009

Reader Survey Questions

This month we'd like to ask you about how well your equipment is protected against lightning. Please use the Reader Survey Card and circle all appropriate numbers. Thanks for participating.

About how valuable is your total collection of hobby equipment?

Under \$100	1
\$100-\$500	2
\$500-\$1000	3
\$1000-\$2500	4
\$2500-\$5000	5
Over \$5000	6

Do you currently have lightning/voltage surge protection in place for your radio hobby equipment?

No, nothing at all in place	7
Yes, but just bare bones	8
Yes, about the best I can afford	9
Yes, the best money can buy	10

Have you ever been affected by lightning/voltage surges?

Been hit but escaped damage because of protection	11
Had some minor damage	12
Really been burned	13
Not sure	14

Highlights from January's Reader Survey

In January we asked if our readers traveled specifically to be in a special place or at a significant event with radio as part of the activity, and 59 percent of our respondents had. Of those, about a quarter each traveled with an AM/FM broadcast band radio, a shortwave radio, or a ham radio, but 44 percent brought along their trusty scanners. Only one respondent sat at a computer and listened to streaming media. Of all the respondents, only about 8 percent said they weren't that interested. We may be wireless, but we are plugged in.

The winner of a free subscription for answering January's survey is **John Kasl** of **Silverdale, Pennsylvania**. Congratulations, John, and thanks for sending in your survey card.

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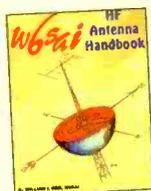
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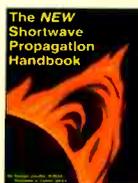
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Faroe Feeding Frenzy! AM Broadcast DXers Receive A Rare Signal From The North

by Bruce A. Conti
BAConti@aol.com

“Accomplished DXer Marc ‘Faroemeister’ DeLorenzo of Cape Cod, Massachusetts, captured much of the excitement in his log reports as news spread like wildfire over the Internet.”

The Faroe Islands are a tiny enclave of Denmark located in the North Atlantic between Iceland and Norway, close to the Arctic Circle. Only one AM radio station serves the islands, the 200 kW broadcast voice of Kringvarp Føroya on 531 kHz. DXers from Ontario to Massachusetts reported hearing the station during an unusual mid-winter propagational opening.

Accomplished DXer Marc “Faroemeister” DeLorenzo of Cape Cod, Massachusetts, captured much of the excitement in his log reports as the news spread like wildfire over the Internet. “Mediumwave country number one hundred!” exclaimed Marc, “Dominant on the frequency with news and an interview in the Faroese language, mp3 audio clips confirmed via the Internet by Bjarne Mjelde, the world’s northernmost DXer in arctic Norway.”

In addition to the Faroe Islands on 531, Greenland was logged on 720 kHz for the first time by many DXers. What caused these AM radio signals to seemingly appear out of nowhere? Thanks to a spotless sun and an extended period

of low geomagnetic activity, the path was cleared for signals normally smothered under the night-time cover of the auroral oval.

Monitoring The Auroral Oval

The monitoring of the auroral oval is important to AM DXers because absorption of radio signals in the ionosphere can occur due to the impact of solar activity at the north and south poles. The auroral oval is the concentrated circumferential area of energy in the ionosphere at the poles that produces aurora borealis or the northern and southern lights.

As solar activity increases, so does the coverage area and intensity of the auroral oval at each pole. Expansion of the North Pole oval will prevent radio signals from propagating over northern latitudes, sometimes enhancing reception of southerly signals from the tropics. Conversely, during periods of low solar activity the oval may shrink enough to open typically non-existent northerly propagational paths, such as experienced with the rare reception of the Faroe Islands. The three computer models shown here provide “best guess” maps of current polar auroral oval position, size, and intensity; POES, CARISMA, and OVATION.

The Polar Orbiting Environmental Satellites (POES) system collects data from nearly 14 polar orbits a day for auroral oval modeling. Real-time auroral oval images (Photo A) are created by the Space Weather Prediction Center (SWPC) of NOAA and the National Weather Service. These images show the extent and position of the auroral oval in the northern and southern hemispheres extrapolated from measurements taken during polar passes of the NOAA POES.

Hemispheric power estimates are computed from each polar pass, and then through statistical analysis converted to a pattern superimposed upon a geographical polar map to generate each auroral oval image. Images are updated approximately every three hours. However the SWPC doesn’t archive images online beyond four days.

The Canadian Array for Realtime Investigations of Magnetic Activity (CARISMA) is a

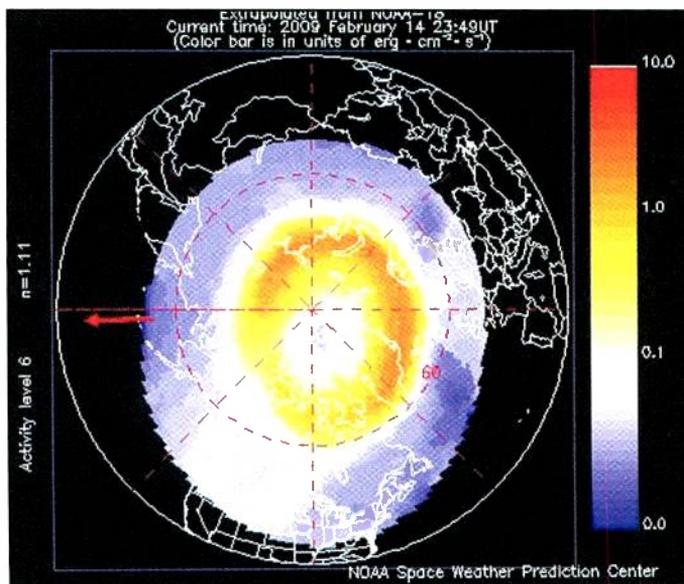


Photo A. POES real-time image of the auroral oval over the North Pole.



Photo B. CARISMA remote monitoring station near Dawson, Yukon. (CARISMA photo)

Canadian Geospace Monitoring (CGSM) project operated by the University of Alberta and funded by the Canadian Space Agency. CARISMA is an array of ground magnetometer monitoring stations (**Photo B**) mostly located along an east-west line across Canada and a north-south line that extends into the United States. Data from the stations is used to generate real-time models of the auroral oval, archived and accessible online through the Canadian Space Science Data Portal. Real-time images (**Photo C**) are updated as frequently as every five minutes during significant auroral events.

Oval Variation Assessment Tracking Intensity and Online Nowcasting (OVATION) is a joint project of the Johns Hopkins University Applied Physics Laboratory, the University of Alaska, and the Air Force Research Laboratory. The goal of OVATION is to create a standard for the auroral oval size, position, and intensity. Unlike the POES project, OVATION maintains an online database of archived images (**Photo D**) from 1983 to present for continuing independent research of past auroral activity. Data to create the images is compiled primarily from Defense Meteorological Satellite Program (DMSP) measurements by polar orbiting satellites, along with data from the NASA Polar UVI Imager and the Meridian Scanning Photometer at the University of Alaska-Fairbanks.

Although the DMSP is mainly for military monitoring of global weather to support the warfighter, per an Air Force fact sheet (www.af.mil/factsheets, Air Force Space Command, Peterson AFB, CO, October 2006), the DMSP satellites also measure space environmental parameters such as local charged particles and electromagnetic fields to assess the impact of the ionosphere on ballistic missile early warning radar systems and long-range communications. Data is used to monitor global auroral activity and predict the effects of the space environment on satellite operations. DMSP tracking stations are operated at New Boston Air Force Satellite Tracking Station in New Hampshire by the 23rd Space Operations Squadron; Thule, Greenland; Fairbanks, Alaska; and Kaena Point, Hawaii. DMSP space environment data became available to the public through the civilian space program and the NOAA National Geophysical Data Center after declassification in 1972.

Use these auroral oval computer models to visualize potential signal paths and absorption regions. POES, CARISMA, and OVATION real-time auroral oval images are easily accessed

online via links at www.solarcycle24.com and www.bamlog.com. Solar Cycle 24.com by amateur radio station VE3EN features "all of your solar and aurora needs in one place," with updates every two minutes of the latest available data from multiple online space weather data sources, including the POES auroral oval images, SOHO solar images, WWV reports, and the SWPC forecast. ;BAMLog! is a mediumwave DX resource website featuring antenna designs, DXpedition reports, logs, and links of particular interest to the AM broadcast DXer. Keep tuned in to solar activity right here in *Popular Communications* too, through the informative "Propagation Corner" by expert columnist Tomas Hood, NW7US.

Broadcast Loggings

This month's selected logs highlight reports of signals arriving from far northerly latitudes. All times are UTC.

189 Ríkisútvarpid, Gufuskálar, Iceland. at 0420 playing a wide variety of English and Icelandic pops that included the "Message in a Bottle" early '80s smash hit by The Police. Very good; this and Europe 1 on 183 kHz are usually the strongest longwave broadcasters received here in the Montreal area. (Chiochiu-QC)

225 Polskie Radio, Solec Kujawski, Poland, at 0014 the "Lady In Red" smash hit of Chris de Bourg followed by comments in Polish. As the Polish talk appeared, the signal started to fade. As usual, the fades on longwave are slow and deep, deeper than observed with mediumwave signals. Fair but not quite good signal. (Chiochiu-QC)

252 RTÉ Radio 1, Clarkestown, Ireland. at 0335 a man in Irish-accented English, slightly over co-channel Algeria, both very poor with heavy interference from the local UL non-directional beacon on 248 kHz. (Chiochiu-QC)

531 Chaîne 1, El Ain Beida, Algeria, at 2139 atop the frequency during a brief fade of Faroe Islands; religious Arabic vocal with horns and violins. (DeLorenzo-MA)

531 Kringvarp Føroya, Akraberg, Faroe Islands, at 2050 American pop music with brief announcements in Faroese between songs. Recognizable tunes included Grand Funk "We're an American Band," Survivor "Eye of the Tiger," ELO "Don't Bring Me Down," Traveling Wilburys "Handle Me with Care," and The Beatles "Hello, Goodbye." (DeLorenzo-MA) At 2134 talk in an unknown language sounding a little like Danish, then on the hour an interval signal into news. The interval signal was the same as archived on Interval Signals Online. (Barstow-MA) At 2159 a musical theme ending the previous interview segment, then time marker and news in Faroese, a language related to Icelandic. (Black-MA) At 2300 "Klokkan er..." (The time is...) into news, well over co-channel Spain. New country logged thanks to email alerts from the Cape Cod DXers. (Conti-NH)

570.05 KNR Nuuk, Greenland. at 0013 parallel 720 kHz, a long commentary in what sounded like the Inuit-type language heard on the CBC Northern Service via shortwave. Interference from CFCB Newfoundland and Radio Reloj Cuba. (Osborne-NL)

585 RNE1 Madrid, Spain. at 0340 a Cuban jazz song, then talk about how Cuban music became a major force worldwide; fair-good signal with at least partial readability, medium-level splash from 580 and 590 kHz. (Chiochiu-QC)

675 Libyan Jamahiriya, Benghazi, Libya, at 2245 strong with a man ranting on like a speech with echoing, parallel 1053 kHz. (Barstow-MA)

693 RDP Azores, at 2130 a mix of Azores with what sounded like a fútbol game, BBC 5 in English, and maybe some RNE Spanish. Azores peaked occasionally with Portuguese play by play, lots of crowd noise, and just now a "Gooooooooo!" (Wood-MA)

720 KNR Simiutaq, Greenland, at 0013 the same as reported on 570.05 kHz, under heavy interference from adjacent local 710 CKVO Clarendville. (Osborne-NL) At 2115 all alone for about 40 minutes with talk in Danish. (Barstow-MA) At 2130 dominant on the frequency with talk in presumed Inuit language, then approaching the hour heard rap

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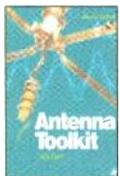


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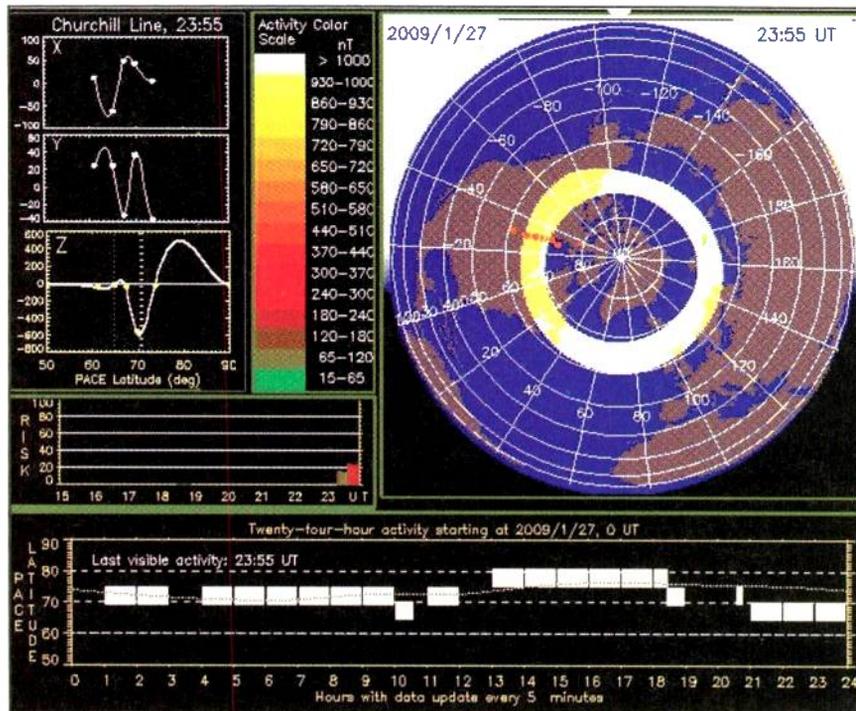


Photo C. CARISMA real-time image and data during disturbed auroral conditions.

music followed by a time marker and news in Danish. Mediumwave country 99 and a big thrill here! (DeLorenzo-MA) At 2159 with Danish-sounding music, then a time or ID announcement in Inuit language followed by a program in Danish. Distance would be around 2000 km, of course not that impressive compared to Iran for example, but from a DXer point of view it sure is a very exotic catch. (Naud-QC)

750 YVKS Caracas, Venezuela, at 0125 the "Ventana Deportiva" sports program. Poor to fair signal with some good peaks, deep fades, and co-channel WSB Atlanta interference. (Chiochiu-QC)

765 RSR Option Musique, Sottens, Switzerland, at 0421 presumed here with a

pop ballad, peaking to a fair and readable signal. (Beu-TX)

900 WATV Birmingham, Alabama, at 2245 urban contemporary music bordering on gospel. "Your Heritage Station, 900 WATV." Weak but steady signal above the static. (New-GA)

1053.07 Libyan Jamahiriya, Tripoli, Libya, at 0040 good with hum of sub-audible het against 1053 TalkSport; Arabic speaker parallel 972 kHz, both on past usual 2345-2353 sign-off time. (Conti-NH)

1134 Glas Hrvatske, Zadar, Croatia, at 0228 announcements in Croatian, on a fair and steady signal, parallel to 3985 kHz. (Beu-TX)

1467 TWR Roumoules, France, at 2350 French program, 2400 sign-off with one cycle

1050 chum

This Month In Broadcast History

75 Years Ago (1934): "Roosevelt Believes Radio Fostered Nation's Faith" was the cover story of *Radio Mirror* magazine. President Franklin D. Roosevelt became known as "The Radio President" with broadcasts of his fireside chats. E.H. Armstrong, credited with the invention of FM radio, began testing the fledgling technology for RCA from the Empire State Building in New York City.

50 Years Ago (1959): Zenith announced the latest in its Trans-Oceanic series of receivers, the model B600. It was to become the last in a line of portable vacuum tube radios from Zenith. "Kansas City" by Wilbert Harrison topped the 1050 CHUM Hit Parade.

25 Years Ago (1984): The world's first direct broadcast satellite TV service was launched in Japan. 1010 CFRB Toronto tested a new car AM stereo receiver by Sansui, the first capable of decoding all four AM stereo formats: Harris, Kahn, Magnavox, and Motorola. CFRB was testing transmissions at night in Magnavox and Motorola formats.

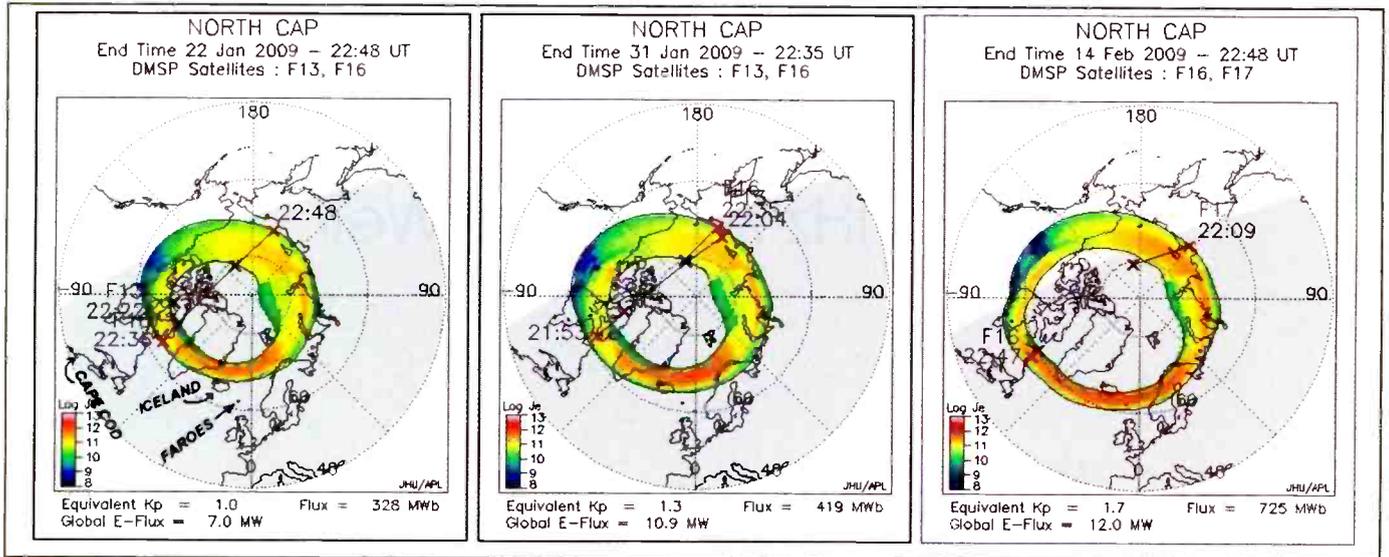


Photo D. OVATION images show the Faroe Islands, Iceland, and southern Greenland clear of the auroral oval on January 22 when reception peaked, bordering the oval on January 31, and inside the oval on February 14.

of interval signal, open carrier until 0002: in heavy splatter from The Oldies Channel 1470 WLAM Maine. (Conti-NH)

1510 KCKK Littleton, Colorado. QSL card, letter on NRC letterhead, sticker, postcard of Denver, and *Mile High Sports* magazine, received in 14 days, signed Patrick Griffith, Broadcast Engineer. Address: NRC Broadcasting, 1201 18th Street, Suite 200, Denver CO 80202. (Martin-OR)

1521 BSKSA Doha, Saudi Arabia. at 0249 discussion in Arabic

followed by prayer. Frequently audible throughout the evening. (Beu-TX)

Thanks to Roy Barstow; Mike Beu, KD5DSQ; Chris Black, N1CP; Bogdan Chiochui; Marc DeLorenzo; Patrick Martin; Sylvain Naud; Bert New; Jerry Osborne, VO1GO; and Steve Wood.

Until next time, 73 and Good DX!



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121.5 MHz Alive And Well

by Gordon West,
WB6NOA
WB6NOA@arrl.net

Don't stop monitoring 121.5 MHz—it was only the satellites that went off the air! As of February 1, 2009, the COSPAS-SARSAT Low Earth Orbit (LEO) satellites, in nearly polar orbit, were no longer tuned in for reception of the 121.5 MHz analog emergency sweep tone. That's led to an unfortunate misconception that the 121.5 MHz beacon distress alerts will now go away. WRONG! Here's the reality:

- New 406 MHz digital 5 watt beacons *continue* to transmit a low-power 121.5 MHz “locating” sweep signal.
- 85 percent of registered aircraft only have a 121.5 MHz ELT.
- For direction finding, ground rescue teams rely on PLBs' (Personal Locator Beacons) 121.5 MHz signals, a low to high sweep with a CW identifier “. _ _ .” (“P”).
- Close-in on the water EPIRBs (Emergency Position Indicating Radio Beacons) provide hom-

“Everyone involved in search and rescue is trained in homing in on the continuous AM analog 121.5 MHz signals, and these signals will stay on the air, even though the February satellite cutoff date is past.”

ing signals on 121.5 MHz, with a high to low sweep signal.

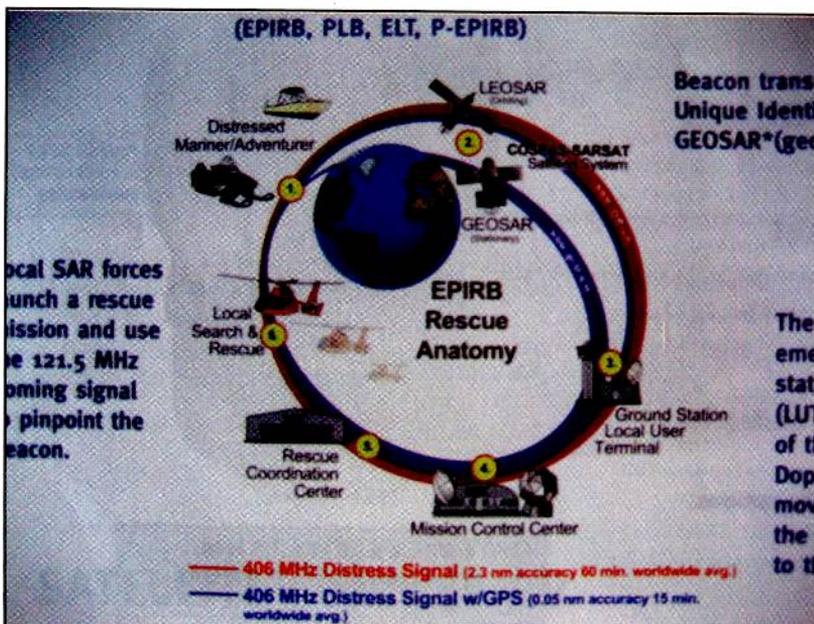
So why drop *satellite* 121.5 MHz monitoring?

Getting To Here

Since 1970, the 121.5 MHz and 243.0 MHz second harmonic analog sweeping signal has saved thousands of lives throughout the world. For instance, aircraft ELTs (Emergency Locator Transmitters) activate a 121.5 distress signal upon detecting a certain forward and downward G force level. The marine equivalent is the EPIRB, which might be activated by floating free at a certain depth, by coming in contact with salt water, or manually. *All* of these emergency 121.5 MHz signaling devices meet rigorous certification.

The recently discontinued COSPAS-SARSAT 121.5 MHz program allowed ground stations, called Local User Terminals, to compute Doppler shift position analysis of the activated 121.5 MHz analog signal. It would then provide a position probability radius of about 12 nautical miles, or a 452-square-nautical mile search area, taking up to six hours for the analysis. An activated 121.5 MHz signal, out in the open sea, say following a low pressure storm, would likely get a high priority for search and rescue.

However, along busy coastlines, local harbors, and inland waterways, *accidental* activations of 121.5 MHz literally clogged the LEO COSPAS-SARSAT receivers. And when these local marine- or aviation-related signals were tracked down through radio direction finding, over 98 percent were found to be false activations. The danger of these masking real emergency activations is obvious. Also, the 121.5 MHz signals



This “anatomy of a rescue” shows how an EPIRB signals for help. (Courtesy ACR Electronics)

themselves carried no user information, so if the signal came from a busy harbor or airport and was considered an accidental activation, the search and rescue callout could be further delayed.

This problem with 121.5 MHz false alerts was such an international headache that the International COSPAS-SARSAT Council held a session in October in 2000, agreeing to drop the COSPAS-SARSAT monitoring of 121.5 MHz on February 1, 2009.

At the same time, digital 406 MHz emergency EPIRBs were becoming less expensive for the general maritime market. The first generation 406 MHz EPIRBs provided search and rescue agencies with a more reliable and complete data burst information packet about the victims in distress, including an every 50 second, 500 ms 406.025 MHz data burst carrying the beacon user's information. Rescue Coordination Center would get in touch with the contact persons listed in the database to gather additional information about the beacon user. The Rescue Coordination Center would dispatch the closest capable search and rescue force, with Mission Control Center continuing to receive information from additional satellite passes, and further refining the beacon position.

Through COSPAS-SARSAT Doppler shift analysis at 406.025 MHz, rather than at 121.5 MHz, the search area is improved 10 times, down to a 2.3-nautical-mile radius or a 12.5-square-nautical-mile search area, calculated in under an hour from search and rescue notification.

Position Locators: The Next Generation

Some manufacturers of the 406 MHz units, including ACR Electronics (www.ACRElectronics.com), added an external GPS data stream capability to its 406 MHz EPIRB. This position information, sent about every five minutes within the 406.025 MHz data burst, is received by the geosynchronous satellite system called GEOSAR. When the GEOSAR receives a 406.025 MHz beacon signal with a U.S. country code, it's instantly routed to the United States Mission Control Center and to NOAA. NOAA will add the beacon registration data to the emergency signal and create an alert message.

This packet of information then allows rescue agencies to see the exact GPS position fix, sometimes within one minute of activation! This now cuts down on the

search area to .05 nautical miles, 110 yards radius, to a .008 square nautical mile search area, allowing searchers to pinpoint the position of the activated GPS EPIRB, with all of the registration information that goes with it, to ensure it is not a false activation.

By 2003, PLBs containing the 406 MHz signal, along with a built-in GPS, could get nearly instant attention to individuals on land who needed help. At the same time, the 406 MHz marine EPIRB, would almost always be sold with the GPS engine built in, aptly called a "GPIRB." But could a floating marine EPIRB receive, and then re-transmit, the GPS information? Before long, refinements to marine and land 406 MHz equipment did indeed solve the poor GPS reception problem, and today GEOSAR West covers the Pacific and GEOSAR East covers the Atlantic.

"Our ACR GPS equipment with the built-in EPIRB will broadcast coordinates within 50 seconds of activation, allowing the United States Mission Control Center to detect and process the transmission within seconds," says John Bell of ACR Electronics. "Within minutes, the United States Coast Guard Rescue Coordination Center can receive the alert message and deploy the search and rescue resources. GPS positioning with the 406 MHz signal, saves critical time on a search and rescue mission," says Bell.

The 406 MHz signal is a 5 watt, digital intermittent "squawk" every 50 sec-

onds, lasting 500 milliseconds. This same beacon transmitting on 406 MHz also transmits continuously the 25 mW "localizing" sweep signal on 121.5 MHz, AM modulation, type 3K20A3X. Why? Because even the best GPS signal might be a few minutes old. For a hiker stuck in a ravine, that's probably no big deal, but a river rafter getting washed downstream might be a half mile away from the original GPS signal.

