



# POPULAR COMMUNICATIONS

JUNE 2008

## Voices Of Discord Monitor Global Hot Spots From Your Shack

- **An Easy High-Performance Yagi For 6 Meters, pg. 16**
- **Tech Showcase: The AOR R2000A Frequency Monitor, pg. 22**
- **A Most Famous Spy Rig, pg. 24**

Cover Photo: *Pop'Comm's* SWL Guru Gerry Dexter tunes the world

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WAM/FM-N/WFM  
\*Cellular blocked

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Universal Radio is pleased to offer the Icom R75-12 receiver. With full coverage from 30 kHz to 60 MHz; all longwave, medium wave and shortwave frequencies are supported plus extended coverage to include the 6 meter amateur band. Some innovative features of the R75 include: FM Mode Detection (but not the FM broadcast band), Twin Passband Tuning, Two Level Preamp, 99 Alphanumeric Memories, four Scan Modes, Noise Blanker, Selectable AGC (FAST/SLOW/OFF), Clock-Timer, Squelch, Attenuator and backlit LCD display. Tuning may be selected at 1 Hz or 10 Hz steps plus there is a 1 MHz quick tuning step plus tuning Lock. The front-firing speaker provides solid, clear audio. The back panel has a Record Output jack and Tape Recorder Activation jack. The supplied 2.1 kHz SSB filter is suitable for utility, amateur, or broadcast SSB. However two optional CW/SSB filter positions are available (one per I.F.). The formerly optional UT-106 DSP board is now included and factory installed! A great value.

Order #0012 Call for price.

## ICOM® PCR1500 R1500



The Icom PCR1500 wideband computer receiver connects externally to your PC via a USB cable. This provides compatibility with many computer models, even laptops. Incredible coverage is yours with reception from 10 kHz to 3300 MHz (less cellular gaps). Modes of reception include AM, FM-Wide, FM-Narrow, SSB and CW. (CW and SSB up to 1300 MHz only). The PCR1500 comes with an AC adapter, whip antenna, USB cable and Windows™ CD. #1501 \$479.95

The Icom R1500 is similar to the above, but also includes a controller head for additional operation independent of a PC. #1500 \$579.95

## ICOM® PCR2500 R2500



The Icom PCR2500 wideband computer receiver uses a similar form-factor to the PCR1500, but has several enhancements, including two powerful features: **dual watch** (the radio can receive two signals simultaneously) and **diversity reception** (two antennas can be connected at the same time and employed to provide stable reception). The optional UT-118 Digital Unit provides D-STAR® digital voice reception and the optional UT-121 supports APCO25 digital voice decoding. The R2500 is shown above. #2501 \$709.95

The Icom R2500 is similar to the PCR2500, but includes a controller head for additional operation independent of a PC. #2500 \$879.95

**FREE**

**ICOM Bonito CS 4.5 Software included!**

A \$69.00 value included FREE with your R1500/R2500, PCR1500/2500 purchase for a limited time.

**Special Note:** Prices shown for the R1500/PCR1500 and R2500/PCR2500 reflect the \$20 Icom limited time mail-in rebate.



### R5

The R5 covers 150 kHz to 309.995 MHz (less cellular gaps) in: AM, FM Narrow and FM wide. 1200 memories store: frequency, mode, step size, duplex direction and offset, CTCSS tone, tone squelch and skip settings. Other features include: attenuator, LCD lamp, AM ferrite bar antenna, auto power off, CTCSS decode, weather function and battery save. A great value at under \$200.00. **Call or visit website for price.**



### R20

The Icom R20 covers an incredible 150 kHz to 3304.999 MHz (less cellular) with 1250 alphanumeric memories, bandscope and SSB/CW. It has: two VFOs, dual watch, voice scan control, NB, large two line LCD and CTCSS/DTCS/DTMF. A built-in IC audio recorder can record up to 4 hours of reception! With charger, Li-ion battery, belt clip and strap. **Call for price.**

### R8500

The Icom R8500 is a full coverage wide band communications receiver that tunes from 100 kHz to 1999.99 MHz in AM, SSB, USB, CW, FM-N and FM-W modes. Available to government customers only. #0663 \$1699.95