Although the United States Coast Guard recently announced airborne automatic direction finder equipment that may home in on the millisecond 406.025 MHz data squawk, this multi-thousand dollar gear is only found in a handful of aeronautical resources.

Safety In Numbers (121.5, In This Case)

Everyone involved in search and rescue is trained in homing in on the continuous AM analog 121.5 MHz signals, and these signals will stay on the air, even though the February satellite cutoff date is past. There are plenty of inexpensive radio direction finder systems for tracking 121.5 MHz signals. For more information, check out the websites located at www.sarsat.noaa.gov, www.NASAR.org, and switchto406@noaa.gov for starters.

So remember, despite some incorrect information, the 121.5 signal remains on the air during any 406 MHz beacon activation. Keep up your radio watch there. ■



All these 406 MHz emergency locator beacons also transmit on 121.5 MHz.

World News, Commentary, Music, Sports, And Drama At Your Fingertips

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.

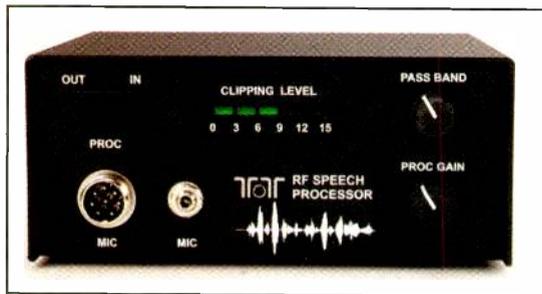
AA, FF, SS, GG, etc. are abbreviations for languages (Arabic, French, Spanish, German). Times given are in UTC, which is five hours ahead of EST, i.e. 0000 UTC equals 7 p.m. EST, 6 p.m. CST, 4 p.m. PST.

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	4835	Radio Capaxiba, Brazil	PP	0300	5010	RTV Malagasy, Madagascar	Malagasy
0000	7325	Radio Austria International	GG	0300	6185	Radio Educacion, Mexico	SS
0000	4319u	AFN/AFRTS, Diego Garcia		0300	4976	Radio Uganda	EE/vern
0000	4815	Radio El Buen Pastor, Ecuador	SS	0300	4790	Radio Vision, Peru	SS
0000	6105	Candela FM, Mexico	SS	0300	3320	Radio Sondergrense, South Africa	Afrikaans
0000	6005	Radio Exterior de Espana, Spain	SS	0300	7390	Channel Africa, South Africa	
0000	11765	Super Radio Deus e Amour, Brazil (ex-R. Tupi))	PP	0300	4960	VOA Relay, Sao Tome	
0030	9755	Radio Canada International		0300	4865	Radio Alvorada, Brazil	PP
0030	6030	Bible Voice Network, via Germany		0330	9790	China Radio International, via Cuba	CC/EE
0030	4955	Radio Cultural Amauta, Peru	SS	0330	5900	Radio Bulgaria	
0100	4895	Radio Brazil Central	PP	0330	4775	Trans World Radio, Swaziland	vern
0100	6200	Radio Prague, Czech Republic		0330	5915	Radio Zambia	
0100	11780	Radio Nacional Amazonia, Brazil	PP	0330	7215	Trans World Radio, via South Africa	Hausa
0100	9870	All India Radio	Hindi	0400	5975	Radio Nederland (relay)	DD
0100	9775	Voice of Germany	GG	0400	5865	Radio Algerienne, Algeria, via France	AA
0100	3250	Radio Luz y Vida, Honduras	SS	0400	4780	Radio Djibouti	AA
0100	12095	Radio Thailand		0400	7165	Voice of Peace and Democracy via Ethiopia	Tigrinya
0100	6020	China Radio International, via Albania		0400	3255	BBC, via South Africa	
0130	9855	RDP International, Portugal	PP	0400	6890	Radio Fana, Ethiopia	Amharic
0130	6145	Radio Romania International		0400	9805	Radio France International	
0200	4699	Radio San Miguel, Bolivia	SS	0400	6165	Radio Nederland Relay, Portugal	SS
0200	4825	Radio Cancao Nova, Brazil	PP	0400	3350	Radio Exterior Espana, Spain, via Costa Rica	SS
0200	7850	CHU, Canada	time signals	0430	3215	WWRB, Tennessee	
0200	6090	University Network, Anguilla		0430	9720	RT Tunisienne, Tunisia	AA
0200	11970	Voz Cristiana, Chile	SS	0430	7230	Channel Africa, South Africa	
0200	5010	Escules Radiofonicas, Ecuador	SS	0500	5910	Marfil Estereo, Colombia	SS
0200	7535	Radio Cairo, Egypt		0500	9645	Radio Bandeirantes, Brazil	PP
0200	9810	All India Radio, Panaji (Goa)	Nepali	0500	4905	RN Tchadienne, Chad	FF
0200	6973	Galei Zahal, Israel	Hebrew	0500	9625	CBC Northern Quebec Service, Canada	FF
0200	4800	Radio Buenas Nuevas, Guatemala	SS	0500	11690	Radio Okapi, Congo (DR) via South Africa	FF
0200	7475	Voice of Greece	Greek	0500	5005	Radio Nacional, Equatorial Guinea	SS
0200	7505	WRNO, Louisiana		0500	7110	Radio Ethiopia	Amharic
0200	4965	The Voice-Africa, Zambia		0500	7205	BBC, via South Africa	
0200	4828	Zimbabwe Broadcasting Corp.		0500	3340	Radio Misiones Intl, Honduras	SS
0200	6070	CFRX, Canada		0500	11720	Radio New Zealand International	
0200	11690	Radio Havana Cuba	SS	0500	5446.5	AFN /AFRTS, Florida	
0200	5035	Radio Aparecida, Brazil	PP	0500	13800	Radio Dabanga, Sudan, via Madagascar	AA
0300	4915	Radio Difusora Macapa, Brazil	PP	0500	9700	Voice of Turkey	
0300	4930	VOA Relay, Botswana		0530	6250	Radio Nacional, Equatorial Guinea	SS
0300	5025	Radio Rebelde, Cuba	SS	0530	3975	Magyar Radio, Hungary	HH
0300	7270	Radio Cairo, Egypt		0530	7335	Voice of Russia	
0300	6010	Nucleo Radio Mil, Mexico	SS	0530	9745	Channel Africa, South Africa	

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0530	7200	Republic of Sudan Radio	AA	1630	11860	BBC Relay, Seychelles	
0600	4885	Radio Clube do Para, Brazil	PP	1700	12080	VOA Relay, Botswana	Hausa
0600	6115	China Radio International, via Canada		1700	11610	Radio Voice of the People (to Zimbabwe)	EE/vern.
0600	9820	Radio 9 de Julho, Brazil	PP	1700	9645	Vatican Radio	
0600	5875	BBC	RR	1700	9610	Radio Canada International	
0600	4800	Radio Transcontinental, Mexico	SS	1800	17895	VOA Relay, Botswana	
0600	7360	Vatican Radio		1800	12035	SW Radio Africa, to Zimbabwe, via England	
0700	6115	Belarusian Radio, Belarus	BB	1800	11615	Radio Nederland, via Madagascar	
0700	5995	RTV Malienne, Mali	FF	1800	9640	Radio Romania International	
0700	9545v	Solomon Islands Broadcasting Corp.		1830	7400	Radio Bulgaria	
0800	9615	KNLS, Alaska		1830	9785	Voice of Turkey	TT
0800	4845	Radio Mauritanie, Mauritania	AA	1900	15190	Radio Africa, Equatorial guinea	
0900	9520	Radio Liberty, via Philippines	RR	1900	11620	All India Radio	
0900	15610	CVC International, via Uzbekistan		1900	73345	Radio Slovakia International	
0930	5995	Radio Australia		1900	9330	Radio Damascus, Syria	various
1000	11735	Radio Transmundial, Brazil	PP	1930	7320	VOIRI, Iran	
1000	3280	La Voz del Napo, Ecuador	SS	1930	11990	Radio Kuwait	
1000	5030	Radio Malaysia, Sarawak	Malay	2000	11735	Radio Tanzania, Zanzibar	Swahili
1030	6060	Radio Nacional, Argentina	SS	2000	9780	Republic of Yemen Radio	
1100	2485	ABC Northern Territories Service, Katherine		2100	11660	Radio Australia	
1200	15300	Radio France International	FF	2100	7510	Radio Tirana, Albania	
1200	15690	Radio Farda, via Sri Lanka	Farsi	2100	9580	Africa Number. One, Gabon	FF
1200	6100	Kyzyl Radio, Russia	RR	2130	6055	The Mighty KBC, Netherlands, via Lithuania	
1200	15350	Voice of Turkey	TT	2200	9550	Radio Havana Cuba	SS
1200	15400	HCJB Global, Australia		2200	17605	Radio Japan, via Bonaire	JJ
1230	11920	VOA Relay, Thailand	CC	2200	11965	KSDA-Adventist World Radio, Guam	Indonesian
1230	9430	Far East Broadcasting, Philippines	CC	2200	9875	VOA via Northern Marianas	CC
1300	6020	Radio Australia		2200	6055	Radio Rwanda	FF
1300	4790	Radio Republik Indonesia, Fak Fak	II	2200	9565	Radio Marti, USA to Cuba	SS
1300	11810	Radio Jordan	AA	2200	7320	Voice of Russia, Magadan	RR
1300	7170	Voice of Islamic Republic of Iran	Pashto	2200	9445	All India Radio	
1300	9420	Voice of Greece	Greek	2200	9595	Radio Nikkei, Japan	JJ
1300	9525	Voice of Indonesia	various	2230	7195	Radio Canada International, via South Korea	Mandarin
1300	9965	North Korea Reform Radio	KK	2230	7210	Cyprus Broadcasting Corp.	GG; wknds
1300	6170	Radio New Zealand International		2230	9705	La Voix du Sahel, Niger	FF
1300	9335	Voice of Korea, North Korea		2230	12090	KFBS, Northern Marianas	VV
1300	9320	Radio Free Asia, via Sri Lanka	BB	2300	11970	China Radio International, via Canada	
1300	9450	Polish Radio, via Germany		2300	7375	Voice of Croatia, via Germany	
1300	11795	Radio Free Asia, via Sri Lanka	Burmese	2300	11910	Radio Japan/NHK	JJ
1300	7200	International Radio Serbia		2300	6300	Radio Nacional de la RASD, Algeria, to Morocco	AA
1300	11675	Radio Sweden		2300	6090	Radio Nigeria	Hausa
1300	7495	VOA Relay, Sri Lanka	Pashto	2300	9760	VOA Relay, Philippines	
1300	6200	Xizang PBS, China (Tibet)	Tibetan	2300	15550	Radio Free Asia, via Northern Marianas	CC
1330	11760	BBC Relay, Oman		2300	11885	Radio Taiwan International, via Florida	SS
1330	15380	BSKSA, Saudi Arabia	AA	2300	9645	Radio Veritas Asia, Philippines	various
1400	9580	Radio Australia		2300	9805	KBS World Radio, South Korea	
1400	15380	Radio Prague, Czech Republic		2300	11885	Radio Taiwan International, via Florida	SS
1400	6285	Voice of Korea, North Korea	KK	2300	9465	BBC Relay, Thailand	CC
1400	9885	WYFR, via Dhabbaya, UAE	vern	2330	7345	Radio Prague, Czech Republic	
1400	9380	VOA Radio Deewa	Pashto	2330	11920	HCJB Global, Ecuador	PP
1400	11680	Radio Nacional Venezuela, via Cuba	SS	2330	11830	Voice of Germany via Petropavlovsk	CC
1430	9425	All India Radio		2330	6240	Radio PMR, Pridnestrovie/Moldova	various
1430	9415	Democratic Voice of Burma, via Armenia	BB	2330	9840	Voice of Vietnam	VV
1500	17745	Sudan Radio Service, via Portugal		2330	9570	BBC Relay, Thailand	
1500	9965	T8WH, Palau					
1530	13720	Radio Tirana, Albania					
1530	17725	Radio Jamahiriya, Libya	AA				
1600	11945	Radio Free Asia, via Northern Marianas	Man				
1600	13650	Voice International, Zambia					
1630	13675	Radio Austria International	GG				

New, Interesting, And Useful Communications Products

by Staff



Ten-Tec's Model 715 RF Speech Processor increases average SSB power output up to four times.

Ten-Tec Model 715 RF Speech Processor

Ten-Tec is currently offering its new Model 715 RF Speech Processor, a high-performance true RF clipping processor that increases average SSB power output up to four times. Designed to operate with most modern HF amateur radio transceivers, the Model 715 uses true RF clipping to achieve a high ratio of average-to-peak power from SSB transmitters.

RF clipping removes low-energy, high-amplitude peaks, which do not contribute to articulation, leaving lower-level speech components unaltered. Average SSB output power is increased by up to 6 dB (the equivalent of adding a linear amplifier or a gain antenna to your amateur station), which means enhanced readability by stations hearing your signal, clearer net and contest frequencies, faster breakup of DXpedition pileups, among other benefits. Also unique to Model 715 is a passband control that allows for tailoring the audio tone of your transmitted signal. Instead of on/off speech processing, not only is the additional punch of a processor added, but the tone of the SSB signal post-processing also can be tailored according to taste with this front panel control.

Priced at \$249, Model 715 includes AC power source and choice of output cable for 4- and 8-pin Ten-Tec and 8-pin Yaesu, ICOM, and Kenwood transceivers. Complete information is available on the company website at www.tentec.com or call 800-833-7373.

Ten-Tec RX-400 HF/VHF/UHF Receiver

Also new from Ten-Tec is the company's latest HF/VHF/UHF receiver, the RX-400. This com-



The Ten-Tec RX-400 HF/VHF/UHF Receiver provides real-time DSP in a commercial off-the-shelf package.

mercial/government receiver provides real-time DSP in a commercial off-the-shelf package that delivers the performance of a mil spec and tactical receiver in a lower price range. The RX-400 features a tuning range of 2 MHz to 3 GHz, 100 channels/second scanning rate, and detection bandwidths up to 300 kHz. The user can program mission-specific AGC characteristics. Wideband IF output provides 6 MHz of bandwidth.

Control interfaces include both TCP/IP and RS-232. The unit is designed to occupy a compact one-half rack of space. This new model joins HF receivers already in 24/7 operations in government/commercial service worldwide. For more information and pricing, visit <http://radio.tentec.com/commercial/receivers/RX400>, email Product Manager Tom Salvetti at TomSalvetti@tentec.com, or call him direct at 304-884-7601.

Alpha Power AP8410 Amplifier

Alpha Radio Products LLC has announced its new AP8410 HF amplifier. The AP8410 is the latest in the line of legal-limit (1.5 kW output) tetrode amplifiers from Alpha Power. Alpha included several features to enhance operating performance, including improved screen-grid regulation, simplified AC line-voltage tap selection, and provision of a USB interface for remote monitoring and limited control. The amplifier uses the Alpha Power brand VTX-X118 tubes—ceramic, external-anode, indirectly heated tetrodes that are qualified to handle the grid current that might be experienced in the AP8410. The AP8410 joins the AP9500 1.5 kW



Alpha Radio Products new AP8410 is a 1.5 kW tetrode HF amplifier.

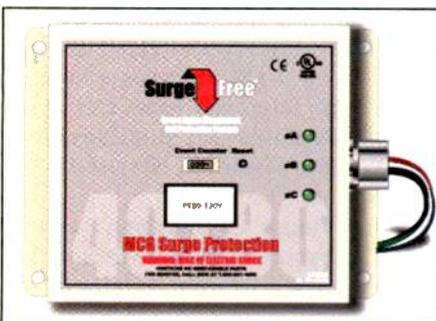
auto-tune amplifier and the AP2100 legal-limit dry dummy load, along with other high-power RF products in production at Alpha.

The AP8410 HF amplifier is priced at \$5,395, plus shipping and handling. For more information, visit www.alpharadio-products.com, or contact Molly Hardman at 303-473-9232.

MCG Electronics Thermally Protected Varistors

MCG Electronics has augmented its line of compact surge protectors with its new PT 80 and PT 40 Series. These advanced, non-modular transient voltage surge protectors can protect an entire residence filled with sensitive equipment, including specialized radio hobbyist devices.

Packed inside the Series' small (6.75 x 7.25 x 4.25 inches) enclosures are up to seven high-energy, thermally protected varistors. These high-performance varistors are typically only found in much higher-priced protectors. Multiple fused surge paths per phase save critical electronics. The redundant paths are comprised of high-energy surge fuses that conduct large surge currents repeatedly without degrading. Front panel protection status LEDs and 1 Form C relay contacts



MCG's PT 80 and PT 40 Series transient voltage surge protectors can protect an entire residence filled with sensitive electronic equipment.

demonstrate the protector's status at a glance. An optional surge event counter displays the number of times that the protector diverts a surge. An abnormal voltage monitor LED monitors voltage between Neutral and Ground, illuminating when abnormal voltages are detected.

The PT Series guards local service entrance panels as well as individual pieces of critical equipment and network closets. It's UL 1449, 2nd Ed. Listed and shows the UL logo, and comes with a 20-year warranty.

Devices are available in 120-600VAC, 1-3ph, single phase, wye and DCT. NEMA 4 Type 2, powder-coated enclosure. All modes protected.

For additional information and pricing, visit www.mcgsurge.com or call 800-852-1508.

On The Web

Radiophiles with iPhones will want to check out Public Radio Tuner 1.1.1, a free iPhone application that features hundreds of public radio streams. It lets users tune in to their local station from anywhere in the world or check out new ones. The Public Radio Tuner iPhone App Project is a collaborative effort led by the Public Radio Exchange (PRX) in partnership with National Public Radio (NPR), Public Interactive (PI), American Public Media (APM), and Public Radio International (PRI), among others. The goal was to create the Public Radio Tuner application for the iPhone platform using Apple's recently released software development kit and iTunes App Store distribution service. The application will serve end users by initially offering access to local stations' Internet radio streams.

For more information, visit www.publicradiotuner.com.

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Radio Cristal/Radio Pueblo Rouses, Transmitters In Transition, And More News

by Gerry L. Dexter
gdex@wi.rr.com

You just never know when some nearly comatose broadcaster will begin to stir, give a yawn, and scratch at a transmitter itch! That happened over the holidays when Radio Cristal/Radio Pueblo from the Dominican Republic kicked the blankets off 5010 and became active—however briefly—to offer up its Radio Pueblo and its 1510 mediumwave signal to a larger audience. In the few weeks since then there have been only one or two few tentative reports of it, but at least we know it occasionally swings its feet to the floor and takes some nourishment. So if you need this one, 5010 might be a good channel to plug into your receiver's memory bank.

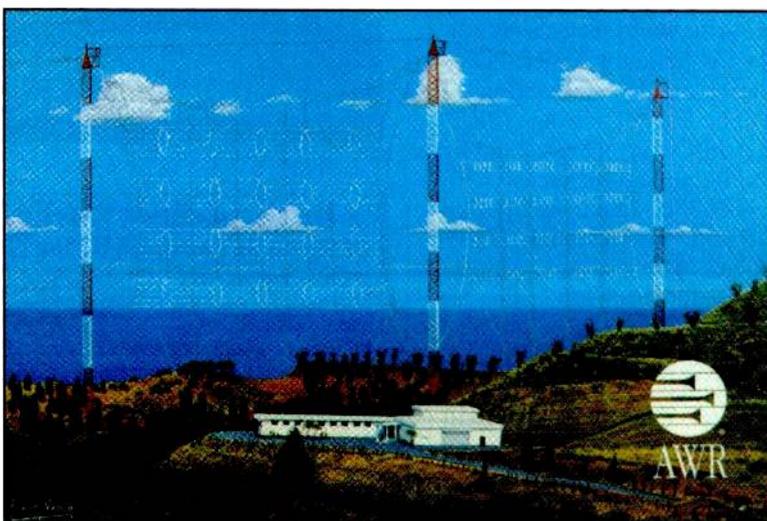
There is word that the Ulbroka (Latvia) transmitter was shut down at the end of 2008, so all those weekend relays on 9290 are apparently finished, or at least are in trouble. There is also a hint that the downsizing only involves the 100 kW transmitter and that a much less powerful 10 kW (or even just 1 kW) unit will be substituted, which will certainly make reception even more difficult.

“In the realm of rumor we hear from a couple of sources via log reporter Charles Maxant, that North Korea purchased the transmitters of the Swiss Broadcasting Corporation and Kim Jong Il’s crew have now installed them at a new, ‘uncited’ transmitter site.”

ZLXA, New Zealand’s Radio Reading Service for the Blind, has called it quits. That’s a real shame, since the station was a prime DX target for many (including yours truly). It operated on 3935 kHz, surrounded by ham operators. One’s chances of catching it weren’t helped by the fact that it only used 1 kW and was only audible in the pre-dawn hours. The station put together a “last chance” DX Test on March 20, but we hadn’t reached that date as of this writing, so we don’t know what the results were.

Next door, in Australia, HCJB is busy adding a new transmitting facility to its Kununurra transmitter site. Four antennas and a new, larger transmitter building for the station’s two 100 kW units are being added. The new building will also allow room to house additional transmitters and a maintenance shop. HCJB leases about 1,200 acres of land there, on which it also operates a farm. It expects to have the improved radio facility in operation by the fall of this year. Kununurra is in northeastern Western Australia, almost on the border of the Northern Territory.

In the realm of rumor we hear from a couple of sources via log reporter Charles Maxant, that North Korea purchased the transmitters of the Swiss Broadcasting Corporation and Kim Jong Il’s crew have now installed them at a new, “uncited” transmitter site. So we may now be hearing North Korea even better than before—and aren’t we all heartened by that?!



Adventist World Radio's transmitter site at Facpi Point near Agat, Guam.

Help Wanted

We believe the "Global Information Guide" offers more logs than any other monthly SW publication (a full 640* 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 "Global Information Guide," 213 Forest St., Lake Geneva, WI 53147. Or you can email them to gdex@wi.rr.com. (See the column text for formatting tips).

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

WMLK, the Assemblies of Yahweh station in Bethel, Pennsylvania, is off the air. It is now in the process of installing a used 250 kW transmitter it also purchased from the Swiss. However, it requires a good deal of refurbishing and that necessity, along with the high cost of making the needed changes, has slowed things down. On top of that, the station had its antenna ruined in an ice storm! Their return date is uncertain. When WMLK

A Guide To "GIG-Speak"

Here's a partial list of abbreviations used in the "Global Information Guide."

* — (before or after a time) time the station came on or left the air

(l) — (after a frequency) lower sideband

(p) — presumed

(t) — tentative

(u) — (after a frequency) upper sideband

v — variable time or frequency

// — in parallel

AA — Arabic

ABC — Australian Broadcasting Corporation

AFN — Armed Forces Network

AFRTS — Armed Forces Radio TV Service

AIR — All India Radio

Alt — alternate

AM — amplitude modulation, AM band

Anmt(s) — announcement(s)

Anncr — announcer

AWR — Adventist World Radio/BC broadcast(er)

BSKSA — Broadcasting Service of Kingdom of Saudi Arabia

CA — Central America

CC — Chinese

Co-chan — co-channel (same frequency)

comml(s) — commercial(s)

CP — Bolivia, Bolivian

CRI — China Radio International

DD — Dutch

DJ — disc jockey

DS — domestic service

DW — Deutsche Welle/Voice of Germany

EE — English

ECNA — East Coast of North America

f/by — followed by

FEBA — Far East Broadcasting Association

FEBC — Far East Broadcasting Company

FF — French

freq. — frequency

GBC — Ghana Broadcasting Corp

GG — German

GMT — Greenwich Mean Time (UTC)

HH — Hebrew, Hungarian, Hindi

HOA — Horn of Africa

ID — station identification

II — Italian, Indonesian

Int/Intl — international

Irr. — irregular use

IRRS — Italian Radio Relay Service

IS — interval signal

JJ — Japanese

KK — Korean

LSB — lower sideband

LV — La Voz, La Voix (the voice)

MW — mediumwave (AM band)

NBC — National Broadcasting Corporation (Papua New Guinea)

OA — Peru/ Peruvian

OC or O/C — open carrier

PBS — People's Broadcasting Station

PP — Portuguese

PSA — public service announcement

QQ — Quechua

QRM — man-made interference

QRN — noise (static)

QSL — verification

RCI — Radio Canada International

Rdf. — Radiodifusora, Radiodiffusion

REE — Radio Exterior de Espana

RFA — Radio Free Asia

RFE/RL — Radio Free Europe/Radio liberty

RNZI — Radio New Zealand International

RR — Russian

RRI — Radio Republik Indonesia

RTBF — RTV Belge de la Communate Françoise

Relay — transmitter site owned/operated by the broadcaster or privately operated for that broadcaster

relay — transmitter site rented or time exchanged.

SA — South America

SEA — Southeast Asia

SCI — Song of the Coconut Islands (transition melody used by Indonesian stations)

s/off — sign off

s/on — sign on

SIBC — Solomon Is. Broadcasting corp.

sked — schedule

SLBC — Sri Lanka Broadcasting Corporation

SS — Spanish

SSB — single sideband

SWL — shortwave listener

TC — time check

TOH — top of the hour

TT — Turkish

TWR — Trans World Radio

Unid — unidentified

USB — upper sideband

UTC — Coordinated Universal Time (as GMT)

UTE, ute — utility station

Vern — vernacular (local) language

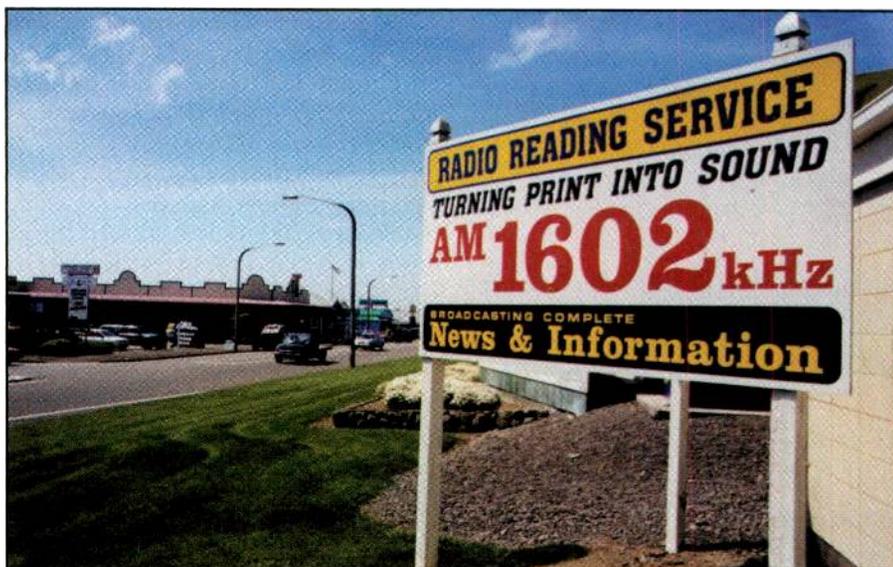
via — same as "relay"

VOA — Voice of America

VOIRI — Voice of Islamic Republic of Iran

WCNA — West Coast of North America

ZBC — Zimbabwe Broadcasting Corporation



ZLXA-The Radio Reading Service is close to dropping its shortwave service.

does return to the air, it'll be on 9265 from 0400 to 0900 and 1700 to 2200.

Be aware that beginning with the current broadcast season (A09), which started at the end of March, broadcasters will no longer be able to use frequencies between 7100 and 7200. That's going to affect stations in several countries and should tighten things up on the remainder of the band.

Reader Logs

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 (originating) country and include your last name and state abbreviation after each. Also needed are spare QSLs or good copies you don't need returned, station schedules, brochures, pennants, station photos, and anything else you think would be of interest. And, c'mon! Where's that photo of you at your listening post? It's your turn to grace these pages!

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.

ALASKA—KNLS, 9615 at 0830. (Patterson, Philippines)

ALBANIA—Radio Tirana, 7510 at 2118 on the history of Albanian art. (Fraser, ME) 13720 at 1535 with news. (Parker, PA)

ALGERIA—Radio Algerienne, 5865 via Issoudun at 0417 with Koran in AA. (Wood, TN) 0530 in AA. (Parker, PA)

ANGUILLA—Caribbean Beacon, 6090 with University Network heard at 0030. (Maxant, WV)

ARGENTINA—Radio Nacional, 6090 in SS with tangos and local pops at 1030. Much better on //11710. (Alexander, PA)

ASCENSION IS.—BBC Atlantic Relay, 7160 monitored at 0405 and 15400 at 2243. (MacKenzie, CA) 0535 with talks on Formula One and yacht racing. (Wood, TN)

AUSTRALIA—Radio Australia, 5995 in Tok Pisin at 0930. Far better than //6020. Also 9580 at 1700. Faded and gone by 1810. (Barton, AZ) 6020 at 1330 with C&W. (Fraser, ME) 9500 with news at 2108. (Gay, KY) 9580 at 1233 with C&W pgm. (Parker, PA) 9710-Shepparton at 0835. (Patterson, Philippines) 9710 at 1940, 11660 with an interview at 2145, 11880 on medical difficulties at 1820 and 13630 at 1320 on troops in Timor. (Maxant, WV) 11825-Darwin with EE lesson in CC at 1330. (Ng, Malaysia)

ABC Northern Territories Service, 2485-Katherine at 2105. (Patterson, Philippines)

HCJB Global, Kununurra, 15400 at 1215. (Patterson, Philippines)

AUSTRIA—Radio Austria International, 7325 in GG at 0005 with international news f/by a science or nature report. They no longer seem to use 5945 or 6155. (Fraser, ME)

BANGLADESH—Bangladesh Betar, 7250 at 1228 sign on with flute IS, time pips, some flute music, muffled talk but clear, intelligible in EE at 1232. (Alexander, PA) 1247 with music, M and possible ID at TOH. (Parker, PA)

BELARUS—Belarusian Radio, Minsk, 6115 at 0720 with local music and anmts in Belarusian. Weak with co-channel QRM. Fair on //7110. (Alexander, PA)

BOLIVIA—Radio Eco, Reyes, 4409.8 at 0015 with SS commentary. (Wilkner, FL)

Radio Santa Ana, Santa Ana del Yacuma, 4451 at 0000 with anmts, brief music bridge,

and several mentions of Santa Ana. (Wilkner, FL)

Radio Virgin de Remedios, Tupiza, (t) 4554.5 heard at 0000 to 0040 with M in SS and some flutes but no positive ID. (Wilkner, FL)

Radio San Miguel, Riberalta, 4699.4 with M in SS at 0239. Weak audio. (Parker, PA)

BONAIRE—Radio Nederland Relay, 5975 in DD at 0415. (MacKenzie, CA) 11655 at 1945. (Maxant, WV)

BOTSWANA—VOA Relay, Moping Hill, 4930 at 0346 with news items. (Ronda, OK) 0319 on coups in Africa. (Wood, TN) 0347 with news. (Parker, PA) 12080 at 1700 with talks in listed Hausa. (Brossell, WI) 17895 at 1803 on the war in Gaza. (MacKenzie, CA)

BRAZIL—(All in PP) Radio Educadora, Limeria, 2380 at 0556 with M talking and choir. (Parker, PA)

Radio Immaculada Conceicao, Campo Grande, 4754.9 at 0040 with M/W talks. (Parker, PA)

Radio Cancao Nova, Cachoeira Paulista, 4825 heard at 0210 with pops, W with ID. (Parker, PA)

Radio Cultura Ondas Tropicais, Manaus, 4845.2 at 0127 with slow ballads, M taking phone calls, (Parker, PA)

Radio Alvorada, Londrina, 4865 heard at 0357 with M/W talk, canned ID and jingle. (Parker, PA)

Radio Clube do Para, Belem, 4885 at 0023 with usual boisterous M anc, reverb, jingles, and pops. (Parker, PA) 0323 with news by M and W with promos. (Wood, TN)

Radio Novo Tempo, Campo Grande, 4894.9 at 0201 with M and religious talk, music bridges. (Parker, PA)

Radio Difusora, Macapa, 4915 heard as early as 0020 and as late as 0616. (Parker, PA)

Radio Educacao Rural, Tefe, 4925 at 0016 with guitar ballad, M/W vocal. (Parker, PA)

Radio Capixaba, Vitoria, 4935 monitored at 0220 with apparent religious vocals. (Parker, PA)

Radio Mundial, Osasco, 4974.8 at 0612 with M talking. (Parker, PA)

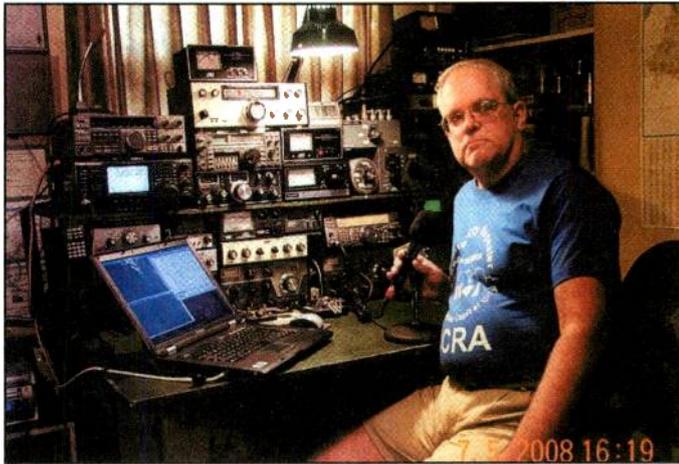
Radio Brazil Central, Goiania, 4985 alternating sappy songs and upbeat things, jingle and M anc at 0609. Also 11815 at 2205 with religious music and talk at 0005. (Parker, PA) 4985 at 2325 with M intro'ing music. (Wilkner, FL) 11815 at 0050 with PP pops. //4985. (Alexander, PA)

Radio Aparecida, Aparecida, 5035 at 0304 with pgm of religious phone-ins. (Parker, PA) 6135 at 2258 with pops, commls, general chatter. (Strawman, IA)

Radio Senado, Brasilia, 5990 from 0857 sign on with ballad, opening anmts and into PP pop ballads. (Alexander, PA)

Radio Nacional Amazonia, 6185 at 0713 with mentns of Brazil and one of "Radio Nacional." (Taylor, WI) 2329 with lively PP songs and network ID. (Ronda, OK) 11780 with Brazilian pops at 2346. (MacKenzie, CA)

Radio Bandeirantes, Sao Paulo, 9645 at 0517 with long talk by M. (Parker, PA)



Here's ham radio operator and GIG reporter Chris Gay in his Lexington, Kentucky, shack. Thanks, Chris. You look like you could use an extra pair of hands!

Radio Voz Missionaria, Florinapolis, 9665 with religious music at 0508. M taking phone calls. (Parker, PA) (p) At 0612 with M in religious talk. (Taylor, WI)

Radio 9 de Julho, Sao Paulo, 9820 at 0610 with M taking calls, short music bridges. (Parker, PA)

RadioTransmundial, Santa Maria, 11735 heard at 1015 with contemporary PP and EE religious songs and an ID. (Alexander, PA)

Super Radio Deus e Amor (ex-Radio Tupi), Curitiba, 9564.9 at 0521 with M, W, guitar, ID, comml. (Taylor, WI) 11765 at 0615 with emotional preacher, several IDs. (Alexander, PA)

Radio Club Parananase, Curitiba (t) 6039.6 at 0124 with operatic and semi-classical music. (Taylor, WI)

BURMA—Radio Myanmar, 9731 in BB at 0840. (Patterson, Philippines)

BULGARIA—Radio Bulgaria, 5900 at 0343 with M ancr and local folk music. (Parker, PA) 7400 at 1840 with *This Is Bulgaria* pgm. (Fraser, ME; Maxant, WV) 11800 at 1810 with talks in BB. Also in BB on 15700 at 1313. (Brossell, WI)

CANADA—Radio Canada Inter-national, 5840 via Sweden to 0200* with talks and musical interlude before they abruptly went off. (Parker, PA) 7190 via South Korea in Mandarin at 2238. (Ronda, OK) 7195 via South Korea in Mandarin at 2210. (Patterson, Philippines) 9610 discussing wind chill factor at 1635 and 9755 at 0035 on a large ice storm. (Maxant, WV) 9610 at 1715 on activists placing body bags in public places to call attention to the gang problem in Canada. (Barton, AZ) 17790 at 1812 on financial problems there. (MacKenzie, CA)

CBC Northern Quebec Service, 9625 at 0531 with news magazine and features. (Parker, PA)

CFRX, Toronto, 6070 at 2145 "You are listening to the *Spider Jones Talk Show* on CFRB ten-ten." (Fraser, ME)

CKZN, St. John's (Newfoundland), 6160 at 0820 talking about computerization in farming. (Maxant, WV)

CHU, Ottawa, 7850nf at 1033. (Barton, AZ)

CHAD—Radiodiffusion Nationale Tchadienne, 4905 at 2222 to 2231* close with Afro-pops, FF anmts and again at 0510. Also 6165 to 2232 close with national anthem. (Alexander, PA) 4905 in FF at 0516. (Brossell, WI) 0545. (Parker, PA) FF and vernacular at 0630. (Wood, TN) 2217. (Strawman, IA)

CHILE—La Voz, 6070 in SS at 0105 when it came on the air and wiped out CFRX. (Maxant, WV) 11970 in SS at 0220. (Parker, PA) 17680 in SS at 2256. (MacKenzie, CA)

CHINA—China Radio International, 5925-Beijing in Mandarin at 2115. (Patterson, Philippines) 7150 in EE at 1740, 6115 via Canada at 0617 on downsizing markets. Also 9665 via Brazil in SS at 0338, 9790 via Cuba in CC/EE at 0348 and 11970 via Canada at 2326. (MacKenzie, CA) 6020 via Albania with *China Drive* at 0115. (Fraser, ME) 7325-Kunming in Cantonese at 2340 with M/W anncrs going back and forth.

Also 9415-Beijing in VV at 2340. (Ronda, OK) 9440-Xi'an in JJ at 1020. (Ng, Malaysia) 9675-Beijing in CC at 2337 over Cancao Nova. Also 11975 via Mali in CC at 2340. (Strawman, IA) 9685-Urumqi in RR at 1208 and 12080 at 1249. (Brossell, WI) 9710-Kashi in SS at 0105 and 9790 in Cantonese at 0407. (Parker, PA)

China National Radio:

CNR-1, Beijing, 5030 in CC monitored at 1420. Better on //7110-Shijiazhuang. (Strawman, IA) 5945-Beijing in CC at 1240. (Ng, Malaysia) CNR-1, Geermu (t), 6080 at 1329 in Mandarin with fairly long talk. Also PBS Nei Menggu 7105, Hohhot, M/W in Mandarin at 2252 and CNR-8, Lingshi (t) 9420 in listed Kazak at 1431 battling Voice of Greece. (Taylor, WI) Xizang PBS, Lhasa (Tibet) 6200 in (p) Tibetan at 1317. Also CPBS-Xi'an, 7130 in CC at 2310. (Brossell, WI) CPBS, 7110 in CC at 1733. Suddenly off at 1735. (MacKenzie, CA) CNR-2, China Business Radio, 7375 at 1157 with quick ID at 1200 and back to CC talk. Parallels on 6065, 6090, 6155, 7130, 7140, 7315 7335, 7350, and 9810. (Alexander, PA)

COLOMBIA—Marfil Estereo, Puerto Lleras, 5010 in SS at 1204 with ID and commls. (Strawman, IA) 2355 in SS with uptempo music, ID at 0002. (Parker, PA) 0232 with contemporary LA music. (Taylor, WI)

CONGO (Dem. Rep)—Radio Okapi, 11690 via Meyerton at 0405 with ID and FF talks, Afro-pops and rap. (Wood, TN) 0435 in FF with lots of lively music, W asking for letters. (Ronda, OK) 0540 with continuous FF talk, canned jingles, off at 9558*. (Alexander, PA) 0540-0545 in FF. (Parker, PA)

CROATIA—Hrvatski Radio/Voice of Croatia, 3984.9 at 0258 in EE with ID at 0300 with headlines and domestic political news. Also 2315 with *Croatia Today* and occasional ham QRM. Better on //7375 via Germany. (Alexander, PA) 0550 in Croatian. (Parker, PA)

CUBA—Radio Havana Cuba, 9550 in SS at 2210. (Ng, Malaysia) 2215. (Patterson, Philippines) 11690 in SS at 0213. (Parker, PA) 11760 in EE with Cuban music at 2055. (Fraser, ME)

Radio Rebelde, 5025 with live play-by-play sports in SS at 0340. (Wood, TN)

CYPRUS—Cyprus Broadcasting Corp., 7210 at 2228 with M in Greek mixing with CRI via Albania. (Brossell, WI)

CZECH REPUBLIC—Radio Prague, 5930 at 2120 with a report on an EU meeting on climate change. Also 15380 at 1408 on hockey exhibit at their national museum, and 7345 at 2340 with *Chef's Competition*. (Fraser, ME) 6200 at 0123 and into SS at 0130. (Parker, PA) 9430-Litomysl in EE at 2120. (Patterson, Philippines) 17540 at 1315 on pro tennis. (Brossell, WI)

Diego Garcia—AFN/AFRTS 4319u at 0005 with news, military PSAs, sports talk. I've been trying for this one for years! (Taylor, PA)

DJIBOUTI—Radio Djibouti, 4780 in AA at 0313. (Brossell, WI) 0332 with African chorals. (Ronda, OK) 0335 with M talk in AA. (Parker, PA) 0343 in AA. (Wood, TN) 2050 to 2102 close. (Alexander, PA)

ECUADOR—HCJB Global, 11690 at 1355 with SS inspirational music. (Parker, PA) 11920 in PP at 2323 and 12040 in GG at 2328. (MacKenzie, CA)

Escules Radiofonicas, Riobamba, 5010 with songs in SS monitored at 0239. (Brossell, WI)

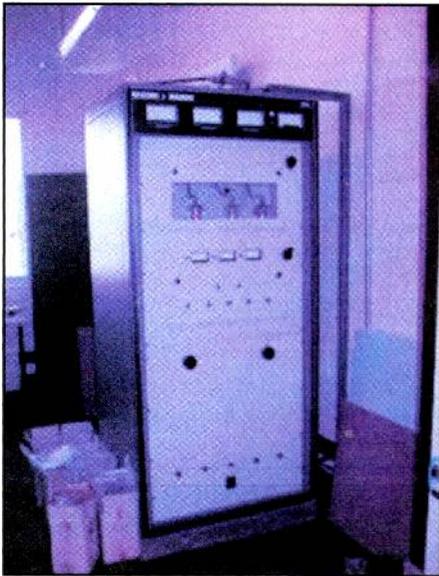
La Voz del Napo, Tena, 3280 at 1015 with Andean music, W over flutes. (Wilkner, FL)

Radio El Buen Pastor, Saraguro, 4814.9 in QQ at 0023 with M/W talk, possibly a radio drama over background music. (Parker, PA)

Radio Quito, (t) 4920 at 0034 with M/W SS anncrs, definite pasacalle music. No solid ID heard. (Parker, PA) (*Unreported in quite a while.—gld*)

HD2IOA, Guayaquil, 3810 at 0205 with pips, M in SS. (Parker, PA) 0708 with time pips audible in heavy ARO QRM. (Wood, TN)

EGYPT—Radio Cairo, 6255 at 1315 with woman in EE. Also 7535 with news, local vocals at 0305. (Maxant, WV) 6290 with Koran recitations at 1930. (Gay, KY) 6290-Abis in AA at 0118. Also 7535-Zaabal to NA at 0215. (Parker, PA) 6850 in EE at 2315. (Patterson, PA) 7270 with *Landmarks in Egypt* pgm at 0308. (Brossell, WI) 15170-Zaabal in AA at 1205. (Patterson, Philippines)



CFRB, Toronto puts out a big signal with its 1 kW transmitter. (Thanks Charles Maxant and the Ontario DX Association)

ENGLAND—BBC, 3255 via South Africa Relay at 0400 with ID, news. Also 9570 Thailand Relay at 2345. (Ronda, OK) 5875-Rampisham in EE to Russia at 0630. Also 11835 Singapore Relay in Indonesian to Southeast Asia at 1310. (Parker, PA) 7205 South Africa Relay in unid language at 0333. (MacKenzie, CA) 9465 Thailand Relay in CC at 2324. (Strawman, IA) 11760 Oman Relay at 1334. (Brossell, WI) 15310 Oman Relay with *The World Today* heard at 0310 and 15575 Cyprus Relay with "TWT" at 0710. (Ng, Malaysia)

Bible Voice Broadcasting, 6030 via Germany with *Right from the Heart* pgm at 0030. (Ng, Malaysia)

EQUATORIAL GUINEA—Radio Nacional, Bata, 5005 with songs and anmts in SS at 0518. (Brossell, WI) 2245 to 2258 close with Afro-pops, SS anmts. (Alexander, PA)

Radio Nacional, Malabo, 6250 at 0622 with SS talks, IDs. (Alexander, PA)

Radio Africa, 15190 at *1517 abrupt sign on with usual EE religion, gospel music. (Alexander, PA) 1950 with Bible quotes, religious music. (Maxant, WV)

ETHIOPIA—Radio Ethiopia, 7110 at 0259 with IS on an electronic keyboard, opening anmts in Amharic, chimes at 0300 and talk. 7165 with 0659 sign on and 9560 at 1815 to 1833* abrupt sign off in unidentified lang. Also 9704 at 2025 with HOA music, Amharic talk. S/off with national anthem at 2058. (Alexander, PA) 0418 in Amharic and vocals. (Ronda, OK) 0506 with two M in Amharic. (Wood, TN)

Radio Fana, 6890 heard at 0410 and 2025 with HOA music. Amharic talks. //6110. (Alexander, PA)

Voice of Peace and Democracy, 7165 with s/on at 0358 in Tigrinya, local drums, some HOA music. (Alexander, PA)

FRANCE—Radio France International, 5900 via Russia in CC at 1025. (Ng, Malaysia) 9805-Issoudun to East Africa in EE at 0401. (Parker, PA) 15300-Issoudun at 1210 with two M in FF. (Wood, TN) FF monitored at 1210. (Patterson, Philippines)

GABON—Africa Number One, 9580 monitored at 0555 in FF with M/W talks. (Parker, PA)

GERMANY—Deutsche Welle, 5945 monitored at 0430 on gas/oil disagreements between Ukraine and Russia. Also 11690 at 2150 on talking owls and 11725 in GG at 1930. (Maxant, WV) 7240 via Wooferton at 0555 with news. (Wood, TN) 9775 Kigali relay with talks in GG at 0128. (Parker, PA) 11690 Kigali Relay ending EE at 2157, GG at 2200 and into news. Also 12080 Portugal Relay with RR service at 1621. (Strawman, IA) 11830 via Petropavlovsk in CC at 2340. (MacKenzie, CA) 17520 Sri Lanka Relay in GG at 0800. (Ng, Malaysia)

Rhein Main Radio Club, 9290 via Ulbroka (Latvia) at 1358 to past 1440 in GG and EE. Faded rapidly after 1430. (Schiefelbein, MO)

GREECE—Voice of Greece, 7475 in Greek with vocals at 0215. (Maxant, WV) 9420 in Greek with music at 1323. (Brossell, WI) 15560 in Greek at 1228. (Patterson, Philippines)

GUAM—Adventist World Radio/KSDA, 11965 ending pgm in Indonesian and off at 2230. (Ronda, OK) 15260 with *Wavescan* pgm at 1130. (Ng, Malaysia)

GUATEMALA—Radio Cultural Coatan, San Sebastian (t) 4780 heard at 0249 in SS with two possible IDs. (Wood, TN) 2310 with ID. Not heard since. (Wilkner, FL)

Radio Buenas Nuevas, San Sebastian, 4799.8 at 0214 in SS with M and TC and ID at 0217, ranchero ballads. (Parker, PA) 0352 with M preaching in SS. Slowly overtaken by the Mexican. (Taylor, WI)

HONDURAS—Radio Misiones/ HRMI, Comayagua, 3340 at 0530 with excited W in SS. (Parker, PA) 0620 with SS anmts, IDs and LA music. (Alexander, PA) 0715 in SS/EE. (Wood, TN)

Radio Luz y Vida, San Luis, 3250 at 0016

with SS religious pgm. (Wilkner, FL) 0350 to 0400 close. Off with national anthem. (Alexander, PA)

HUNGARY—Magyar Radio, 3975-Jaszbereny in HH at 0535 with talks. Very strong signal, making for some very annoyed hams. (Parker, PA)

INDIA—All India Radio, 4840-Mumbai in vernacular with M/W talk at 0202, 4850-Kohima at 0305 weak in vernacular, 9870-Bangaluru in Hindi to South Asia at 0237. Also 9810-Panaji (Goa) in Nepali to South Asia at 0207, 9835-Delhi to West and South Asia at 0332, 9910-Aligarh to Afghanistan in Pashto at 0221. (Parker, PA) 5010-Thiruvananthapuram in Hindi at 1353, 9425-Bangaluru with five minutes of EE news at 1430, 9820-Panaji in Sinhala at 1340 and 9870-Bangaluru very good at 1330 with songs and talks in Hindi. (Ronda, OK) 9425 with drums and sitar at 1500. (Barton, AZ) 9445 in EE at 2209 and 9690-Bangaluru in EE at 1416. (Strawman, IA) 9445 on a terrorist attack at 1305 and 11620 at 1935 talking of peace with Pakistan. (Maxant, WV) 15050-Delhi/Khampur in Tamil at 1145. (Patterson, Philippines)

INDONESIA—Voice of Indonesia, 9525.9 at *0948 abrupt sign on in unid lang., theme music at 1000 and more talk. Very weak, with low modulation. (Alexander, PA) 1235 in II but poor, just above the noise. (Ronda, OK)

Radio Republik Indonesia, 3325 Palangkaraya (presumed) monitored at 1335 in II with M DJ and a continuous stream of callers. Mostly poor. (Schiefelbein, MO) Merauke, 3905 at 1137 with M and music, but very tentative. (Taylor, WI) 4790-Fak Fak with pop things at 1352. (Strawman, IA)

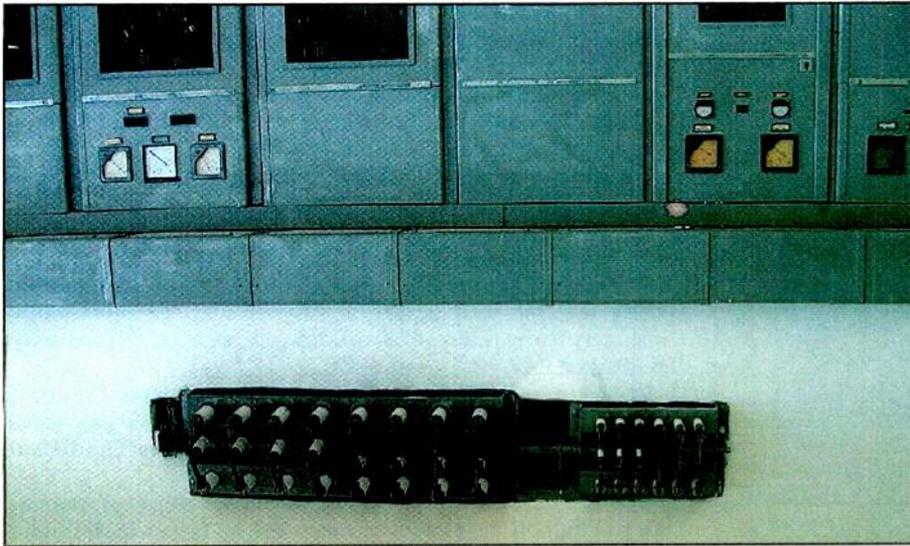
IRAN—VOIRI, 6205 at 1940 with W and news. (Gay, KY) 7160 in EE at 0105 and 7320 with phone interview at 1955. (Maxant, WV) 7170 in listed Pashto at 1320. (Brossell, WI) 15150-Sirjan in Mandarin heard at 1202. (Patterson, Philippines)

ISRAEL—Galei Zahal, 6973 at 0010 with reggae and HH. (Parker, PA) 0547 in HH with bugle calls and martial music. ID by W.

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. 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!

This month's prize winner is **Jack Linonis, Hermitage, Pennsylvania**, who now owns a copy of the 2009 edition of *The World Radio Handbook*, compliments of Watson-Guptill Publications. The *WRTH* is one of the DXer/SWLs foundational guides for our hobby. It's crammed with schedules, frequencies, addresses, powers, sites, personnel, equipment reviews—all you need for full enjoyment of this great pastime! Larger bookstores have it in stock, as do shortwave equipment dealers. Don't turn on your radio without it!