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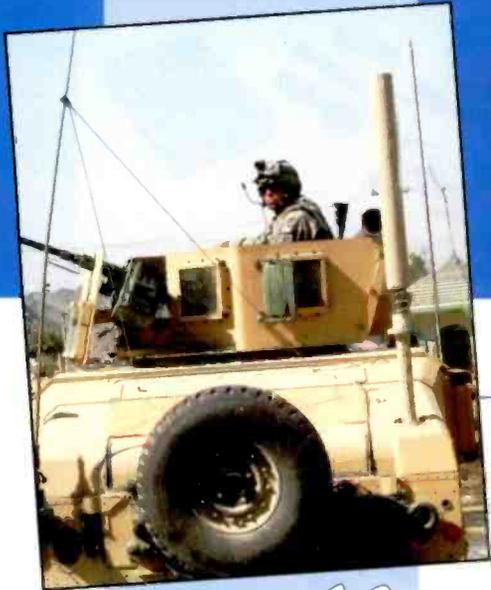
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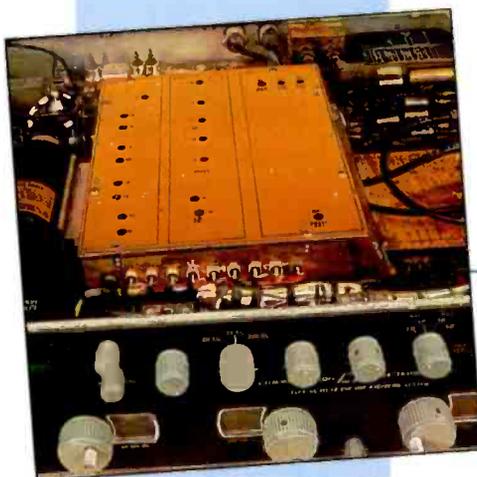
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### On The Cover

Pop'Comm's "Global Information Guide" columnist, Gerry Dexter, kicks off "World Watch," a new semi-regular feature focusing on listening in on the world's hot spots. This month he monitors a deeply troubled—and troubling—region in "Evening In Pakistan," starting on page 10. Dexter himself graces this month's cover, shown in his nicely equipped monitoring shack in Lake Geneva, Wisconsin. (Cover photo 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  
**\$199<sup>95</sup>**

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

## 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 54" whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, \$15.95.

MFJ-1024 **\$159<sup>95</sup>**

## 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 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. 3/16x1 1/4x4 in.



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.

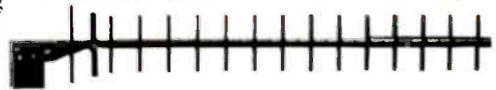
It's easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

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. 5/16Wx2 1/8Hx5/16D 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-5606SR, \$24.95. Cable connects 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!



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 \$119<sup>95</sup>

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.

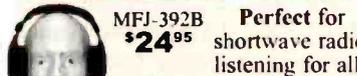
## High-Gain Preselector

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 Shortwave Headphones



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 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 Antenna Switches

MFJ-1704 \$74<sup>95</sup> MFJ-1702C \$34<sup>95</sup>

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 pocket-sized MFJ-461 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 1/2Wx1Dx2H inches.

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# When Companies Don't Compete...You Win...?

**L**ike a teenager arguing for a car because his string of accidents made him a better driver, regulators of the Justice Department's antitrust division managed to flabbergast with their decision in the end of March to allow the merger of the country's only two satellite radio companies. It wasn't the decision itself so much ("Sure, fine, merge and be fruitful!") that had jaws drop to the floor, but the circular logic behind it: the two companies don't compete with each other anyway. It was beautiful in its austere audacity.

The Justice Department pointed out that customers of XM Satellite Radio and Sirius Satellite Radio typically stick with one service once they've signed up, because they'd have to buy a new radio if they wanted to switch. See, there's a little problem with inter-operability: XM's radios don't pick up Sirius signals and vice versa.

It just wasn't supposed to be that way. When it allocated the satellite radio spectrum in the mid-1990s, in an effort to foster competition, the FCC mandated that the two licensees "certify" that their radios would receive both services. Of course, it also mandated that "one [satellite radio] licensee will not be permitted to acquire control of the other." (I must look up the word "mandate.")

Maddeningly, Justice cited the failure to bring to market the promised radios that work with both systems in its justification to clear the merger, stating that "there has never been significant competition" between the companies for customers already subscribed to one of the services and that "no such inter-operable radio is on the market and that such a radio likely would not be introduced in the near term."

Justice green-lighted the merger after determining that the \$13 billion deal was unlikely to hurt competition in large part because of the "likely evolution of technology" that "consumers in the future" might choose over satellite." Some members of Congress, consumer advocates

and the National Association of Broadcasters (of course) begged to differ. And given the track record of the companies abiding by their assurances, to the FCC at least, they've got a point.

But, with Justice pacified, the FCC is the only remaining obstacle. The Commission, however, has apparently never rejected a deal approved by Justice. Still, opponents hope to pressure the FCC to stop the merger or at least put conditions on it. FCC Chairman Kevin Martin has said that "the hurdle here, however, would be high" for approval because of the agency's no-merger rule and that the companies would have to prove that "consumers will be clearly better off with both more choice and affordable prices." NAB's Executive Vice President Dennis Wharton, doesn't think they can, or will, stating, "This monopoly will lead to higher prices, less innovation and lousy service."

Thankfully, the Justice Department has allayed our concerns, slicing through all this irritating Chicken Little handwringing over the proposed merger: "...the Division estimated the likely variable cost savings—those savings most likely to be passed on to consumers in the form of lower prices—to be substantial." Yes, we live in a good, and just—and generous—world. But sometimes I wouldn't mind having a second Justice Department, just to keep things competitive.