This transmitter is said to be used by the Voice of Korea. (Thanks Charles Maxant and a contact of his in Europe)

(Wood, TN) 2248 with pop things. (Strawman, IA)

ITALY—Radio Joystick via IRRS, 9510-Slovakia with pops and ID at 0902. (Alexander, PA)

JAPAN—NHK Radio Japan, 9825 via Issoudun in Swahili at 0341. (Parker, PA) 13650 in EE closing at 0020. Also 17710 at 0000 with *What's up Japan*. (Barton, AZ) 11910 in JJ at 2335, 13650 in CC at 2305, 17605 via Bonaire in JJ at 2257 and 17810 in Indonesian at 2306. (MacKenzie, CA)

Radio Nikkei, 3925 in JJ at 1235 and 6055 in JJ at 1020. (Alexander, PA) 3925 at 1209 and (p) 6055-Nagara in JJ at 2125. (Patterson, Philippines) 9595 at 2207. (Strawman, IA) 9760 in JJ at 0559. (Parker, PA)

JORDAN—Radio Jordan, 11693 at 1920 discussing Indian insurgency. (Maxant, WV) 11810 in AA to South Asia heard at 1320. (Parker, PA)

KUWAIT—Radio Kuwait, 11990 heard at 1915 discussing school teachers. (Maxant, WV)

LATVIA—RNI Radio, 9290 via Ulbroka at 1315 with *Latvian Radio Magazine*. 1342 with *Latvia Today*. (Taylor, WI)

LIBYA—Radio Jamahiriya/Voice of Africa, 17725 at 1438 with ID and continued with EE pgm. (Ronda, OK) 1555 on African unity. (Brossell, WI)

LIBERIA—ELWA, 6070 at 2240 with religious music, talk. Off at 2302 with national anthem. Weak under a strong Romania until buried by RRI at 2257. (Alexander, PA)

MADAGASCAR—Radio Madagaskara, 5010 at 0227 with W ancr and excellent high-life music. (Parker, PA) 0245 with local vocals and instrumentals. (Strawman, IA) 0250 with talks in Malagasy and wide variety of music. (Alexander, PA) 0306 with hymns sung in (p) Malagasy. (Brossell, WI)

MALAYSIA—RT Malaysia, Kuching (Sarawak) on 5030 in Malay with ID for "Sarawak FM" at 1000. (Ng, Malaysia)

MALI—RT Malienne, 5995 at 0745 with FF talk. Off with flute IS at 0759. Also 9635 at *0800 sign on with opening FF anmts, vernacular talk and local guitar music. "Radio Mali" ID, //7285. (Alexander, PA)

MAURITANIA—Radio Mauritanie, 4845 at 0009 with M in vernacular. (Parker, PA) 0731 in FF with fast paced talk. (Wood, TN) 2258 in AA. (Brossell, WI) 0810-0843 with AA talks, local music. Also 7245 heard at 0853 sign on. Into AA talks at 0900. (Alexander, PA)

MEXICO—XERTA-Radio Transcontinental, Mexico City, 4800 at 0033 with M in SS and variety of music. Best in USB to avoid Buenas Nuevas. (Parker, PA) 0315 with SS vocals. (Maxant, WV) 0354 with contemporary Mexican ballads and campo music. (Taylor, WI) 0720 with music selections and ID at 0726. (Wood, TN)

Candela FM, Merida, 6104.8 at 0022 in SS. (Wilkner, FL)

Radio Educacion, Mexico City, 6185 with long classical piano selection until 0146. ID, M/W SS talks. (Parker, PA) 0500 with SS and polka-style music by a big band. (Wood, TN)

MOLDOVA—Radio PMR, 6240 at 2340 with "This is Moldova" anmt. Also 7370 at 1645 with ID and news of natural gas supply. (Maxant, WV)

NETHERLANDS—Radio Nederland, 6165 via Portugal at 0410 with two M in SS. (MacKenzie, CA) 9895 via Sweden in DD at 0855. (Patterson, Philippines) 11615 Madagascar Relay with *Newsline* at 1815. (Fraser, ME) 11655 Madagascar Relay in DD at 1655. (Brossell, WI)

The Mighty KBC, 6055 via Lithuania at 2210 talking about Wolfman Jack and into a song. (Maxant, WV) 9770 at 1450 with IDs and pop/rock. (Alexander, PA)

NEW ZEALAND—Radio New Zealand International, 6170 with local news at 1304. (Brossell, WI) 9765 at 0845. (Patterson, Philippines) 9765 at 0615 with national news

In Times Past...

Here's your blast from the past for this month...

Singapore—The British Forces Broadcasting Service, 5010 at 1131 on September 9, 1964, running 10 kW. (Dexter-WI)

and into *Cowboys and Comforts* pgm. Also 11720 at 0530 with BBCnews. (Maxant, WV)

NIGER—La Voix du Sahel, 9705 at 2235 to 2301* with ballads, FF anmts, Koran at 2253. (Alexander, PA)

NIGERIA—Radio Nigeria, Kaduna, 6090 at 2110 with talk in (l) Hausa, tribal vocals. Lost to Anguilla at their 2204 sign on. (Alexander, PA)

NORTH KOREA—Korea Central Broadcasting station, 2850 in KK at threshold level at 1206. (Strawman, IA) 1312 with two ancrs in KK. (Taylor, WI)

Hamgyong People's Station, Hamgyong, 3320 poor at 1350 with patriotic vocals. (Strawman, IA)

Voice of Korea, 6285 at 1249 with anthem and suddenly off. (Ronda, OK) 1400 sign on, //6185 in (p) KK, though different programs. (Barton, AZ) 9335 heard at 1302 beginning news in EE. (Brossell, WI)

NORTHERN MARIANAS—KFBS, 11580-Saipan in Mandarin at 1305. (Patterson, Philippines) 12090 at 2236 with listed VV service. (Strawman, IA)

OPPOSITION—Ginbot 7 Dinst Radio (to Ethiopia), 7485 via Samara from *1701 open with HOA music, Amharic talk. //9610 under Canada. Tu-Th-Sa only. (Alexander, PA)

North Korea Reform Radio, 9965 (to N. Korea), with W and KK talk at 1305. (Ng, Malaysia)

Furusato no Kaze, 9880 via Darwin (to North Korea), at 1445 with alternating M/W ancrs in JJ. (Taylor, WI)

SW Radio Africa (to Zimbabwe), 11745 via Rampisham at 1755 with IDs, vocal music, political talk. (Ronda, OK) 12035 on human rights in Zimbabwe at 1822. (Brossell, WI)

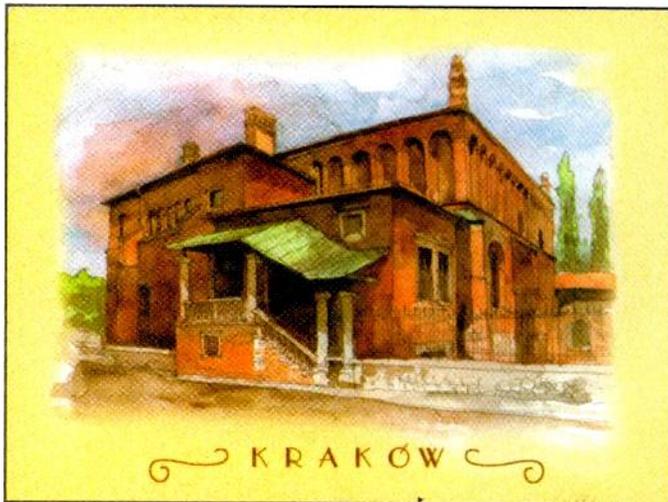
Radio Voice of the People (to Zimbabwe), 11610 at 1700 opening with African music and EE/vernacular anmts. Close at 1756 with contact info. (Alexander, PA)

Radio Solh (to Afghanistan), 17700 via England in listed Pashto at 1320. (Brossell, WI) Voice of Mesopotamia, 11530 via Moldova in Kurdish at 1252. (Patterson, Philippines)

Radio Nacional de la RASD, Rabuni (to Morocco), 6300 in AA at 2250. (Strawman, IA) 2310 (Ronda, OK) 2355 with AA talk, anthem monitored at 0002. (Parker, PA)

Democratic Voice of Burma, (p) 9415 via Armenia in BB at 1431 with intro and apparent news. (Taylor, WI)

PAKISTAN—Radio Pakistan, 15100 with EE news at 1100. (Ng, Malaysia) Urdu at 0905. (Patterson, Philippines)



An artful card from Polish Radio. (Thanks Paul Gager, Austria)

PALAU—T8WH, Koror, 9965 at 1509 with M and apparent Bible teaching. (Taylor, WI)

PHILIPPINES—Radio Pilipinas, 15285 with *Philippines Today* at 0245. (Ng, Malaysia)

FEBC International, 7400 with religious talks and songs in Mandarin at 1445. (Ronda, OK) 9430 with talks in CC at 1231. (Brossell, WI) 15380 in Indonesian at 0900. (Ng, Malaysia)

Radio Veritas Asia, 6115-Palauig in Mandarin at 2135. (Patterson, Philippines) 9645 in Kachin with *2330 sign on. (MacKenzie, CA)

PERU—Ondas del Hullaqa, Huanuco, 3239.5 in SS with Andean music at 0015. Also at 1020 fade in. (Wilkner, FL)

Radio Vision, Chiclayo, 4790 at 0235 in SS with usual man speaking to a large crowd over a distorted PA system. (Parker, PA) 0348 with usual lively preacher, ID and frequency at 0350. (Taylor, WI)

Radio La Hora, Cusco, 4857.4 anc in SS with frequency and time at 2310. (Wilkner, FL)

Radio San Antonio, Ucayali, 4940 in SS at 0021. Very weak, but traces of quena flute clearly heard at times. (Parker, PA)

Radio Cultural Amuata, Huanta, 4955 in SS at 0037, M/W talks, slow music bridges. (Parker, PA)

Radio Victoria, Lima, 9720 at 0115 with M/W SS talks. Good and in the clear. (Parker, PA)

PIRATES—WBNY-Radio Bunny, 6210u at 1845 offering special QSL package for decoding a secret message. Uses the Belfast address. (Patterson, PA) 6925 noted at 1642, 1909, *2132, 2358 with numerous cameos by other pirate operators, "Good Monkey Club," fake ads, call-ins, etc. (Zeller, OH) 9625am at 2308 with "Monkey Boy" song. (Lobdell, MA)

Undercover Radio, 6925u at *2220 and 0457 with Dr. Benway, "Hello Radio" and counts testing some new equipment. (Zeller, OH)

Wolverine Radio, 6925u at *0035 and 0125 with new age folk, some disco, pop. No address announced. (Hassig, IL; Zeller, OH)

Northwoods Radio, 6925u monitored at 1831 with a CKLW tribute. Email: northwoodsradio@yahoo.com. (Patterson, PA)

Psycho Radio, 6925u at 1912 with talk about marijuana, sound effects, instrumentals. (Lobdell, MA) 2101 anned as a live broadcast, talking about the sky falling. (Zeller, OH) 0104 with pops, no address announced. (Patterson, PA)

Random Radio, 6925u at 2251 with '40s music, no address. (Patterson, PA) 2255 with '40s style music, vocals. Asked for reports to FRN. (Zeller, OH)

Radio Azteca, 6925u at *1650 with Bram Stoker and usual humor about DXing. Plenty of audio bridges from *Rocky and Bullwinkle*. Belfast address. (Zeller, OH)

"WMLK" at *1626 played the entire "I Have a Dream" speech with various pejorative remarks pasted in. An overtly racist new station. (Zeller, OH)

WTCR—3433u at 0203. (Patterson, PA) 6925u at 0100 with 20th Century Fox theme Christmas tunes by big bands. (Hassig, IL)

WEAK Chicago, 6925u at 2027 and 2349, the latter featuring interviews at a Chicago mall. (Patterson, PA)

Gospel Bob, 6925u at 1534 with *Lost in Space* theme, Stoneham address. (Patterson, PA)

WDDR Worldwide, 6925u giving QSL info monitored at 2130 sign off. (Gay, KY)

Channel Z Radio, 6925am at 1603 with Christmas music. Blue Ridge Summit address. (Patterson, PA)

WMPR, 6925am at 2312 with Christmas music. No address. (Hassig, IL) 2348-0002. (Patterson, PA)

Mystery Radio (Euro), 6220 at 0015 with pop/rock and numerous IDs. (Parker, PA)

Radio Jamba International, 6952u at 0144 with various Christmas things including fake ads and parodies. Faded just as they gave email address. (Hassig, IL) 6955u at 0507 with call-in show and Belfast address. (Patterson, PA)

WTPR, 6925u at 1401 just at the end of their broadcast, warning DXers to turn off their radios lest they lose all the air in their tires. (Zeller, OH)

MAC Shortwave, 6925u heard at 1658, 1709 and 1758 featuring "Ultra Man" and many old novelty tunes. Gave macshortwave@yahoo.com for reports. (Zeller, OH) 1725 with novelty songs. (Hassig, IL)

Ann Hofer Live, 6925u at *2024 playing tunes on her guitar, said she is growing good stuff with her "aerogarden hydroponics" set up. Off at 2044* (Lobdell, MA) 2255 and then 2318 playing her guitar. (Hassig, IL) 2319 with guitar, no address. (Patterson, PA)

KUSA North America, 6955u at 1820 with Christmas show but no address. (Patterson, PA)

Radio Beacon, 6925 in CW with EE Morse code loop from Spain at 2215. Reports go to beaconhf@hotmail.com. (Patterson, PA)

Outhouse Radio, 6927u at 0222 with music. Also 1621-1626 in CW, later SSTV. No address. (Patterson, PA)

WRPR-Real Pirate Radio, 6925u at 0011 with Eagles "Hotel California." (Lobdell, MA)

Radio Free Euphoria, 6925am at 2028 with various songs, Captain Ginga the hippie, talk about the '06 SWL Winterfest, many strange Christmas tunes. (Hassig, IL)

Radio Morania, 6925u at 1741 with the *Spaghetti Harvest Show*. No address. (Patterson, PA)

Voice of the Abnormal, 6925u at 1627 with crazy psycho theme, Elkhorn address. (Patterson, PA)

Radio Playback Intl (Euro) (t) 6870 at 0225 with pops and talk. Too weak for an ID but I note European DXers hear this one on this frequency. (Alexander, PA)

POLAND—Polish Radio, 9450 via Wertachtal at 1302 on Polish energy independence. (Parker, PA) 1325 on various European capitals. (Brossell, WI) 1340. (Maxant, WV) 15520 via Wertachtal in RR at 1225. (Patterson, Philippines)

PORTUGAL—RDP Intl, 9455 at 0255 with an nmt about leaving the frequency at the top of the hour. (Maxant, WV) 9795-San Gabriel in PP at 2140. (Patterson, Philippines) 9855 with nice flute music and man in PP. (Parker, PA)

ROMANIA—Radio Romania Intl, 6030 *Inside Romania* with 6115 at 0444 in EE and Romanian featuring a Romanian vocal group. Off at 0456 after ID, sign off anmts and address. Also 9680 at 0633 on Romanian troops remaining in Iraq and an item on the new government. (Wood, TN) 6145-Tiganesti at 0152 with mailbag. (Parker, PA) 9610 at 1331 with talks in Romanian. (Brossell, WI) 9640 at 1845. (Maxant, WV) 15150-Galbeni in FF at 1155. (Patterson, Philippines)

RUSSIA—Voice of Russia, 4975 via Tajikistan at 1259 with IS, ID and into (l) Pashto/Dari, 6100-Kyzl at 1200 with IS, ID, news in RR, 7135-Moscow in RR at 1305. Also 7150-Armavir in RR at 0315 and 7175-Petropavlovsk-Kamchatka at 1200 with IS, ID and talks in JJ. (Brossell, WI) 5925-Krasnodar in RR at 2135. (Patterson, Philippines) 6115-Khabarovsk at 1452 in Mandarin and 7320-Magadan in RR at 2218. (Ronda, OK) 7130-St. Petersburg in AA at

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Another QSL from Radio Damascus verifying its German service. (Thanks, Paul Gager, Austria)

1738. 7335-Chita in RR at 0338 and 9840 in EE at 0459. //7335-Chita. (MacKenzie, CA) 7150-Armavir at 0521. (Wood, TN) 9435 in RR with nondescript contemporary music to the Caucasus area. (Taylor, WI)

RWANDA—Radio Rwanda, 6055 at 2045-2100* with Euro-pops. FF talk. Off with short instrumental bit. (Alexander, PA) 2210 with FF talks. (Ng, Malaysia)

SAO TOME—VOA Relay, Pinheira, 4960 in Hausa at 0312. (Parker, PA)

SAUDI ARABIA—BSKSA, 15250-Riyadh in EE at 1207. (Patterson, Philippines) 15380 in AA at 1340. (Brossell, WI) 17895 with AA. Koran at 0650. (Ng, Malaysia)

SERBIA—International Radio of Serbia, 7200 at 1310 on the European Union. (Maxant, WV)

SEYCHELLES—BBC Relay, 11860 with a sports round-up heard at 1655. (Brossell, WI)

SLOVAKIA—Radio Slovakia Intl, 7345 heard at 1940 with EE feature. (Maxant, WV)

SOLOMON ISLANDS—SIBC, 9541.5 heard at 0700 opening with "Hello, good evening..." and EE news, f/by mostly country tunes. Mostly poor. (Schieffelbein, MO) 0750 with mostly local island music. Talk in Pidgin at 0755. EE newscast at 0830. Poor to fair. (Alexander, PA) 9542 heard at 2130. (Patterson, Philippines)

SOUTH AFRICA—Channel Africa, 7230 on Russian gas/oil at 0445 and 7390 at 0305 ending news and into vocals. Also 9735 at 0535 on cholera in Africa and 15235 at 1705 on gold prices. (Maxant, WV) 7390 at 0317 with domestic news. (Brossell, WI) 9745 with African music at 0535. (Barton, AZ) 9750 at 0550 with news. (Parker, PA)

Radio Sondergrense. 3320 with soft instrumentals at 0310. (Brossell, WI) 0353 with country tunes. (Ronda, OK)

SOUTH KOREA—KBS World Radio, 3955 in GG at 2055. (Gay, KY) 7275-Kimjae in KK at 0940. (Patterson, Philippines) 9805 with presumed news at 2307. (Strawman, IA) (PWBR shows lang. as AA.—gld)

SPAIN—Radio Exterior de Espana, 3350 Costa Rica Relay in SS at 0427 and 17850 Costa Rica in SS at 1810. (MacKenzie, CA) 3350-Costa Rica in SS at 0535 and 9765 with SS M/W talks, pop bridges at 0122. (Parker, PA) 6005 at 0002 with EE phone-in pgm. (Fraser, ME) 6055 with EE news at 0000. (Maxant, WV) 6125-Nobeljas at 2200 with *Radio Corner* at 2200. (Ng, Malaysia) 9535 in SS at 0245 and 15385 in SS at 1645. (Wood, TN) 11910 via Xi'an, China, with SS talks at 1255. (Brossell, WI) 15585-Nobeljas in SS at 1220. (Patterson, Philippines)

SUDAN—Republic of Sudan Radio, 7200 in AA at 0537 with AA talk and mix of ME and Sub-Saharan music, mentions of Khartoum. (Wood, TN)

Radio Dabanga, 13800 via Madagascar with AA talk, ID jingles heard at 0515, //7315 via Germany, poor due to a strong tone on the frequency. (Alexander, PA)

SWAZILAND—Trans World Radio, Manzini 3240 at 0326 in vernacular, EE ID at 0339. (Wood, TN) 4775 in listed Lomwe at 0340. (Strawman, IA)

SWEDEN—Radio Sweden Intl, 5840 in Belarusian at 2110 and 11675 in Swedish at 1310. (Patterson, Philippines) 9895 via Madagascar on child labor exploitation at 2050. (Fraser, ME)

SYRIA—Radio Damascus, 9330 at 1835 with ME music, GG talk, ID, FF at 1900 and abrupt close at 1900. Must use ECSS-LSB to avoid WBCQ after their 1858 sign on. (Alexander, PA) *News and Views* in EE at 2115. (Gay, KY)

TAIWAN—Radio Taiwan Intl, 3965 via France with M in GG at 2105. (Gay, KY) 7185-Kohu in Mandarin under ARO chatter at 1420. (Ronda, OK) 7445-Yunlin in Thai at 2225. (Patterson, Philippines) 11885 via Florida in SS at 2305. (MacKenzie, CA)

TANZANIA—Radio Tanzania, Zanzibar, 11735 heard at 1800 with EE news "Spice FM" relay. (Alexander, PA) 1834 with an interview in Swahili. (Brossell, WI)

THAILAND—Radio Thailand, 12095 heard at 0045 with review of upcoming local events, weather and national anthem, into Thai service. (Alexander, PA)

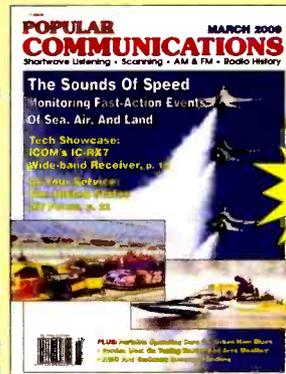
TUNISIA—RT Tunisienne, 7190 in AA at 0523 and 12005 in AA at 1903. (Brossell, WI) 9720-Stax in AA at 0445. (Parker, PA)

TURKEY—Voice of Turkey, 6050 with Turkish classical music at 2000. (Fraser, ME) 9700-Emirler in TT at 0501. (Parker, PA) 9785 at 1825 going into EE also 15450 with Turkish songs at 1307. (Brossell, WI) 15350-Emirler in TT at 1212. (Patterson, Philippines)

UGANDA—Radio Uganda, Kampala, 4796 monitored at 0334 in vernacular with local

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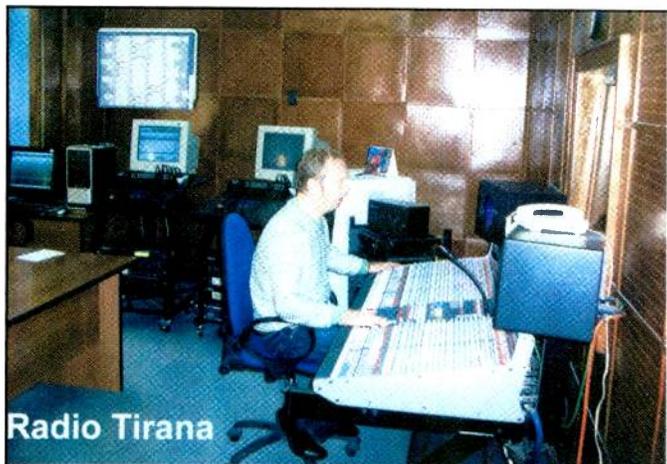


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How times change! Radio Tirana actually sends QSLs showing its control room! (Thanks Paul Gager, Austria)

music, very weak. (Parker, PA) 2302 with group chorals in vernacular. (Brossell, WI)

UNITED STATES—VOA, 7235 Philippines Relay with presumed news at 1443, 9380 Thailand Relay with VOA Deewa service in Pashto at 1420 and 9490 Philippines with news at 2320. Also 9720 via Rwanda in Indonesian at 2205 and 9875 Northern Marianas relay in (p) Chinese at 2203. (Strawman, IA) 7495 Sri Lanka relay in (l) Pashto at 1312, 9345 Philippines at 1320. (Brossell, WI) 11920 Thailand Relay in CC at 1246 and 15565 via England in RR at 1308. (Parker, PA)

Radio Free Asia, 5810 via Tinian in Mandarin at 2115, //7355 via Taiwan and 9875 via Palau. (Alexander, PA) 9320 via Sri Lanka in (l) Burmese at 1301. (Brossell, WI) 11795 Sri Lanka relay in Burmese at

1340, (Parker, PA) 15550 Northern Marianas relay in CC at 2318. (MacKenzie, CA) 11945 via Tinian in Mandarin at 1615. (Strawman, IA) 17515 via Tajikistan at 0600 with ID, open in Tibetan. (Ng, Malaysia)

Radio Liberty, 9520 via Philippines in RR at 0915. (Ng, Malaysia)

Radio Marti (to Cuba), 9565-Greenville in SS monitored at 2225. (Patterson, Philippines)

Radio Farda (to Iran), 15690 via Sri Lanka in Farsi monitored at 1235. (Patterson, Philippines)

Sudan Radio Service, 17745 via Portugal with EE IDs, *Let's Talk* pgm about local developments in Sudan. Into AA at 1530. (Alexander, PA)

AFN/AFRTS, 5446.5u at 0205. (Parker, PA) 0413. (Wood, TN)

Trans World Radio, 7215-South Africa at 0331 with an apparent sermon in Hausa. (Brossell, WI) 11640 at 0610. Uncertain site. (Wood, TN)

Family Radio/WYFR, 6240 via Moldova heard at 2135. (Patterson, Philippines) 7165 via Russia in EE at 1400, (Ng, Malaysia) 9855 via Dhabbaya, UAE, heard at 1428 in listed Marathi. (Ronda, OK)

WWRB, 3185 monitored at 0430. (MacKenzie, CA)

WRNO, 7505 with news and gospel singing at 0200. (Maxant, WV)

KJES, 11715 at 1635 with children singing. (Barton, AZ)

VATICAN—Vatican Radio, 5885 in SS at 2125. (Patterson, Philippines) 7250 at 0601 with EE discussion, excellent level. Also 7360 at 0638 with African Service, talk of Somali pirates and coups in various African countries. (Wood, TN) 7305 at 0250 about the pope's travels and 9645 at 1715. (Maxant, WV) 9600 in VV at 2345 and 15235 at 1315 in VV. (Ng, Malaysia) 1540 with pgm *Right or Wrong?* (Brossell, WI)

VIETNAM—Voice of Vietnam, Son Tay, 7370 via Wooferton in VV at 2220. (Patterson, Philippines) 9840 in EE with news at 1240. (Parker, PA) 2349 suddenly rising up through the noise to almost good status and declined almost as quickly. (Strawman, IA) 2350. (Ronda, OK) 12020 with *Letterbox* at 1245. (Ng, Malaysia)

VENEZUELA—Radio Nacional, 11680 via Cuba in SS at 1414 when they went into EE. (Barton, AZ) 13680 via Cuba in SS at 2340. (MacKenzie, CA)

YEMEN—Republic of Yemen Radio, 9780 monitored at 0411 with M/W AA anners. (Parker, PA) (t) With AA talk and some ME music at 1845 and abrupt sign off at 1903. (Alexander, PA) 2008 mixing with VOA in FF via Sao Tome. (Strawman, IA)

ZAMBIA—Radio Zambia, 5915 at *0248 sign on with fish eagle IS, choral anthem, vernacular and more choral music. (Alexander, PA) 0345 with continuous high-life music and some slower hymn-like songs. (Schiefelbein, MO)

The Voice-Africa, 4965 at 0304 with Bible teaching. (Brossell, WI) 2320 with gospel soul, heavily accented M DJ. (Parker, PA) 7160 with religious music at 0435 and 9430 at 1945. (Maxant, WV) 13650 in EE at 1607 with contemporary Christian music. (Taylor, WI) 15160 via Uzbekistan monitored at 0925. (Patterson, Philippines)

ZIMBABWE—ZBC, 3396 with long conversation at 0338. (Ronda, OK) 4828 at 0201 with high-life music. (Brossell, WI) 0406 with local music. (Parker, PA)

And that's a wrap! Here are the good guys who cruised the bands and shared their results this time: Brian Alexander, Mechanicsburg, PA; Robert Wilkner, Pompano Beach, FL; Joe Wood, Greenback, TN; Chris Gay, Lexington, KY; Charles Maxant, Hinton, WV; George Zeller, Cleveland, OH; Gene Patterson, Gibsonsia, PA; Jim Ronda, Tulsa, OK; Jerry Strawman, Des Moines, IA; Mark Schiefelbein, Springfield, MO; Rick Barton, Phoenix, AZ; Robert Fraser, Belfast, ME; William Hassig, Mt. Prospect, IL; Robert Brossell, Pewaukee, WI; Peter Ng, Jahore, Malaysia; Stewart MacKenzie, Huntington Beach, CA; Chris Lobdel, Tewksbury, MA; T.C. Patterson, Cebu, Philippines; and Mark Taylor, Madison, WI. An excellent turn out and heartiest thanks to all of you!

Until next month, good listening!



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Keeping Lightning At Bay

by Kent Britain, WA5VJB
wa5vjb@cq-amateur-radio.com

“Avoid learning your own lesson the painful way and be sure to make the parts of your antenna, especially the driver element or a whip, the attach point for your dissipater.”

Pop'Comm has devoted many pages of this issue to the extremely important topic of lightning and lightning protection. While even commercial antenna systems can still be taken out by this “Act of God,” there are several ways to help protect your equipment when lightning strikes. But in this column, let's expand on the cover feature a bit to look at ways to minimize the chances of getting hit by a strike in the first place.

These days, most towers have static electricity or lightning dissipaters on them. If you look closely at the top of the tower in **Photo A**, you'll see four rods with what looks like a flower at their tips. This is an 1,840-foot tower with a 10-foot-wide face, and those “flowers”—the dissipaters—are nearly a quarter mile away.

The petals of these flowers have upturned tips with lots of sharp points, with the idea being to dissipate the static electricity charge around the tower. This doesn't mean that the tower will never

get hit by lightning again, but it does mean a 90-percent reduction in the number of lightning hits.

The Challenge Of Extremely High Voltages

Ever note how very high voltage circuits have large rounded surfaces? You've probably seen a photo of a Van der Graaf generator, that thing with a big round, smooth ball on top, as sketched in **Figure 1**. Because the electric field concentrates around any sharp points and easily dissipates the electrical charge, dirt, dust, and sharp points have to be avoided.

If you've ever played with a Van de Graaf generator or a Tesla coil, you know that just setting a thumbtack on the top will concentrate all the corona or sparks around its sharp point and dissipate the voltage. It makes sense, then, if you don't want any high voltages collecting on something, then you just need a lot of sharp points!

D-I-Y Dissipaters

In **Photo B** we have an easy-to-build lightning dissipater. In this design, I just used the shield-

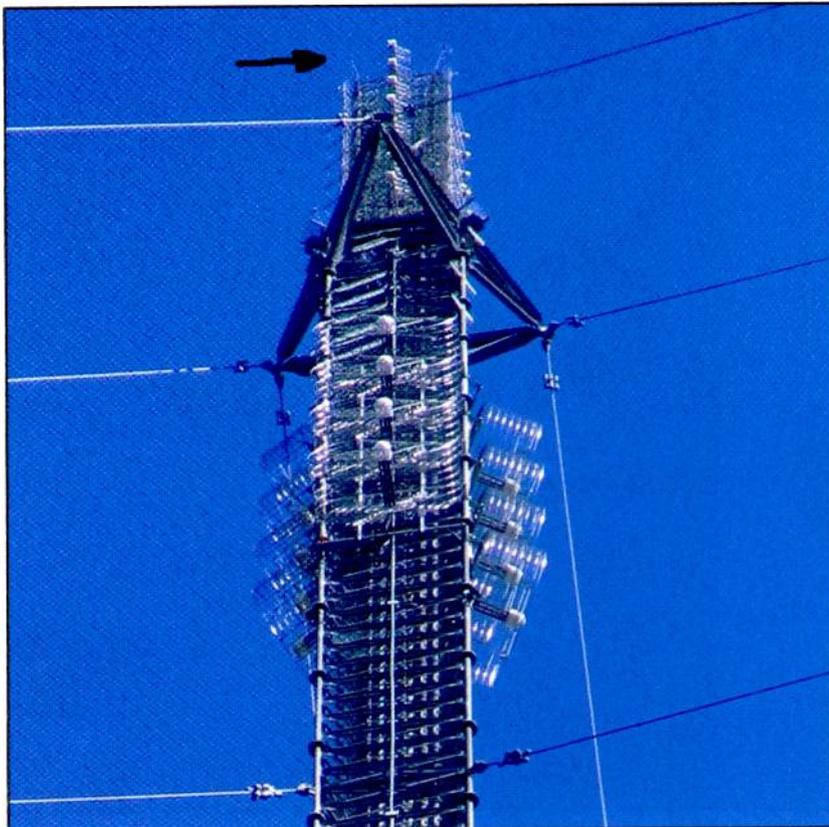


Photo A. 1840-foot tower with lightning dissipaters.

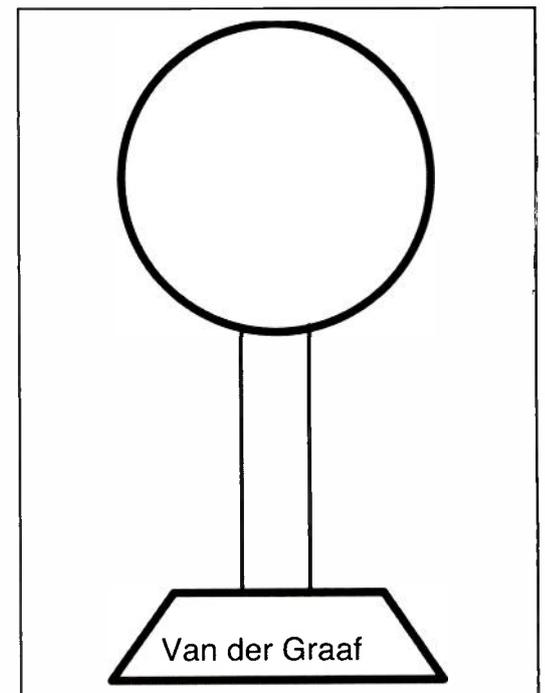


Figure 1. Rounded dome of a high-voltage Van der Graaf generator.

ing braid off some old coax, spreading out the ends, a bit of aluminum tubing or rod, and a hose clamp. To put it to work, just mount it as high as practical and make sure the rod has a good connection back to grounded metal. This will dissipate that static charge and lower the chances of a lightning strike.

In the category of "Lessons Learned," here's an aside for you. Oh, did I ever make a mistake on my first dissipater. I had this "brilliant" idea that the tip of my 2 meter vertical was the highest point, so I would just make the tip of that vertical my dissipater. Bad (not brilliant) idea! As the tips of those wires dissipated the static charge, there were constant small electric arcs. The noise floor was horrible on dry days. Ever hear the motor noise of an electric razor on your radio? Imagine making the electric razor your antenna.

Avoid learning your own lesson the painful way and be sure to make the parts of your antenna, especially the driver element or a whip, the attach point for your dissipater. Bolt the rod of the dissipater to your mast or tower with a good solid elec-

trical connection. Fellow ham WB5LBT used to have one of his dissipaters on its own wire to ground and would put a milliamp meter in series with it. That meter would swing up every time a low cloud passed by. That current certainly showed that the dissipater was doing its job.

In **Photo C** you see some typical lightning protectors, comprised of two plates with an easily ionized gas between the plates. By controlling the gas, and occasionally a little radioactive alpha emitter isotope in there, the voltage at which the protector breaks down can be controlled from 60 volts to 350 volts for most common protectors. Surge currents of 1000 amps can shunted to ground.

The three-lead surge protector shown in that photo is commonly used in the telecom industry. The center lead is connected to ground, and the two outside lines go to the "twisted pair" phone lines. There's a small hole in the center spacer, so if one side fires from a voltage surge, some of the plasma passes through this hole and fires the other side as well. This way both wires in the phone line are grounded at the same

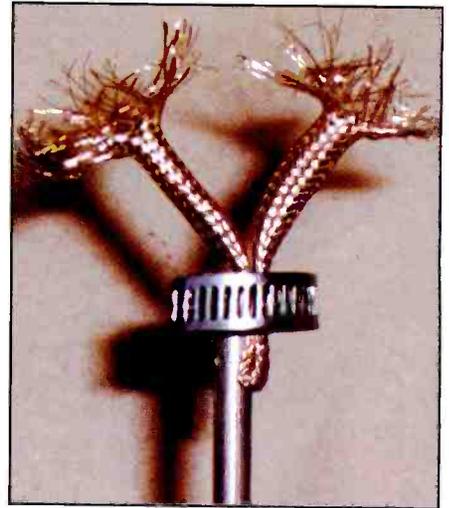


Photo B. Homebrew lightning dissipater.

time during a lightning strike. For antennas these work just fine. Simply connect the center terminal and one side terminal and use it like the two-lead protector shown at the top of the photo.

While it may sound like a good idea to put one of these across the power line to

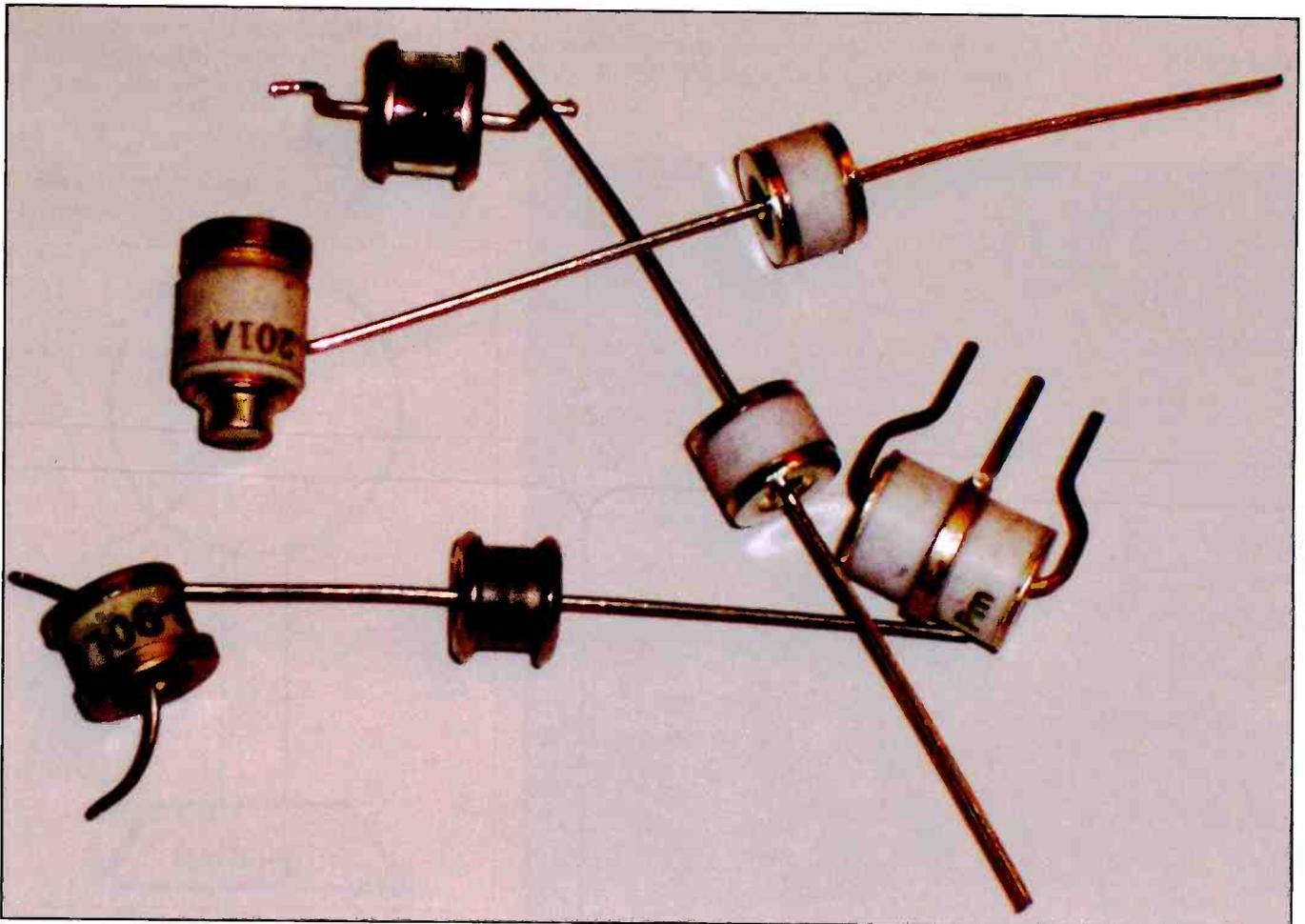


Photo C. Gas lightning discharge tubes.

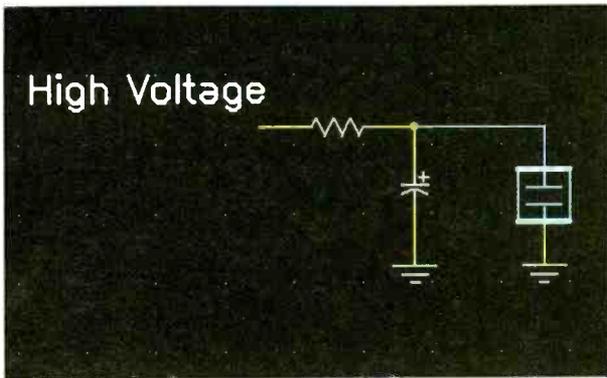


Figure 2. Gas discharge tube stress circuit.

protect equipment, I can assure you, you don't want to. While it takes 350 volts to fire the protector in the photo, once it fires, it goes to almost 0 ohms and tries to short out the local power substation. Lots of sparks, smoke, and noise. As they say, I've been there, done that, and don't want to do it again!

I wanted to have some fun with these gas discharge tubes, so I built up the circuit in **Figure 2** and did some "stress testing" of a couple of those lightning protectors shown in **Photo D**. The old-timers out there will recognize this as the circuit for a relaxation oscillator. The capacitor slowly charges up, reaches the firing voltage of the discharge tube, or in the old days, an NE-2 light. The

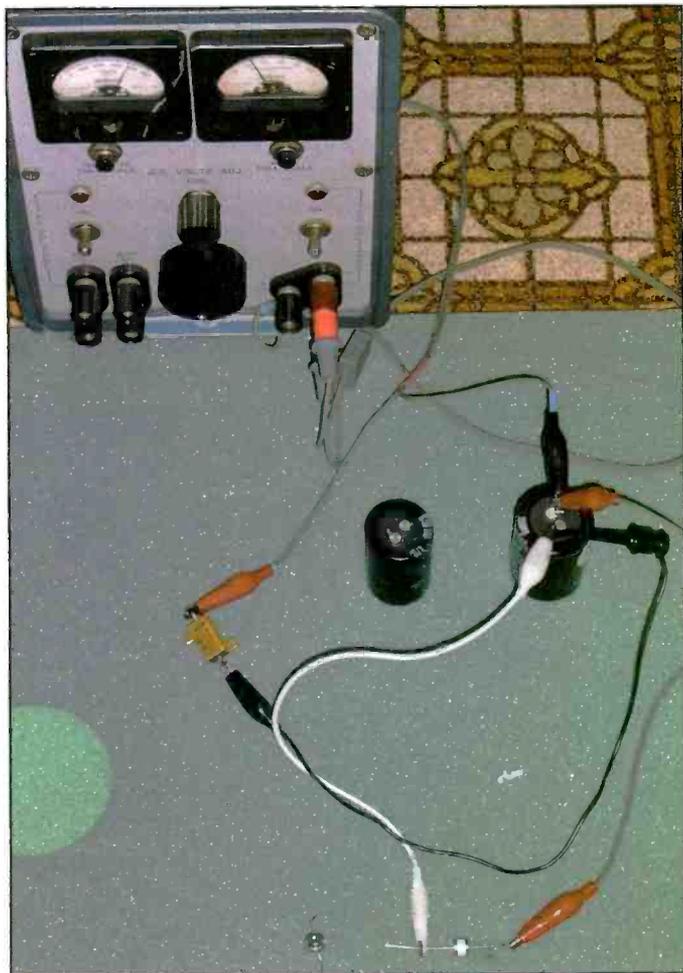


Photo D. My gas discharge tube stress tester.

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tube fires, the capacitor voltage drops close to 0 volts, discharging though the ionized tube, the discharge tube shuts down, and the capacitor starts charging again.

The resistor controls how fast the tube fires; at 10K ohms the rate was about every four seconds. The capacitor determines how much energy is discharged through the discharge tube. I used a 47 μF capacitor (you can go as low as .1 μF) and it briefly flashes; over 100 μF , the tube will not last many flashes.

NOTE: Guys, be very careful if you feel the need to duplicate this circuit—we are talking some very serious voltages here. I was using about 350 volts.

In **Photo D** you see where I finally caught a flash. A lot of purple and UV in there. It took about two dozen tries to get the shutter and the flash to happen at the same time. (Oh, for the good old days of 35 mm and time exposures.)

An even simpler anti-static accessory for your station is shown in **Photo E**. Start by taking an ohm meter and measure your antenna. Some will read near 0 ohms, and that's fine for antennas with loops in their active elements. If it reads several Megaohms, you have the potential for sta-

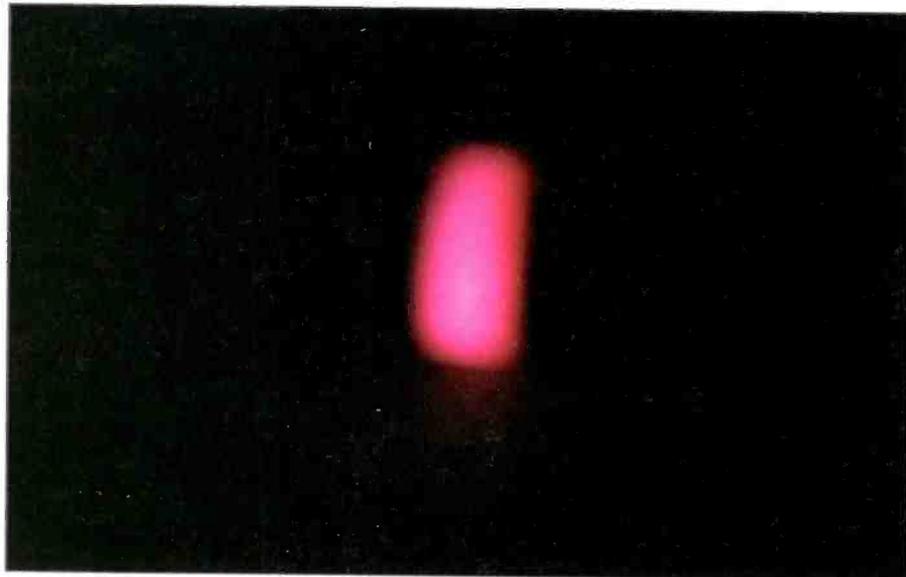


Photo E. Gas discharge tube doing its job.

tic charges to build up on the antenna. Now measure the resistance of your scanner or SWL receiver across its coax connector. If it reads from 0 ohms to a few K ohms, again you're okay.

If, however, the antenna connection reads several Megaohms to ground or its chassis, and the antenna reads several Megaohms, then there's no way for static charges to dissipate. You just need a resistor in the 10 K ohm to 50 K ohm range and some ingenuity. With older radios it's easy enough to put the resistor across the coax connector inside the rig, and most older radios already have such a resistor. It seems that most of my Heathkit radios had a resistor across the coax connectors.

You can put this static bleed resistor

inside an antenna switch, preamp, or pre-selector as well. You can also use an old coax connector and a "T" connector, with the antenna to one side of the T connector and a resistor on the other side of the T. Now that pop, pop, pop you often heard when a hot dry wind was blowing will be gone.

What's On Your Mind?

As always, we welcome your questions, suggested construction projects, and possible topics for future columns. Please drop me an email at wa5vjb@cq-vhf.com or you can also visit www.wa5vjb.com for additional antenna projects. We always look forward to hearing from our readers. ■

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Photo F. Simple static dissipater for SWL radios and scanners.

The "e-Approach" To The QSL Quandary: Taking It Online

by Dan Srebnick, K2DLS
k2dls@arrl.net

One recent afternoon I heard PG6G calling CQ on 20 meters. I responded to his call and informed him that I was impressed with his signal strength. He was the strongest Dutch station I'd heard since I last listened to a transmission of Radio Nederland Wereldomroep from Flevo. The irony of the moment was best expressed when the operator, Peter, responded that he was located at the RNW transmitter site in Flevo and that his antenna was an eight dipole curtain array with 22 dB gain, formerly used to transmit to North America. Flevo, the once-mighty transmitter site of one of the all-time shortwave favorites has become a field day site for hams.

Query The Zed

Historically, the *Radio Amateur Callbook* was the way a ham could obtain contact information for a ham located in another country. The *Callbook* is still available on CD, but a lot of hams are using qrz.com. Found on the Web at www.qrz.com, qrz is an online forum catering to amateur radio operations around the world.

There are the usual forums, for sale/wanted listings, and news items, but the main attraction for many is the callsign lookup. When I "qrz" PG6G, I saw a nice image of its QSL card (**Figure 1**). It features the Radio Nederland curtain array used for its recent operating event. Typically, licensee name, address, email address, and QSL route are listed as well. Some ops add a personalized biography and links to external websites. For U.S. hams, FCC license information is also included.

The QSL Challenge

SWL's have lately lamented how poor their QSL return rate has become. As my received country count goes up, I too have noticed that my return rate has gone way down. I've tried everything, from "green stamps" to International Reply Coupons (IRCs) to including a CD recording of the station along with the report. The definitive list of shortwave broadcast countries for SWLs is the North American Shortwave Association (NASWA) Country List, available at www.naswa.net/list. One glance through the list may convince you that the days of verifying 200-plus shortwave broadcast countries are gone forever.

Some stations, especially hobby pirates, have taken to QSLing via email. Sometimes the email is a simple statement of verification, but could include a graphic image of a QSL or a certificate that the recipient can print out. A few pirates don't publish a mailing or even an email address, but respond to reports left online at the Free Radio Network website (www.frn.net). Some brave online posters publish their mailing address in reports left on the website, but others provide an email address to make contact. International SWBC stations often publish a form on their website where a listener can leave a reception report and receive a paper QSL in the mail.

QSLing online has become a niche in SWL circles, but has really taken off in the amateur



Figure 1. QSL card of PG6G, operating from the former RNW Flevo site.

radio world. ARRL issued awards, such as Worked All States (WAS) and DX Century Club (DXCC), require that the applicant provide QSL proof of a contact. Printing and mailing QSL cards around the world becomes quite expensive. Hams save money by using the QSL Bureau to send cards in bulk; however the downside is that this method is slow. It can take two years for a QSL to show up in the mail. Online QSLing provides that sense of instant gratification, lessens the time necessary to apply for and obtain awards, is more convenient and less expensive than the snail mail method. So this month, we take a look at online QSL methods for radio amateurs.

The Online Approach

There are three major approaches to online QSLing in the amateur radio community, and each has its advantages and disadvantages:

Logbook of the World: www.arrl.org/lotw
 eQSL: www.eqsl.cc
 Global QSL: www.globalqsl.com

Logbook Of The World

If ARRL-issued awards are what motivates you, Logbook of the World (LOTW) will be of interest. This is not exactly an electronic QSL card. LOTW is more of a contact matching ser-

“QSLing online has become a niche in SWL circles, but has really taken off in the amateur radio world.”

vice. It does not provide an image of a QSL that you can view or print out. It is also the most complex of the three online methods to start using, but it is the best bet for obtaining the DXCC or WAS certificate for the wall of your shack. The first thing to do is to read the “Getting Started” PDF file at <http://arrl.org/lotw>.

The folks at the ARRL seem to be very concerned about fraudulent submissions to the LOTW system. In an effort to maintain the integrity of the logs submitted online, they have come up with a digital signature system. This is the part that new users seem to have the most difficulty with, so we’ll list the steps necessary to get started:

1. Download the software
2. Create a certificate request
3. Upload the request
4. Authenticate your request
5. Load the certificate
6. Backup the certificate

All of this is covered in great detail in the Getting Started document, and if it sounds like the ARRL has put in place what

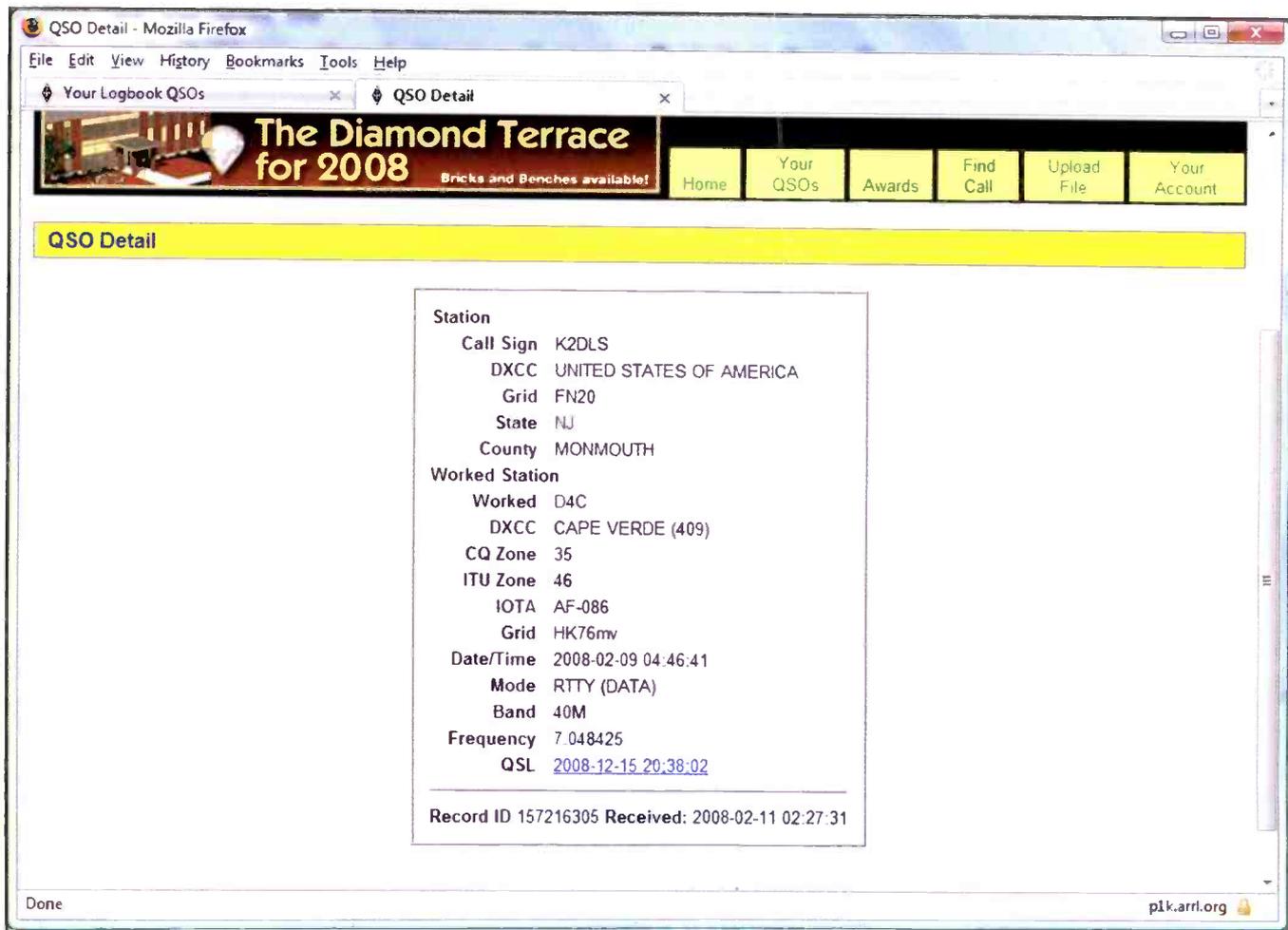


Figure 2. An LOTW “QSL” for a 40 meter RTTY contact between K2DLS and D4C.

HC2GF
 Francisco Diaz Granados A. | Los Olivos | GUAYAQUIL - ECUADOR,
 09-06-122
 Ecuador | Loc:FI07BU ITU:1.2 CQ:10
 QSL DIRECT PO BOX 09-06-122 | EPC#3828 DMC#122 OMC#195

To: K2DLS This confirms our 2-way SSB QSO
Date: July 22, 2008 Time: 23:13 UTC
Band: 10M UR Sigs: 55

Figure 3. Who says 10 meters is dead? EQSL from HC2GF contact in July 2008!

information technology folks refer to as a Public Key Infrastructure (PKI), you're not too far afield. Step 4 is the one that many new LOTW users find annoying. The League authenticates you by snail mailing a postcard to your FCC address of record. The postcard contains a code that needs to be entered on the LOTW website to authenticate you—in other words, to prove that you are YOU! While some believe this step ought to have no place in an online QSL methodology, LOTW has gone to great pains to maintain the credibility of its offering.

Now that you're registered to use LOTW, it's time to upload your logbook. I use Ham Radio Deluxe (HRD) for my online logbook, but any log program that supports exporting of ADIF files is acceptable. Select the contacts that you want to upload and export them to an ADIF file. Then sign the ADIF file that you just exported using the free LOTW "Trusted QSL" software. Finally, upload your contacts to the LOTW website. This is where the fun begins. If the other party to your QSO has already uploaded his logs, an electronic "QSL" results. This "QSL" now counts towards WAS or DXCC, and you did not have to mail, print, or write anything! Click on the details caption, and the full contact information appears, as shown in Figure 2.

My QSL return rate via LOTW currently runs at about 24 percent. I find that for digital mode contacts, such as PSK31 and RTTY, the rate runs even higher. It seems that digital mode operators are great fans of LOTW. Contest operators

also seem to upload their logs to LOTW in great numbers. When it comes time to apply for an award, you can apply online. Other awards, such as VUCC (VHF/UHF Century Club) are supposed to be added soon, but I've been using LOTW for a couple of years so far and have seen no new awards added yet. It is possible to apply for an award using only contacts that appear in LOTW, but it's also possible to apply for an award using a combination of LOTW credits and paper QSLs. In this case, the paper QSLs need to be field checked by your local ARRL affiliated club or mailed into Newington, Connecticut, for checking by HQ.

Some DX cluster software will even flag DX that is known to upload to LOTW. This is the case, for example, with the VE7CC cluster software available at no charge from www.ve7cc.net. There's also a page where LOTW users can setup scheduled contacts, called "skeds," at www.obriensweb.com/sked. The new Triple Play award, based only on contacts verified through LOTW from 2009 onward has generated a lot of interest. It has also put a strain on the LOTW website, and sometimes it is not responsive or returns a message that there are too many users connected.

eQSL

eQSL is another popular online QSL service. Some folks like eQSL because you can view and print a graphic image of a "real" QSL. This service has been online for 10 years now. It is easier to register for eQSL than for LOTW, because

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there is no “digital signature” to deal with, and there are four different “authentication” options:

1. Mail an authentication code
2. Scan and upload your ham license
3. Leverage LOTW (be careful!)
4. Have three other eQSL users vouch for you

In order to leverage your LOTW authentication, you have to give eQSL your LOTW password. There’s nothing they can actually do without having your digital certificate from LOTW other than log on and verify that you are YOU, but my recommendation is to either avoid this option or to change your LOTW password immediately after using the LOTW authentication option.

The downside of eQSL is that the ARRL steadfastly refuses to accept any eQSLs for awards. Some believe that this is because the ARRL does not want the competition, but the official ARRL position is that eQSL is not as secure as LOTW because it lacks the PKI digital signature component. The ARRL position stems from its assertion that a paper QSL is signed by the issuing operator. While this is not always the case, that is the League’s position. Some claim that they have printed eQSLs and successfully submitted them for ARRL awards.

However, eQSL is a vibrant online community unto itself, and as such offers its own DX awards, such as eDX100 and eWAS. It is also incredibly easy to upload contacts. HRD supports direct upload to eQSL immediately upon logging a contact, so nothing could possibly be easier. If your logbook software does not support auto upload, you can always upload an ADIF file of your contacts. eQSL also allows for personalized comments on each card, and has email integration functions that can be used to notify you of new QSLs. **Figure 3** shows a nice eQSL that I received for a 10 meter contact with Ecuador last July!

Global QSL

Global QSL is a true hybrid solution. Its website, at <http://globalqsl.com>, allows hams to upload their logbooks and then have Global QSL print and mail the resulting QSL cards (**Figure 4**). The cards printed by Global QSL are of very high quality and the cost is quite reasonable, if you take into account that you don’t have to print or mail anything. A potential user, especially in the U.S., should understand

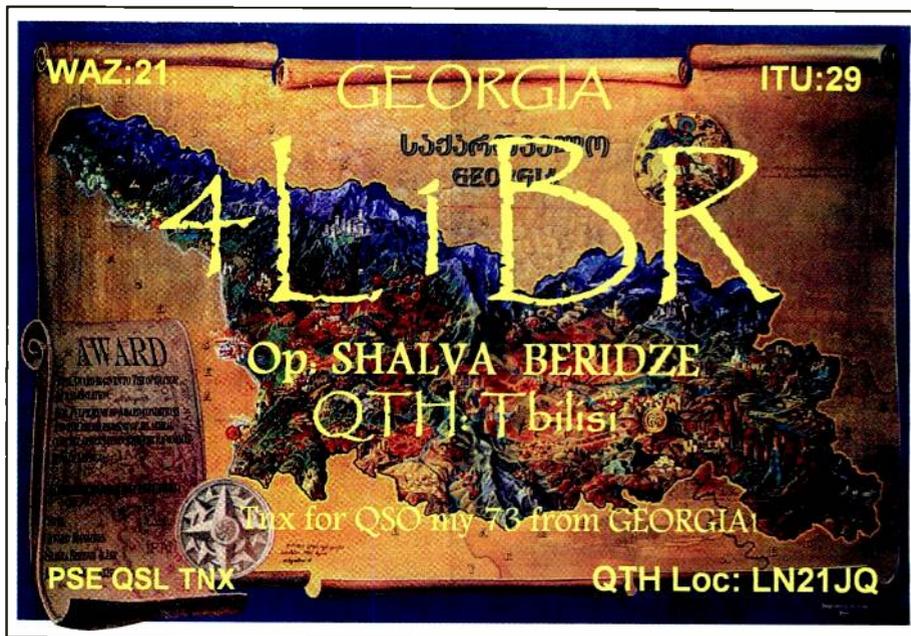


Figure 4. Global QSL from 4L1BR of Georgia, but I don’t think he’s from Atlanta.

upfront that this is a solution mainly to provide hardcopy QSLs for overseas contacts where the operator might otherwise use the QSL Bureau to send out cards. Do not plan to use this solution for U.S.-to-U.S. QSL cards.

The main reason that the solution does not work for domestic QSOs has to do with the rules of the ARRL inbound QSL Bureaus. They don’t allow use for U.S.-to-U.S. verifications, as they were designed to offset the cost of mailing QSLs to and from overseas locations. In the early days of Global QSL, it was not entirely clear to some users that it would not work for U.S.-to-U.S. contacts, as Global QSL is located in and mails its cards from Israel. While some domestic QSLs have been reported to be successfully delivered through this method, many have reported the receiving bureau returned cards to the sender.

For overseas-bound QSLs that go via the Bureau, this is a great solution. Use the Global QSL Graphic Editor (free on their website) to design your QSL, purchase QSL credits, and upload your design and ADIF file to its website. It’s that easy. Within 60 days, Global QSL will print your cards and send them to the Bureau that handles the callsign prefix for your recipient. Sixty days is an outside maximum—bureaus that accumulate 100 or so cards will get their QSLs shipped well before that time frame. This is not a QSL solution for the impatient; however, the impatient ham is not likely to be making much use of the QSL Bureau.

The operators of Global QSL are responsive, provide good online support via email, and host message forums to provide technical support. There are options to have QSLs that Global QSL receives for you to be expedited (at an additional charge) and some specialty clubs, such as 10-10 have joined Global QSL. This is one loophole that 10-10-affiliated U.S. users can take advantage of to get around the ARRL rules, as QSLs bound for the 10-10 Bureau would bypass the ARRL Bureaus. Global QSL supports both two-way amateur contacts as well as ham-to-SWL QSLs, although SWL reports must be manually entered rather than uploaded as part of an ADIF. I do get SWL reports from time to time, and always take the time to respond with a QSL.

Newsbit

A lot of ham-related Web hosting had been done on the qsl.net and qsl.com websites, run by K3TKJ. Al is retiring, but is passing the torch (and URLs) on to Scott Neader, KA9FOX, who runs the well-respected qth.com website. Scott intends to keep up the tradition of using the qsl.net and qsl.com URLs to provide hams with no-cost webhosting and emails, but he always appreciates donations. [Qth.com](http://qth.com) has been providing hams with free classified ads to sell and buy equipment and is a haven from more commercial online auction sites.

That’s it for this month. Until next time, 73 de K2DLS.

Trivia And Toons

by R.B. Sturtevant, AD7IL

Q. Before World War II Japan had some hams in the country, but not nearly as many as America did, per capita. Did the Japanese military **have** any trouble finding enough radio operators to fill their wartime needs?

A. Not really. Totalitarian governments tend to discourage hams and therefore often do wind up in war with too few military radio operators. However, in 1923 Japan suffered a great earthquake that destroyed much of Tokyo and Yokohama. To cut costs in order to rebuild infrastructure, the military laid off a large number of career officers and NCOs. The militarists found work for these old soldiers, indoctrinating the youth by including regular military training in the school system to encourage "right thinking." One of the subjects taught, along with using searchlights and mortar operation, was wireless communications. When World War II began (in September 1931 when Japan invaded China) anyone with any talent for the subject was an experienced operator. They tended to be good operators but did not have the extensive background and creativity that come from years of amateur radio operation. American military radio operators, who came into the military with years of ham work behind them, had a more advanced skill set. The best estimates indicated that Japanese technology, based on captured equipment, was developmentally five years behind ours.

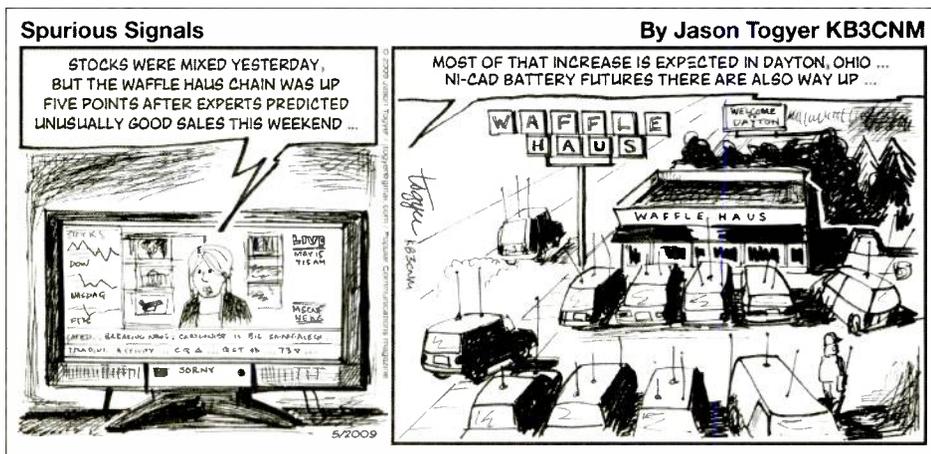
Q. What kind of communications did General MacArthur have when he was in command of the Korean Conflict?

A. Some people who were there tell me it was a war but... Anyway, MacArthur had a wide area to cover and did a lot of flying. He maintained good contact while aloft over there because he had good operators at his headquarters, working him on an SP-600, the latest model Army command radio. They had solid copy with his plane throughout the Korea-Japan area. An operator was also able to work MacArthur on his trip to Wake Island to meet Truman. Of course, Truman fired MacArthur on Wake and Mac went home, still in direct contact with his Korean command.

General Matthew Ridgeway was sent out to take over for MacArthur. The two planes passed each other en route but were unable to make radio contact. Both of them were worked by the Korean-based SP-600 that relayed traffic between the two planes for about two hours. Don't you wish you'd have been able to monitor those signals!

Q. What kind of operations were first used for communications in Vietnam?

A. Back in 1962 the 39th Signal Battalion was the first Army ground unit to be sent to Vietnam. It operated troposphere scatter radio relay equipment, which made multi-channel voice communications possible over extended ranges. This was the first time this type of advanced communications system was ever used to supply command and control in a combat environment. The 39th Signal also used HF radio to provide telephone and message traffic between Saigon and the Philippines, Okinawa, and Thailand. It operated an overseas telephone switchboard and a RTTY message center in Saigon. The 39th Signal's work demonstrated the truth of the old Army maxim: "Signals are the first ones in and the last ones out."



Outsmart That Dreaded Interference!

by Kirk Kleinschmidt, NTØZ
kirk@cloudnet.com

Astronomers build radio telescopes way out in the boonies for a very good reason: A distinct lack of neighbors, industry, power substations, high-voltage transmission lines, wireless routers, baby monitors, touch lamps, broadcast transmitters, and drive-through windows makes for a beautifully quiet RF environment. In such controlled conditions, the biggest interference problems may actually be internal. That is, the techs and scientists may have the most trouble keeping their computers and electronic gadgets from interfering with the site's highly sensitive receivers. Welcome to the modern age of radio!

The irony of a radio astronomy site interfering with itself might be easier to appreciate if similar situations didn't plague amateur radio operators on a daily basis. In addition to receiving interference from hundreds of electronic devices

in our personal "space," we also receive interference from our own computers, fluorescent lights, and computerized washing machines (computerized whatever), and by transmitting we can interfere with our own non-radio gadgets—and those of our neighbors!

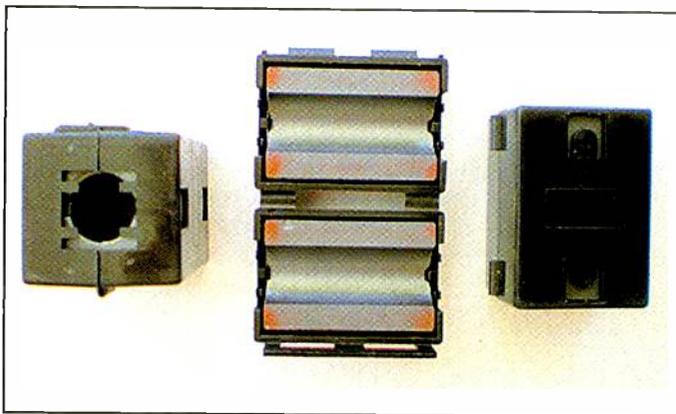
These days, everywhere we turn, the potential for interference (of any variety) looms large. And with all of the sneaking around we have to do in this era of deed restrictions and homeowners' associations (don't get me started), the potential is much greater. Try telling your townhouse association that a simple dipole in the backyard is a lot savorier than an attic (indoor) antenna from an interference standpoint. On second thought...

Heck, aside from fledgling technology, Marconi and his fellow radio pioneers had to overcome only natural obstacles, such as noise from thunderstorms and the effects of a capricious ionosphere. If Marconi's next-door neighbor had a new computerized washing machine that spewed tons of nasty RF from its unfiltered pulse-modulated drive motor and several smaller stepper motors, radio history may have unfolded quite differently!

Dark forces seem to be lining up against us, so we must be strong. Now that the economy has tanked big time, manufacturers have little incentive to spend the extra buck or two required to produce consumer products that can peacefully coexist in the shortwave space. And the FCC, which used to make at least some effort to enforce its own standards—or even come up with standards—seems to be focused on cost savings and the mess that is the transition to Digital TV. The Commission's budget for cleaning supplies and toilet paper probably exceeds its budget for enforcing EMI/RFI standards in the US market.

It's pretty clear that, as hams, we'll have to try to take care of ourselves. Fortunately, nobody knows more about RFI and how to fix it than hams!

Before we explore some solutions to RFI caused by your transmitter in this month's col-



Snap-on ferrite RFI chokes/filters, such as these split cores from www.darkwire.com.au, are an RFI-fighter's best friend. You can find them at your local RadioShack, any electronic-parts retailer, or from dozens of sellers on eBay. You open the plastic housing, place the ferrite core over the outside of a coaxial cable, and close the housing. For smaller cables, such as speaker leads or DC power cables, open the housing, wrap several turns of wire/cable through the inside of the core, and close, using a layer of electrical tape to keep the turns from loosening. Your RFI problems are over (or well on their way to being so).

"When interference becomes a problem, who's responsible? And who gets to fix it? The answers are varied, both technically and politically."

umn, let me introduce you to what is probably the best single source of information about interference mitigation for hams and SWLs alike, namely *The ARRL RFI Book: Practical Cures for Radio-Frequency Interference*, edited and shepherded by ARRL RFI guru Ed Hare, W1RFI. This jumbo reference, now in its second edition and sporting a green cover, is a comprehensive resource for fixing every imaginable interference problem in your home or mobile shack. If you're lucky, your local library will have a copy. Otherwise, plunk down the \$30 to get your own copy from your favorite ham radio bookseller or from the League's website at www.arrl.org. You'll use it forever. Copies of the red-cover first edition—still excellent—sell for less than \$10 at www.half.com.

The Political Blame Game

When interference becomes a problem, who's responsible? And who gets to fix it? The answers are varied, both technically and politically. Here are some factoids:

- Hams *must* operate in accordance with appropriate FCC regulations. Make sure your station equipment is properly installed, has a good RF ground, uses a good low-pass filter at the station output, etc.

- The FCC considers telephones, VCRs, and other consumer electronics devices that receive RFI to be *improperly functioning* as radio receivers. Despite your neighbors' protests, these design inadequacies are manufacturer issues.

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

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Want to watch distant UHF digital TV while giving your neighbors something to talk about? As detailed in last month's column, here's a massive, home-brew Gray-Hoverman UHF array being aimed and tested by ham-in-training Garrett Vrieze, of Rochester, Minnesota. It looks like a bedspring, but the phased array has 15+-dB gain and a wide beamwidth that just can't be achieved by Yagi-type directional antennas. (Photo by soon-to-be-ham Kevin Adler, the antenna's builder)

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

- FCC regulations require that ham transmitters not emit *spurious signals* that interfere with other *radio services*. This is a ham's sole *regulatory requirement*—and it doesn't apply to interference to non-radio consumer devices. If you mess up your neighbor's TV reception the FCC probably won't even blink an eye. If you interfere with your airport's instrument landing system, keep your front door open so the SWAT team won't have to break it down! In FCC-land there's a *big difference* between the two situations.

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

RF Cleanliness Is Next To RF Godliness

Before you get carried away, make sure that your transmitter *is* the cause of your problem. There's a lot of RF floating around out there. Run a few quick tests to see what bands, modes, and power levels are involved.

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

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

RFI issues "caused" by your transmitter come in three main flavors:

- *Spurious emissions (harmonics, mixing products, noise) and other unwanted signals generated by your transmitter.* Reducing transmitter power, using a low-pass filter or using certain antenna tuners can sometimes eliminate this type of interference.

- *Intermodulation and external rectification.* Poor-quality electrical connections (usually outdoors); corroded joints in downspouts, antenna towers or metal-sided buildings; bad solder joints in telephone systems and junction boxes—and a whole host of similar items—can radiate RF energy and harmonics when "excited" by your station's RF. These problems can be frustrating and difficult to track down.

- *Fundamental overload.* This is the most common culprit. Your transmitted RF (from your clean, perfectly engineered station) simply overpowers the affected device. Your signal might be "getting into" the affected system through antenna lead-ins, speaker wires, AC line cords, ground wires, or all of the above.

The Usual Cures

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

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

When RF from your transmitter is adversely impacting some other device,

the first step in solving the problem is determining exactly how the RF is "being received." Don't assume, for example, that a TV set is receiving unwanted signals through its antenna. Power cords, speaker wires, audio/video input and output cables, and ground leads can also receive RF.

Disconnecting the various "potential RFI antennas" is often the best way to start the tracking process:

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

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

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

To make a common-mode RFI choke, wrap a few turns of the cable, cord, or wire through an appropriately sized ferrite core as close to the chassis/connector end as practical, securing the windings with electrical tape if necessary. This will often reduce or eliminate the RFI and will let you know whether you're on the right track. Curing severe common-mode RFI

may require chokes on several cables or interconnects (AC power, antenna, A/V inputs, etc).

- For stereos and PC sound systems, to determine whether the radio portion of the system is experiencing problems from harmonics or front-end overload, disconnect the antenna. If the interference disappears, install a high-pass filter at the antenna terminal (50 ohm for coax, 300 ohm for twin lead).

If the RFI is still present, leave the high-pass filter in place and begin the search for common-mode culprits per above. Disconnect cables and speaker wires and reconnect one at a time to pinpoint the trouble spot(s) and apply/wind common-mode chokes as necessary.

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

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

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

RFI Is Here To Stay

Unless you live far from civilization, RFI is here to stay, and you will need to treat its symptoms for as long as you're a radio hobbyist. With more and more people receiving digital TV "over the air," the protection afforded hams by the widespread use of cable and satellite TV systems may be only a pleasant memory. Your neighbor's 50-inch LCD TV may produce a spectacular picture, but if it's connected to an outdoor high-gain TV antenna with a 25-dB preamplifier (designed to be inexpensive and missing the few parts that could dramatically improve its ability to survive in a modern RF environment), you're going to have an issue. Trust me! ■

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More About Solar Cycles (Is The Sun Dying Or What?)

by Tomas Hood,
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There's been speculation in various online discussion forums that Solar Cycle 23 is a record-long cycle. This observation is based on the occasional appearance of sunspots that are magnetically oriented consistent with sunspots belonging to the second-half of Cycle 23. The speculation leads to conclusions that the new cycle may not occur with any significant level of activity (it will be a dead cycle), or that we're seeing a dying sun! All of this speculation creates a lot of discussion and leaves the radio hobbyist wondering what's in store during the coming year and beyond.



Figure 1. Sunspots come in pairs and occur where magnetic field lines of a giant magnetic loop pierce through the sun's corona. This image shows coronal plasma loops being created along the magnetic field above a sunspot group. (Source: TRACE/NASA)

Sunspot activity on the sun varies over a roughly 11-year cycle. At the beginning of a cycle, there are many days without sunspots, and when sunspots occur, they are few. As the solar cycle progresses, the spots gradually increase over several years until the activity peaks. After the peak, sunspot activity decreases over the next several years, with spots from old and new cycles often occurring simultaneously as a new cycle starts. From 1755 to 2007, astronomers counted a total of 23 cycles of sunspot activity.

To which cycle a sunspot belongs is determined by two characteristics of a sunspot. The first identifying feature of a new-cycle sunspot is its solar latitude. The first sunspots of a new cycle initially appear at high latitudes. As the cycle progresses, they begin appearing progressively closer to the solar equator. The second feature is polarity. The sun has a magnetic field, just like the earth, but the sun's field flips much more frequently than the earth's. The sun's magnetic poles typically reverse at the peak of each sunspot cycle. The rapid flipping of the sun's magnetic pole affects the polarity of sunspots (Figure 1), helping scientists distinguish between sunspots belonging to different solar cycles.

The sunspots belonging to Cycle 23 were oriented with the North Pole spot on the left (as seen from our vantage point of Earth) and the South Pole spot on the right. New Cycle 24 spots are reversed (Figure 2). The first official spot of Cycle 24 was observed in January 2008, because it had the reversed polarity and occurred at a high latitude.

The occurrence of old sunspots during the beginning of a new solar cycle is common, because the cycle "merges" into the new cycle. New cycle spots gradually increase in number as the old spots decrease, until only new cycle spots occur.

The speculation that Cycle 23 is the longest on record is based on the false premise that cycles end abruptly, and new cycle spots immediately and completely replace old cycle spots. However, according to the official record, the end of Solar Cycle 23 is now positioned statistically on

August 2008, the month currently used by the panel of scientists predicting the current Cycle 24 progression.

Since October 1996 is used as the effective start of Cycle 23, Cycle 23 lasted 11 years and 10 months. Since August 2008, we've seen more Cycle 24 spots than Cycle 23 spots (Figure 3). It's typical, according to scientists like David Hathaway, for spots belonging to the previous solar cycle to continue occurring for at least 18 months after the effective start of a new cycle. So as we continue to see occasional spots with the magnetic structure consistent with Cycle 23, they do not change the actual start of the new cycle, or for that matter, the end of the last.

Cycle 23 is not the longest on record. For example, Sunspot Cycle 4 was over 13 years in length, and Cycle 5 was over 12. There are many other examples. The length of Cycle 23 falls well within the confines of the solar cycle average length of 11 years (an average of 11.1 years, to be exact).

The number of spotless days during this current solar cycle minimum (the transition between the two cycles) is also

unremarkable. Sunspot cycle minimums during the 1800s had many more spotless days than this current period (Figure 4).

What might be remarkable is the very low geomagnetic activity we've observed during the current cycle minimum (Figure 5). However, since we were not recording the geomagnetic activity until recently in respect to when we started recording sunspot numbers, we cannot make any reasonable deduction about this low level of geomagnetic activity. We'll need quite a number of cycles with their respective numbers before we can start making deductions.

All of this translates to some rather simple facts: 1) solar science is a young science, 2) we don't have enough data to really understand the entire mechanisms involved in space weather and radio propagation, 3) it is anyone's guess as to how Cycle 24 will play out, 4) running with speculation might be fun, but doesn't really mean much.

That said, this author has had some great radio fun, even making a confirmed QSO with a South African station using single-sideband voice on the 80 meter

amateur band, using only a dipole and about 100 watts. There's plenty of radio happening during this solar cycle quiet spell. And there's evidence now that the new cycle is slowly gaining in strength and should be a normal cycle. Forecasts still call for a moderately high peak between a smoothed monthly sunspot count of 110 and 160. Check this column each month for continued coverage of the progress of Sunspot Cycle 24.

High Frequency Propagation

As we move away from the winter shortwave season into the longer days of summer, the overall trend in shortwave propagation is the opening up of the higher frequencies into many areas of the world. Some of these openings will be longer in duration than during the winter season. However, the openings occurring on the highest frequencies on the edges of ionospheric propagation of a given path can be variable in strength, are subject to fading, and could be short-lived.

The Ap Index And Understanding Propagation Terminology

The Ap index, or Planetary A index, is a 24-hour averaging of the Planetary K index. The Planetary K index is an averaging of worldwide readings of Earth's geomagnetic field. High indices ($K_p > 5$ or $A_p > 20$) mean stormy conditions with an active geomagnetic field. The more active, the more unstable propagation is, with possible periods of total propagation fade-out. Especially around the higher latitudes and at the polar regions, where the geomagnetic field is weak, propagation may disappear completely. Extreme high indices may result in aurora propagation, with strongly degraded long-distance propagation at all latitudes. Low indices result in relatively good propagation, especially noticeable around the higher latitudes, when trans-polar paths may open up. Maximum K-index is 9, and the A-index can exceed well over 100 during very severe storm conditions, with no maximum.

Classification of A indices is as follows:

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

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

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

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

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

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

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

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

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

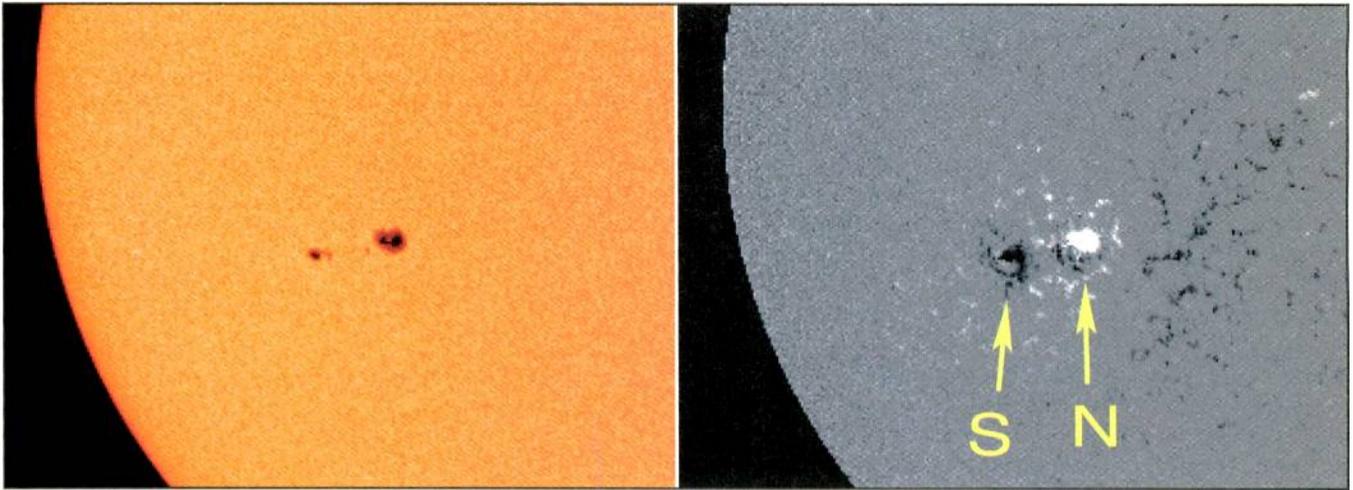


Figure 2. Sunspots are areas of intense magnetic activity and occur in pairs with a north and south polarity, just like a magnet. The image on the right shows a sunspot group with the north pole spot on the right, displayed as a white spot, and the south pole on the left, displayed as a black spot. The orientation of a sunspot group, and the latitude at which the group occurs, indicates to which cycle the group belongs (see text). During the approximately 11-year Solar Cycle 23, the sunspots had the north pole on the left and the south on the right. Cycle 24 spots are oriented the opposite way. (Source: SOHO/NASA)

The causes of these change are complex. The length of daylight over a region of the ionosphere, the intensity of the solar radiation, and the density and height of the various layers of the ionosphere all affect the propagation of the shortwave frequencies we're interested in. Winter daytime propagation over a given path could sustain higher frequencies than the same path during the summer daytime, while the summer nighttime frequencies will be higher than the winter nighttime frequencies on that same path (partly due to the proximity of the Earth to the sun during these two seasons; in the winter, the Earth is closer).

On the higher HF frequencies (16 through 11 meters), fairly good daytime openings should be possible on north/south paths during May. Sixteen meters will be the best bet out of the higher bands, not only because of propagation, but also because more international broadcasters will still use this band around the clock.

Most DX signals, and the strongest signals, will be found on the middle and lower HF bands. Look for peaks in signals around the hours of sunrise, and again just before sunset, and into the late evening. Daytime paths are best when they terminate in areas where it is night. This enhances propagation to remote parts of the world and lengthens the DX window. Twenty-five and 22 meters will have more stable signals than those on 19 meters, especially on north/south paths, again around the hours of sunrise and sunset. Thirty-one meters again becomes one

of the strongest and most reliable bands, though you will find it congested. Look for Europe and Africa early in the morning through late morning, then for north/south openings during the day if the solar activity is low (otherwise the D layer absorption will wipe out the band). As sunset approaches, look for the South Pacific, then Asia as the sun sets.

During the night, 41 through 60 meters should provide good openings from Europe, Africa, and the east. Some DX should be possible on 75 through 120

meters, but signals are expected to be mainly weak and covered by seasonal noise. Static levels also increase noticeably during May, and signals may sound weaker on DX openings during the daylight hours.

VHF Ionospheric Openings

Possible transequatorial (TE) propagation and occasional sporadic-E (*Es*) propagation will keep the VHF enthusiast happy. The annual summer *Es* season

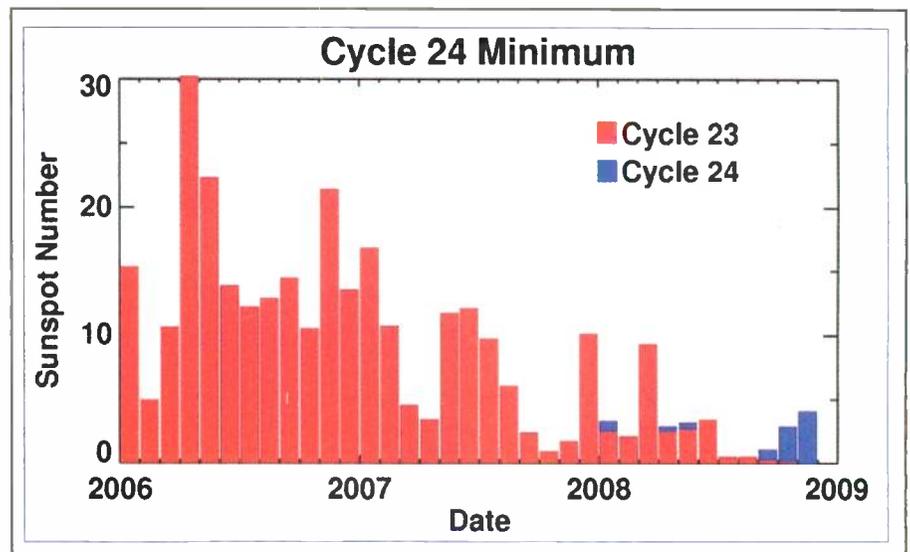


Figure 3. This graph indicates the number of spots per month that belonged to either Sunspot Cycle 23 (red) or to Cycle 24 (blue). (The Y-axis is the number of sunspot groups observed during that month, and is not the same as the official smoothed monthly sunspot count). As can be seen, there is a clear ending of Cycle 23 and a beginning of Cycle 24, based on the orientation of the majority of sunspots observed during each month since the end of 2008. (Source: NASA)

Optimum Working Frequencies (MHz) - For May 2009- Flux = 79, Created by NW7US

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

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

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

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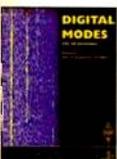
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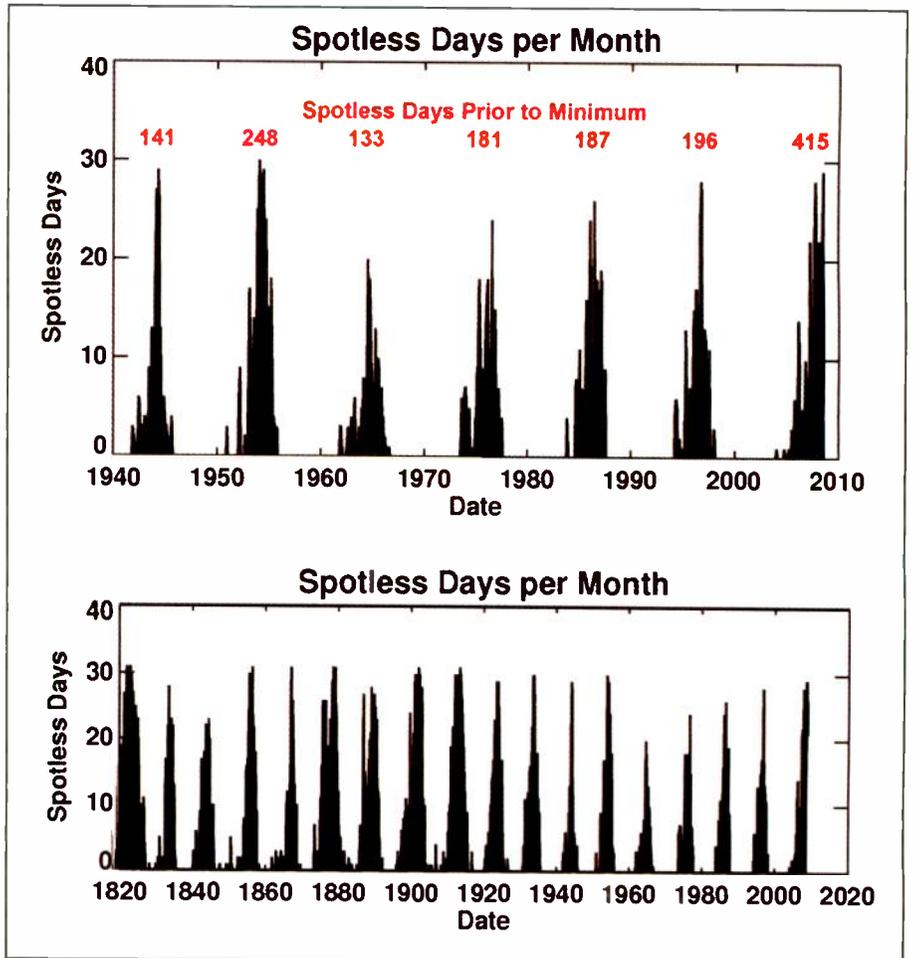


Figure 4. Another source of speculation current in many discussions is the number of spotless days during the current minimum between Cycle 23 and 24. In fact, the record shows that the high number of spotless days currently observed (upper graph) is not as great as the number seen during cycles occurring during the 1880s (bottom graph). When the historical record is examined, one can see that there is nothing unusual about the current lack of activity. (Source: NASA)

begins around May 1, with the activity sparse during the first two weeks of May, then picking up to about 60 percent of the days by the end of May.

The date of May 1 is like a switch in the ionosphere. Simply, the oxygen ions that are in the *E* region of the ionosphere are now being excited more and more by the increasing closeness of the sun and recombine with metallic ions that are present in the *E* region at a higher rate than other times of the year. This eventually leads to thin layer formations in the *E* region, off of which we can bounce VHF radio waves (*Es* propagation). Because we expect *Es* to increase considerably during May, fairly frequent VHF short-skip openings should be possible. These are likely to occur over distances of approximately 1,000 to 1,400 miles. Although *Es* openings can take place at just about any time, the best time to check is between 10 a.m. and 2 p.m.

and again between 6 and 10 p.m. local daylight time.

A seasonal decline in TE propagation is expected during May. An occasional opening may still be possible on VHF. The best time to check for VHF TE openings is between 9 and 11 p.m. local daylight time. These TE openings will be north-south paths that cross the geomagnetic equator at an approximate right angle.

Auroral activity is generally lower now than during March and April, due to the change in the orientation and position of the Earth and magnetosphere in relation to the solar wind. Watch for planetary K-Index (K_p) values above 6, which occur on days when we see coronal holes affecting space weather or the arrival of coronal mass ejections a few days after any major solar flare.

One meteor shower, the Eta Aquarids, will occur in May. The Eta Aquarids peak

during the beginning of May but start during the end of April. This shower has a peak rate of up to 60 visuals per hour. Look for TV and FM broadcast pings (short bursts of signals, refracted off the ionized trails from the burning meteorite) during these events. If you're an amateur radio operator, look for 6 and 2 meter openings off the ionized meteor trails.

Current Solar Cycle Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for January 2009 is 1.5. The lowest daily sunspot value of zero (0) was recorded on January 1-8, 14-18, and 20-31. The highest daily sunspot count was 10 on January 11. The 12-month running smoothed sunspot number centered on July 2008 is 2.7. The forecast for May 2009 calls for a smoothed sunspot count of 10 to 15, reflecting a gradual start to Cycle 24.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 69.8 for January 2009. The 12-month smoothed 10.7-cm flux centered on July 2008 is 6.6. The newly released predicted smoothed 10.7-cm solar flux for May 2009 is 72 to 79.

The observed monthly mean planetary A-Index (A_p) for January 2009 is 3, which is typical for the beginning of winter. The 12-month smoothed A_p index centered on July 2008 is 6.6. Expect the overall geomagnetic activity to be varying greatly between quiet to minor storm levels during May.

I'd Like To Hear From You

Be sure to check out the latest conditions, as well as the educational resources about propagation, which I have put together for you at <http://prop.hfradio.org>. I also provide a WAP/WML resource for wireless devices. If you want the latest propagation information like the solar flux, A_p reading, and so forth using a cell phone or other WAP device, check out <http://wap.hfradio.org>, the wireless version of my propagation site.

Please don't hesitate to write and let me know about any interesting propagation that you have noticed. Do you have questions about propagation? I look forward to hearing from you. Until next time, happy signal hunting!

73 de NW7US, Tomas Hood

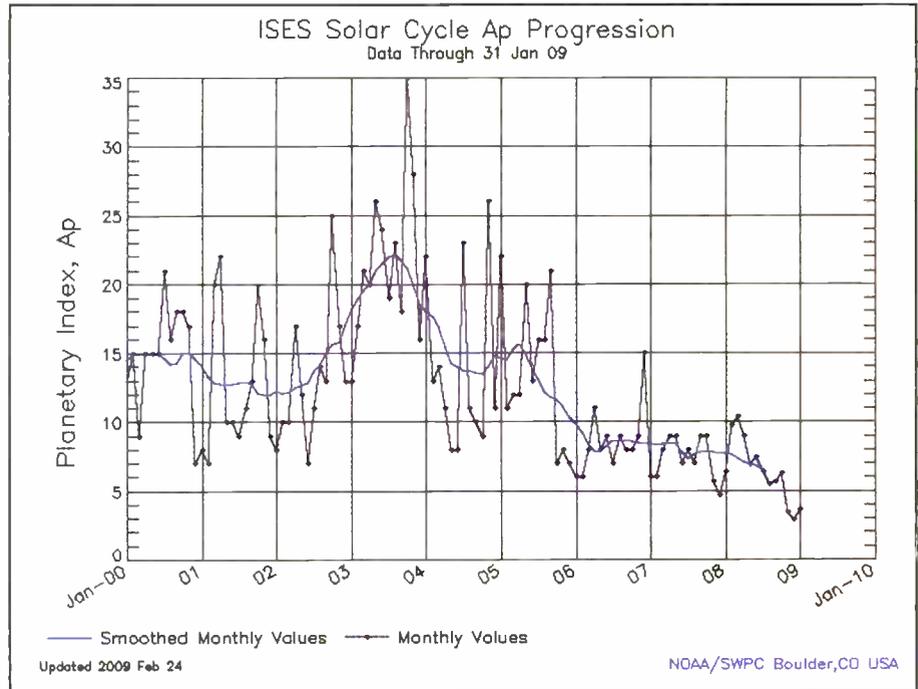
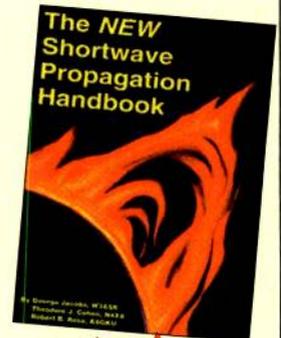


Figure 5. Graph of the geomagnetic activity progression of Cycle 23 and Cycle 24, as of January 31, 2009. Notice the very quiet period during recent months. This is the lowest overall activity level observed since the geomagnetic activity levels were first consistently recorded. (Source: NOAA/SWPC)

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Be An Air Traffic Controller At Home

by Tom Swisher, WA8PYR
airscan65@gmail.com

Well, almost. AirNav RadarBox, mentioned in a previous column as one option for monitoring the ADS-B systems now coming into use in the United States, is one heck of an interesting gadget.

A product of AirNav Systems, AirNav RadarBox is an excellent way to monitor aviation activity in your area. RadarBox allows you to decode the ADS-B (Automatic Dependent Surveillance Broadcast) signals, and displays the aircraft position reports on a radar-like display on your computer screen. In addition to position indications, RadarBox shows the flight number, aircraft type, altitude, heading and speed of that flight, and uses the position reports to display a track of each flight.

Getting Started

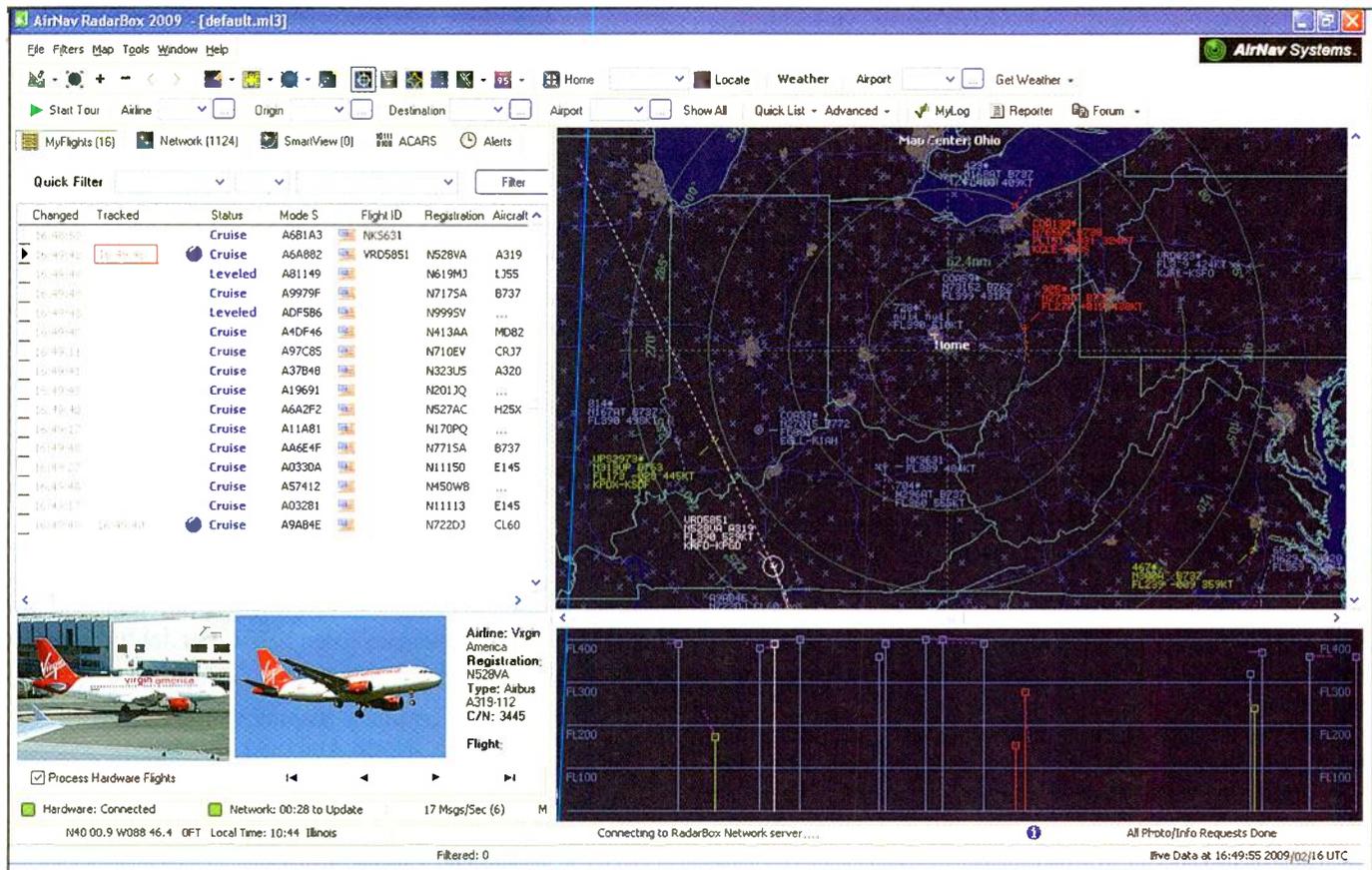
The package comes complete from AirNav Systems with the RadarBox receiver, a USB cable, the required antenna, a quick installation guide, and the software CD. The receiver is a small aluminum box (about the size of a paperback book) that is

“One very slick feature is the aircraft information display. When you click a line on the flight list, the program checks the database of the Gatwick Aviation Society via the network using the aircraft registration number, and it downloads the information on that aircraft, including photographs!”

quite compact and lightweight, and the antenna is a small magnetic-mount model. The receiver connects to the computer with a simple plug-and-play USB connection. There’s no time-consuming setup needed and installation is quick and easy: just install and configure the software, connect the antenna to the receiver, then connect the receiver to the computer with the supplied USB cable.



AirNav RadarBox hardware. (All photos/screenshots by the author)



The RadarBox program in action.

Upon startup, you'll need to set your current location by entering the airport code on the menu bar. Alternatively, you can open the Preferences screen (under File on the menu bar), go to the Home Station Location tab, and click the AutoDetect button. As long as you have an active connection to the Internet, the program will figure out the nearest city, display it, and ask if you want to set that as your default location. Click Yes and then the Apply button, and the program will make the setting and bring up the map.

Once you have the software configured, connect the receiver to a USB port using the supplied cable. The receiver will dump whatever it hears to the program as well as dump the received flight information, which in turn places position points on the display and starts tracking flights.

Features And Options Galore

The software has a raft of features, including worldwide mapping, and includes over 200,000 map points, such as airports, VOR, NDB, and roads. An active Internet connection allows the program to download flight information received by other users from the AirNav Systems network, and use that data to further update your display. In addition to being displayed on the "radar" display, the flight information is also displayed to the left on a flight list showing the flight number, aircraft registration number, and other information.

The software also allows you to specify certain criteria which, when matched with received information, sounds an alert to get your attention. You can also display real-time weather information for a specific location. The software also allows you to replay log files on the display to review activity for some-

thing you thought you saw, or something you missed. You can also mouse over the active display for a quick view of the flight and aircraft information.

One very slick feature is the aircraft information display. When you click a line on the flight list, the program checks the database of the Gatwick Aviation Society via the network using the aircraft registration number, and it downloads the information on that aircraft, including photographs! How cool is that?

The RadarBox software also includes a host of useful tricks to enhance your monitoring. Filters allow you to limit the activity you see by airline, origin, destination and/or airport. This can limit the number of flights you see on your active radar display, but will also limit your view to just the flights at your local airport, or any specific airport you wish to monitor.

An interesting feature called MyLog allows you to log the activity in your area and share the logs with other users; the ScreenShot feature allows you to snap a screen shot of the active display and share that as well. MyLog also shows the aircraft callsign and route information, and it allows you to sort activity logs by date/time first seen or last seen, by aircraft type, name or callsign, by the country of registration, or by the airline. You can also search your log for specific information.

Another feature called SmartView allows you to display METAR (weather) and TAF (Terminal Aerodrome Forecasts) for specified airports. All you have to do is enter the four-character ICAO airport code (for example, KBWI for Baltimore-Washington International, or KLGGA for La Guardia Airport), and RadarBox will go out and fetch the current weather and forecast data for that airport.

Various optional products are available to enhance your monitoring fun. One recommended addition is the AirNav ACARS

interface. If you don't already use one of the ACARS solutions for hobbyists available on the market today, the AirNav ACARS software would be worth a look; it integrates seamlessly with the RadarBox application and adds those flights not currently equipped with ADS-B to your display.

AirNav also offers an HF SELCAL decoder. By monitoring the HF aviation bands with your shortwave receiver, this lets you decode the SELCAL signals used to alert aircraft in flight. The program displays the SELCAL data as well as the aircraft information.

Another interesting option is the AirNav Suite. The Suite is like RadarBox on steroids. Instead of just one data source, you get several: ADS-B, VHF and HF ACARS, SELCAL, and the network.

A Soaring Success

All in all AirNav RadarBox is a really excellent product. It makes set up and use really easy, and its host of features make monitoring a breeze. The host of database features and powerful logging capabilities make it very useful for monitoring aviation activity in your area. Combine it with the various options available and you will have a powerful, world-class aviation monitoring post.

Visit the AirNav website at www.airnavsystems.com for the latest information and pricing on their products. The company often runs price specials, so check frequently. There are also several U.S. dealers for the product (see "AirNav RadarBox Dealers").

ATCS In Your Area...

Speaking of ATCS monitoring (you are, aren't you?), there's a variety of new ATCS frequencies cropping up all over North

AirNav RadarBox Dealers

ACS Wireless (4Cellular.com)
Chadds Ford, PA

Oceanviewcom (oceanviewcom.com)
Norfolk, VA

Scanner Master (scannermaster.com)
Natick, MA

MyAirplane.com (MyAirplane.com)
Cardington, OH

Check the AirNav Systems webpage for complete contact information for these dealers. There's also an active community on the AirNav forum where you can talk with other RadarBox owners for the latest tips and tricks.

America, in addition to the original few placed in service by ARINC. I've monitored activity on many of these frequencies from my location in Ohio, and there's plenty of it out there. Be sure to check the frequencies listed below, but don't forget the regular ARINC ACARS frequencies.

131.550	ARINC primary channel (North America)
129.125	ACARS (North America)
130.025	ARINC secondary channel (North America)
130.425	ACARS (North America)
130.450	ACARS (North America)
131.125	ACARS (North America)
136.700	ACARS (North America)
136.750	ACARS (North America)
136.800	ACARS (North America)
136.850	ACARS (North America)



A closer look at the "radar" display.

A Hitchhiker's Guide To A Small Galaxy Of Broadcasting's Past

by Shannon Huniwell
melodyfm@yahoo.com

My father is constantly mining eBay for nuggets of radio history. He's even enlisted my help in scouring the online auction site's search engine just in case something escapes his notice. More than once, this frenzy for vintage AM/FM memorabilia has generated a comedy of errors resulting in both of us inadvertently competing for the same item.

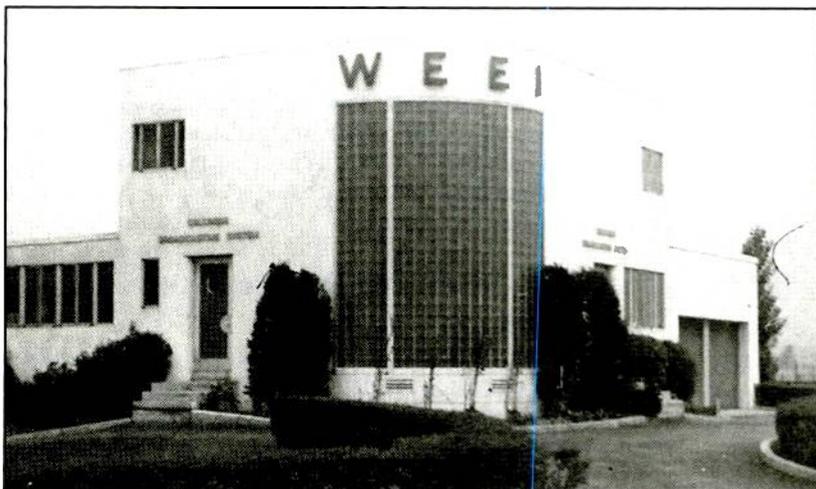
In the instance of this month's topic, the mutually exclusive broadcast classics in question were several old snapshots—amateur shutterbug views of four standard band transmitter sites circa 1940. It seems to me that there was also a third party also bidding on the black & white pictures. In any event, upon seeing the action heat up, he or she must have gotten scared off and dropped out shortly before my father and I realized we were bidders #1 and #2. When Dad called to announce his "great find" for a future *Pop'Comm* story, I quickly interjected an identical eBay discovery, resulting in chagrined laughs and the agreement that I'd immediately stop clicking on the "bid now" button.

My father's hastily enveloped \$5.75 purchase arrived so nakedly that he fired off an email practically begging the seller for details about the circumstances surrounding the pictures. A curt question along the lines of, "How should I know?" resulted, but so did the vendor's antique shop's phone number at the electronic communicués's

boilerplate conclusion. This allowed Dad to hound the guy until he looked up the particulars of the woman who'd sold him the photos—which had been mixed in with several shoeboxes of old postcards, political buttons, roadmaps, and trading stamps—sometime during the previous fall. Dad jotted down the number and lost no time in calling her.

Understandably, she was very suspicious of his contact, especially when he launched into a monologue about how the pictures would appear in a "major publication's vintage radio feature authored by a noted broadcast historian!" Turns out, she didn't even know the boxes of stuff she'd sold to the shop had contained any radio-related material. No doubt in an attempt to end the conversation, the chagrined woman promised to ask her son if he knew anything about them. Months went by and my Dad finally forgot about it.

I had already begun outlining an article around the uncaptioned snapshots when a gentleman from Marblehead, Massachusetts, phoned to say that his elderly mother suggested he call and provide background on his father's memorabilia. Dad immediately put him in contact with me. I described the four little images, though not expecting them to generate much recollection. "Doesn't ring a bell offhand, and my father died in 1994," the man replied. Neither did the only clue I could see jog his memory. This consisted of an inscription, "Hal, for your scrapbook. Regards, H. Grossman," penciled on the back of one picture. In any event, he pledged to think about it, and then asked for my email address.



A late Depression-era shot of CBS' Boston AM transmission facility. Named for its original owner, Edison Electric & Illuminating, WEEI came to signify quality programming in Eastern New England. That's why, years later during the 1990s radio station "swaparoo" period, the calls were happily co-opted by Boston's 850 AM (nee WHDH).

Putting Cars, Thumbs, And Kilocycles Together

What arrived two weeks later was a bit of a surprise. The guy must have spent an entire evening composing the nicely written explanation that follows:

Our conversation about Father's photos jogged my memory regarding his aggravating (to me) practice of stopping for hitchhikers, the scruffier the better. Even as a kid, whenever riding with him and a hitcher came into view, I'd point out the dangers of strangers and would strongly object to him giving such unknown persons a lift. His stock retort was that in our family there was a young thinker and an old fogy—and a regret that the old fogy happened to be a teenager.

I'd turn silent when a hitchhiker hopped into our white Ford Falcon station wagon but listened intent-

ly as my dad chatted with the guy like a skilled talk show host. Not too many miles down the highway, he'd learn the person's name, hometown, destination, and other slice-of-life pieces of his story. Sometimes, if Father felt the hitcher didn't look adequately fed, we'd stop at a diner and all have the special and a piece of pie. After this detour, my dad would often reason that his kindness to traveling strangers was a sort of payback to all of the kind folks who'd stopped for his thumb when he didn't have much money or a vehicle.

The gentleman figured that because those radio station pictures appear to be from the late 1930s—when his dad, Harold or “Hal,” was high school age and a bit of an electronics tinkerer—they might correspond to a handwritten journal from that period that had been saved from a fate of getting dumped off at the second-hand store. Hal's son speculates that a journal entry from May 1939 appears to provide an account of his dad skipping a few days of school for a “true radio road adventure.” It's my belief that we can safely say that he's correct.

Loitering On CBS Property

The clearest picture of the “eBay four” shows a front and center view of the transmitter building for WEEI (590 kHz) Boston. Begun in 1924 by the Edison Electric & Illuminating Company, the station was sold to Columbia Broadcasting System a dozen years later. The Mystic River Parkway “shack” for its 5 kW transmitter represented true Art Deco styling, complete with curved facade, generous use of glass brick, and porthole windows in the entry doors. No wonder this place and related directional antenna array screamed radio to the kid in our story.

According to the journal, as the son tells us, Hal had ridden his bike there to see if WEEI might have any odd jobs for industrious teens. Before he could finish pacing the walkway and work up the nerve to knock, his shy efforts were interpreted by a grouchy engineer as “loitering.” Hal was told to “beat it” or risk arrest by the Massachusetts State Police. A friendlier EEI guy, however, overruled his cranky colleague and invited Hal inside the RF generating plant.

I'll admit to using poetic license here in order to fill-in some blanks, as the journal simply states that this kind tech—identified as Mr. Henry Grossman—was a CBS official who arranged for Hal to see some radio places that were typically off limits to the public. My guess is (and Hal's son concurs) that Mr. Grossman was on some kind of engineering junket from Boston to New York and back. For reasons that would raise suspicions today but were perfectly innocent, he offered Hal the opportunity to ride shotgun on the trek for no other reasons than spreading the broadcast engineering “gospel” to a young man on the precipice of career choice. Whatever the rationale, Mr. Grossman likely phoned Hal's mother for permission to take him along. The journal says that they left after lunch at some diner not far from the WEEI plant. Delicious Boston Cream pie is also mentioned.

By mid afternoon, the two were in East Providence, Rhode Island, touring the WEAN (790 kHz) transmitter site. Apparently, Mr. Grossman knew some people there and introduced Hal as “a future broadcast engineer.” When the teen commented about the iconic tower on the WEAN roof, his host remembered the camera in his car's glove compartment. Judging from the 3-by-4 inch prints, it was probably a Kodak Brownie or some such basic shutter box. WEAN's technical center was also planned in the Art Deco fashion. Glass bricks surrounded its front door and indentations in the masonry accent the building's front wings and entrance facade. White



WEAN Providence, circa 1940. Note the little rooftop tower. No doubt this iconic structure was planned by the building's architect to signify “broadcasting.” Perhaps plans even called for a flag to wave from its mast.



Nearly a quarter century after this picture was taken, the unseen transmitter inside the building shown here helped give New Yorker's their first taste of Beatles' music—a harbinger of social change in the immediate Post-Kennedy era.

blocks lined the wide driveway, as bright beacons might light a busy airport runway.

Prior to its 1954 purchase by the *Providence Journal-Bulletin* newspaper organization, WEAN was owned by The Yankee Network. Earlier, the paper operated WPJB Providence (an erstwhile Pawtucket facility—WFCI—on 1420 kHz with transmitter in relatively distant Lincoln, Rhode Island) but acquired WEAN for its better signal. Subsequently, this Providence-area 1420 spot was re-activated as a New Bedford, Massachusetts, outlet.

Lead Balloon Jingles Deflate Over Providence

If you don't mind an aside regarding WEAN, I remember hearing a tale about the 5000 watt directional station circa 1973. In an attempt to have its facility's output sound more contemporary, *Journal-Bulletin* radio executives ordered a jingle package from the famed PAMS production company, signifying its shift towards hit music. Meanwhile, the program director of cross-town WJAR (920) Providence, who was at PAMS' Dallas studios to hear his station's jingles recorded, happened upon a tape reel marked WEAN. He convinced someone in the control room to let him hear “just a cut or two.” It featured the phrase,



An early 1920s depiction of WMCA's New York City birthplace, the McAlpin Hotel, and rooftop antenna. The image, spotted at an online auction site, comes from a promotional stamp that the lodging establishment affixed to its correspondence.

"WEAN (pronounced *wean* as in weenie) means music."

WJAR's PD couldn't believe that his competitors would convert their call letters into such a wimpy name. Sensing a competitive opportunity, he phoned orders back to WJAR on-air personnel instructing them to immediately begin using the slogan, "WJAR means music!" whenever talking up a record intro. Needless to say, when the WEAN jingles eventually hit the air, they sounded like a lame attempt to copy WJAR—not to mention the unfortunate "weenie" connotation.

Next Stop...The Jersey Side Of New York Radio

Details are sketchy, but it seems like Mr. Grossman and Hal got to the New York City area around sunset and went directly to the Grossman home (whereabouts not disclosed). Hal's writing only says, "Very fancy and clean house with green tile guest bathroom. Mrs. Grossman sure can cook!" There is a fascinating mention of a "television receiver in the attic spare room. Just saw still image of lines, circles, and station identification." Again, I'm guessing about the reality here, but can speculate that Mr. Grossman was important enough in the CBS engineering hierarchy to have been loaned an early TV set for critiquing the experimental Columbia (and maybe RCA/NBC, as well as DuMont) video signals. Anyway, it sounds like he was describing a primitive test pattern.

An early start the next day got our travelers to the Kearny, New Jersey, transmitter site of WMCA (570 kHz) New York. With a cantilevered roof over the entrance and movie theater-type signage pylon, vertically announcing WMCA, this facility also possessed the requisite glass brick and curved masonry of its Art Deco-style Boston and Providence counterparts. The "shack" appears to have been recently constructed, as no greenery had yet grown from the dirt embankment bordering the place's freshly paved drive. There's no record of what business the CBS man had with independent WMCA. Perhaps it related to some engineering society doings or a courtesy call on radio brethren who were proud to show off their new facility. Hal's log is to the point on this one, "Smaller than WEEI and WEAN, but nicely equipped with the latest gear and lots of meters."

Born In A Hotel Room

WMCA traces its earliest roots to a 1920 broadcast concert sent from the suite of a songstress who lived in the McAlpin Hotel. Somebody in charge of this hospitality establishment must have caught the radio bug, as two years later he followed this transmission (considered by the authors of *The Airwaves of New York*, Bill Jaker, Frank Sulek, and Peter Kanze; McFarland & Company publisher, as the Big Apple's first hotel broadcast remote) with the installation of ship-to-shore "radiophones" in the lodging's deluxe rooms. By early 1925, McAlpin Hotel officials secured an experimental broadcast license, identified as 2XH, so that entertainment could literally radiate from the hotel rooftop.

After a brief trial period, the station was granted the callsign WMCA, a mnemonic for the McAlpin. A 500 watt WMCA resided on 880 kHz until shifting to 810 in 1927, and then down the dial to 570 the following year. By then the hotel executives had signed over their interest in the station to a Broadway entertainment maven. WMCA then moved out of the McAlpin and occupied new studios in a theater building (the first of several subsequent venue changes) and got the government go-ahead for boosting power to 1 kW.

Through mid-1933, WMCA shared time with other New York stations, like municipality owned WNYC. By July, though, WMCA happily stood alone as the first thing New Yorkers' could reliably hear as they spun their dials from left to

right. With a 1941 upgrade to 5000 watts and a decade and a half reputation for popular music and other innovative "let's give this a try" programming, WMCA was poised for what many Metropolitan baby boomers recall as the station's finest period, a great home for good guys.

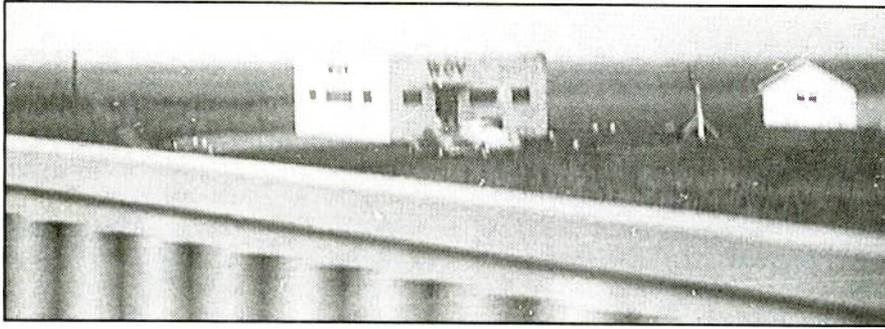
Dubbed Fabulous 57, "WMCA drifted into rock and roll in about 1958." That chronology from *The Airwaves of New York* was not as specific as the metropolitan AM radio station history book's exact dating of the first Beatles song ever aired in America's #1 media market: "On 29 December 1963," its authors pinpointed, "WMCA signaled a cultural revolution when [DJ] Jack Spector played...*I Want To Hold Your Hand*." It's unlikely that Spector or any of the other WMCA disc jockeys, known as "good guys," could have imagined how tightly top-40 tune lovers would soon embrace the burgeoning British pop music invasion.

WMCA stayed with the contemporary format—with the exception of a long-running late night talk show that essentially signaled teens that it was truly time for bed—until spring 1969 when conversation was programmed from 10 in the morning through 10 at night, with rock returning for the remainder of the schedule. This odd mix evaporated during the fall of 1970 when talk took over the entire WMCA clock.

We now fast-forward to 1987, when the station, having been recently sold by longtime owner Nathan Straus who'd operated it since 1943, quickly changed hands twice and ended up in the control of Salem Communications. Salem flipped WMCA to a religious format in the fall of 1989, and eventually secured a construction permit to up its property's power from 5000-watts day/night to 50 kW daytime and 30,000 watts at night.

The Three-Letter Station

That's how Hal referred to the interesting AM in our final snapshot. When he toured the WOV (1280 kHz) transmitter site in Carlstadt, New Jersey, the directional antenna arrangement there was among the most striking sights in radio. Hal's journal records it as "a three-legged self-supporting mast standing close by a four-sided diamond shaped tower, together practically screaming to me, 'warning: electromagnetic waves!'" Strangely, though, the WOV technical building picture is the weakest image of the bunch, apparently shot from the car window while Hal and Mr. Grossman were



Just out of view of this inconspicuous looking box of a cinder block transmitter shack is arguably the most unusual New York City-area AM antenna array. It belonged to WOV and served as a Jersey swamplands broadcast icon to several generations of radio buffs. The system was replaced circa 2002.

approaching the WOV transmission facility, and completely void of that unique antenna array. Above his journal entry, the boy doodled the call letters, W-O-V, annotating them with, "Only the oldest stations were given three letter names."

WOV New York debuted in 1928 out of the ashes of WGL, another Big Apple broadcast outlet that even tried popularizing on-air séances before giving up the ghost. Actually, WGL's remains were sold to an Italian-American who got new call letters—WOV—and, just a couple of months after signing on with 1 kW at 1020 kHz, shepherded a switch to 1130 on the dial. The owner's ties with the culture of Italy caused him to slip more Italian language into WOV's programming until much of its daylight schedule was in his native tongue.

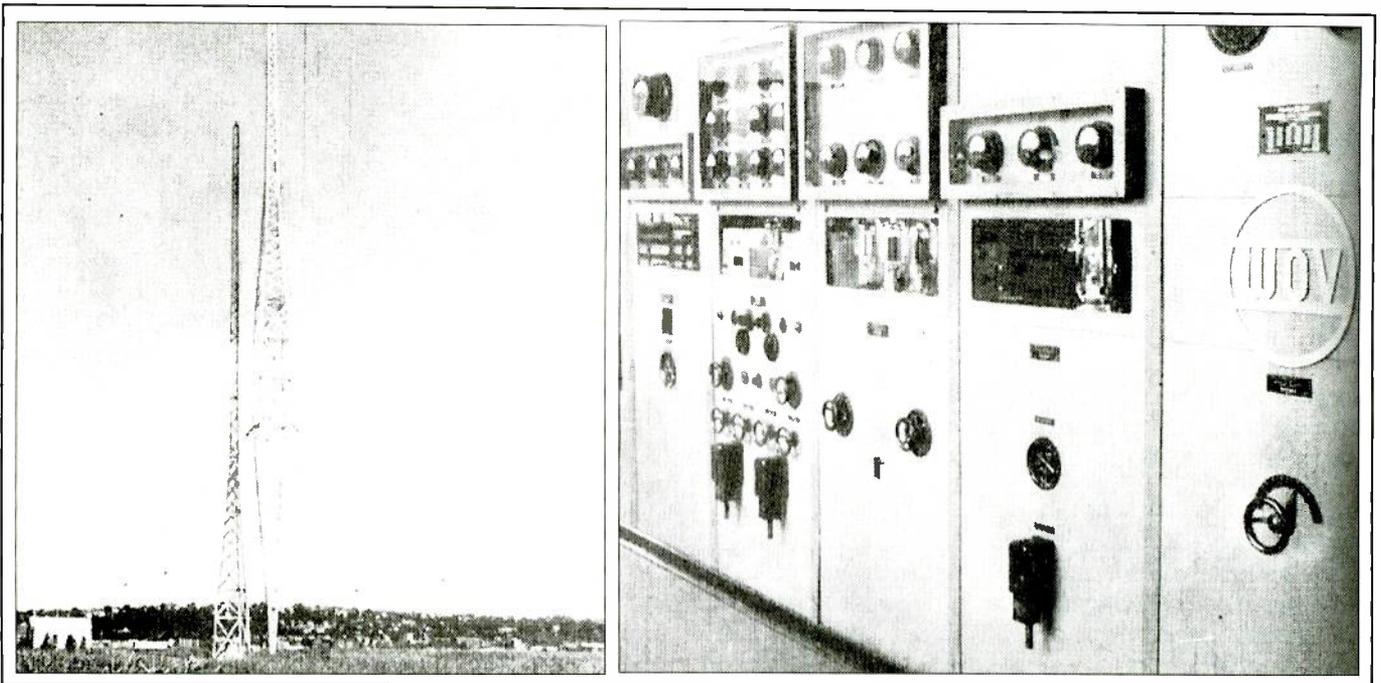
By the late 1930s, and in a deal that would even be difficult to decipher in English, WOV's owner had relinquished nighttime (as well as all Wednesday and Sunday) broadcast hours to WBIL New York and WPG Atlantic City, New Jersey, both of which transmitted on close-by 1100 kHz. Remuneration to the WOV ownership for this generosity occurred in the form of a complex series of stock swaps with the owner of New York's popular WNEW 1280 kHz and WBIL 1100. The 1940 transaction saw WPG's airtime going to WOV, then WOV closing down on 1130 so that WBIL could have this "better known" frequency, and finally WOV's three letter ID replacing the WBIL moniker. The net effect was that this "new" WOV was all by itself on 1130 with no nearby interference.

Less than a week prior to the Pearl Harbor attack, WOV's ownership—also operator of pop music pioneer WNEW 1280 kHz, and hampered by a Sunday/Monday timeshare with WHBI Newark, New Jersey—acted upon an okay from the FCC for the two stations to exchange call signs. This allowed WNEW to occupy the clear channel spot, 1130, and later seek FCC permission for a 50 kW output. Meanwhile, WOV went up the dial to 1280 and inherited that thorn-in-the-side timeshare with WHBI. (The Newark piece of 1280 was later bought out by WOV's successor.) Italian broadcasts ran from 9 a.m. through early evening with the rest of the slate featuring jazz, pop, country, and soul music. By the mid 1950s, WOV essentially offered a day/night split of Italian and African-American programs.

The end of the decade saw WOV sold and the calls changed to WADO. Among the diversified roster of listeners its fare targeted were Hispanic New Yorkers. The Spanish language format was gradually extended until 1973 when it finally occupied the entire broadcast day.

A Honey Of A Transmitter!

Hal's journal paints a fascinating picture of WOV's transmitter room. He calls its 5000 watt unit as "a real honey with huge dials, big glowing tubes, framed meters, emergency safety switches, and a little steering wheel sticking out of a tech-



Check out WOV's old Blaw-Knox diamond stick dwarfing its little self-supporting sister. And how about the WOV transmitter and phasing unit? To the casual observer, this row of electronic gear might conjure up some scary vision of Dr. Frankenstein's laboratory; to us radio nuts, though, such intricately complex RF cabinets are a delight to behold!

nical cabinet that has the station's name mounted on it." The last part of his entry confused me a bit. Admittedly, I wouldn't have accurately envisioned the scene had my Dad not snagged another gem on eBay: a 1951 book entitled, *TV And Electronics As A Career*. It contains a shot of WOV's shack, and just as Hal described, there's a custom metal casting of the station's logo. It's affixed to what looks to be the directional antenna's phasing cabinet, complete with an adjustment wheel. Regarding WOV's RF sticks, the book says,

...the two towers constitute a phased directional array. The signal is fed to them in such a way as to concentrate the radiation more heavily towards [New York City] and to decrease radiation in the direction of another station on the same frequency. Most of the transmitters for the New York stations are located in the nearby New Jersey swamps where there is a big clear area and where the swampy soil gives good ground conductivity.

Traveler's Epilogue

According to his notes, Hal was treated to another night of hospitality at the Grossman home and, while there, a chance to talk on the microphone in Mr. Grossman's well-appointed basement ham shack before being transported back to Massachusetts. Along the way, as we learn from the boy's notations, he and his host stopped at two more stations, though no call letters are mentioned. Perhaps they were Connecticut outlets and less visually spectacular than the ones he'd already chronicled. Maybe the film was gone and that's why there were no pictures of them. Who's to say?

What we do know, however, is that Hal's late 1930s thoughts committed to paper suggesting that he "might consider entering broadcasting professionally," went unrealized. His son's 2008 epilogue to the story tells us, "No, my father never got into radio or television other than being an avid listener and viewer. He was a buyer with a Boston-based department store, so traveled a lot."

I was hoping that something in Hal's journal would somehow neatly tie our station pictures together. His son scanned the crinkly pages again for me and simply concluded that his late father had closed the journal entry with thankfulness for having "struck gold" by his chance meeting with the kindly Mr. Grossman at WEEL. I'll echo that appreciation, as his nearly forgotten snapshots and journaling truly panned out into a little gem of radio's sparkling past.

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

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Bill Flies Over The Cuckoo's Nest

by Bill Price, N3AVY
chrodoc@gmail.com

"After trying every trick in the book to push or pull the sheet metal chassis from the "box," I actually resorted to a big rubber mallet and drove it out from the back with a few whacks."

Besides Norm, there's probably no one who gets more mention on this page than loyal reader, former EMT, and guy with an HPJIE*, Joe Maurus, formerly of Pumpkin Center, Louisiana. Of course, if any of you had sent me a picture of yourself sledding down a big hill in Idaho with your grandson (or with Joe's grandson) I'd probably mention you here, too.

At my own HPJIE, it's been a good couple of weeks. I've been tracing wires that would remind some of you of Medusa's hair or a Gordian knot (that's *not* one tied by Gordon West, by the way). The search for a *loose connection* (where have we heard that before?) has never been more difficult, particularly trying to squeeze my, er, largeness behind some racks made for little people. And why, while we're at it, must *all* audio cables be black?

If you've ever traced a wire—or traced many wires—you know about some of the absolute truths involved in the process:

- Whatever you need while you're behind a rack will be in front of the rack.
- Someone will call with the most inane question just after you get behind the rack again.
- The wire you're tracing—the black one...the black one amid 700 *other* black ones...the one that you've followed under floor tiles and over the tops of other racks—will slip from your fingers just as you near the end you've been searching for, because you sneezed.

But amid all this are some small victories. Little intermittent goblins and hitherto unexplained variations in levels have been discovered, surgically removed, and put out with the trash. Unexplainable inconsistencies in metering and switching are all of a sudden understood—and put to rest for good.

Some of the things I've discovered would take two pages to explain and would bore you anyway, but the boss has given me free rein to go through our satellite uplink system and find these gremlins (hey, I once *drove* a Gremlin...) and send them off to some foreign country where they might annoy someone else for a decade or so.

There was a simpler time, a time when I lived on a ship and copied code for eight hours a day. A time when my transmitter would be tuned to only two frequencies, and both were in *kilocycles*. And that transmitter didn't even have a *modulator!* Push down on the key, make a sound; leave off of the key, stop making a sound. Two sounds: a *dit* and a *dah*.

But it wouldn't be any simpler if I were back there again today. They took away my MF transmitter (that's *MEDIUM FREQUENCY!*). They even took away my kilocycles and my key. As I understand it, the only thing I'd recognize if I were a Coast Guard radioman today would be the SOS. I mean the SOS on the mess deck.

And while no one precisely responded to my challenge to design a lighted letter board (that was a 10 x 10 lamp board attached to a typewriter-style keyboard, which would light up the bulbs to make each letter (A, B, C, etc.) when the key was pressed, one reader with waaaaaay more brains than I have has responded with an interesting concept (interesting enough that I'll be sending him a copy of a book that Norm and I worked on together).

The Republic of Texas brought forth Jerry, K5JLW, who *must* have a double-E (as in BSEE), because he has not only drawn all the appropriate diagrams for a keyboard that would light up a lamp board and would show not letters but *dits and dahs* (graphically represented as dots and dashes), but he also took the time to explain how it would work. My hat is off to Jerry, even if I'll probably never build the thing.

Finally, my work (the HPJIE day-job work) has been made considerably easier with the addition of a "Fox & Hound" to my arsenal. Back in the '50s, the "Hound" would be called a signal tracer and the "Fox" would be a signal generator. Today, these have become more common (and smaller, and lighter, and less costly), because they are used so frequently in LAN wiring and other communication cabling jobs.

For over a year now, I've been staring at a small, name-brand, not-worth-the-powder-to-blow-it-to-hell guitar amplifier that's had an intermittent problem since I first got it and decided to bring the Fox & Hound home to help trace and analyze the problem with it.

Removing the four screws that held the chassis to the high-grade vinyl-covered flakeboard was pretty easy. After trying every trick in the book to push or pull the sheet metal chassis from the "box," I actually resorted to a big rubber mallet and drove it out from the back with a few whacks. I'm still enough of a mental defective to really grow to *hate* an inanimate object, and this one has become a prime example.

Finding the poorly designed input jack, which must have cost all of THREE CENTS and replacing it with a sophisticated dollar-version was not all that difficult, either. But putting the chassis back into the lovely vinyl-covered sawdust box was truly the worst repair nightmare I can remember. If I had not sold my only shotgun, this *thing* would have been turned to dust, swept into a manila envelope, and mailed to its creator with a note that would have put me up some river making license plates for a long time.

I'm calming down now. Really. Besides, those "love-yourself" jackets don't come in my size, and you can never scratch your nose when you're wearing one. Maybe I'll find a nice roommate like Chief and we can play basketball if nurse Ratched lets us out.

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