## A Final Note

From "potential technologies" and "consumers of the future" we briefly turn to a footnote from radio's past: the demise of North America's last radio orchestra, Canada's CBC Radio Orchestra. Formed in 1938, it is to be disbanded at the end of the concert season in November.

Radio orchestras like the CBC's were once common and provided programming and theme music for radio shows, showcased local composers and musicians, and gave public performances. A sad coda, indeed.

*Popular Communications* invites your comments, questions, criticisms, compliments, article submissions—in a word, your thoughts. Write to me at [editor@popular-communications.com](mailto:editor@popular-communications.com).

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144MHz FM TRANSCEIVER

# TM-271A

■ 200 memory channels (100 when used with memory names) ■ Frequency stability better than  $\pm 2.5$ ppm (-20~+60°C) ■ Wide/Narrow deviation with switchable receive filters ■ DTMF microphone supplied ■ NOAA Weather Band reception with warning alert tone ■ CTCSS (42 subtone frequencies), DCS (104 codes) ■ 1750Hz tone burst ■ VFO scan, MHz scan, Program scan, Memory scan, Group scan, Call scan, Priority scan, Tone scan, CTCSS scan, DCS scan ■ Memory channel lockout ■ Scan resume (time-operated, carrier-operated, seek scan) ■ Automatic repeater offset ■ Automatic simplex checker ■ Power-on message ■ Key lock & key beep ■ Automatic power off ■ Compliant with MIL-STD 810 C/D/E/F standards for resistance to vibration and shock ■ Memory Control Program (available free for downloading from the Kenwood Website: [www.kenwoodusa.com](http://www.kenwoodusa.com))

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## VOA Adds Two FM Affiliates In Bangladesh

Radio Today and Radio Amar, two FM radio stations in Dhaka, Bangladesh, became the newest affiliates of the Voice of America's Bangla Service.

Radio Today (89.6 FM) now broadcasts five minutes of world and U.S. news produced by VOA's Bangla Service daily between 11:45 p.m. and 12 a.m. (1745 to 1800 UTC). In addition, a 10-minute English-language newscast jointly produced by Radio Today and VOA will air nightly at 9:45 p.m. local time. The programs were formally inaugurated on March 3. Since March 12, Radio Amar (101 FM) has broadcast the first 30 minutes of VOA's daily one-hour Bangla-language program six days a week from 10:00 p.m. to 10:30 p.m. (1600 to 1630 UTC). Every Wednesday, Radio Amar broadcasts the entire 60 minutes, including the popular call-in show "Hello Washington."

VOA Bangla Service broadcasts on radio, television, and the Internet reach an estimated 10 million people in Bangladesh and the Indian state of West Bengal. There are more than 1,000 VOA fan clubs in Bangladesh.

## VOA Expands Swahili Broadcasts To Kenya

In more VOA news, the station has expanded Swahili broadcasts to Kenya with an additional half-hour each day. The expanded radio coverage will offer news from a network of stringers in the region, interviews with a range of newsmakers, including ruling and opposition party representatives, political analysts, economists, local residents, as well as U.S. officials, UN, EU and AU mediators, and other African leaders.

The service will also begin a new series called "In Focus," taking an in-depth look at issues such as land distribution, the constitution, ethnic tensions, national reconciliation, and the future of democracy in Kenya.

The new program will be broadcast at 0930–1000 UTC Monday–Friday, and at 1700–1730 UTC on weekends. Swahili broadcasts will now run for a total of two hours each weekday and one hour on Saturdays and Sundays.

## Israel Radio Halts All Shortwave Broadcasts, Available On Internet

Israel Radio's shortwave broadcasts, in all languages, ceased on March 31. Shortwave radio broadcasts have been under threat of closure for years, but were saved in the past by a barrage of protest letters from listeners around the world. From April 1, people who have been listening to shortwave radio will be able to pick up all their favorite broadcasts via the Internet.

Israel Broadcasting Authority spokeswoman Linda Bar said the IBA will be seeking funding to allow Farsi-language broadcasts to remain on shortwave. Bar noted that under the Broadcasting Authority Law, the IBA is not mandated to provide shortwave broadcasts. For many years, such broadcasts were co-funded by the Foreign Ministry and the Jewish Agency, which gradually dropped out of the partnership with the IBA.

## BBCWS Shortwave For Caribbean Closed

BBC World Service shortwave transmissions to the Caribbean closed on March 23, 2008. Because many listeners in the Caribbean and around the world no longer listen via shortwave, but are choosing to listen to the radio on other platforms such as FM, satellite, and online, the BBC has invested in new FM services to the Caribbean. BBC World Service programs can now be heard on FM 24 hours a day in Antigua, Trinidad, and Jamaica as well as via partner stations in almost all the Caribbean islands.

## World Harvest Radio Prepares To Expand Service To The Caribbean, Central, And South America

U.S. religious broadcaster World Harvest Radio is installing a sixth transmitter at WHRI, its shortwave station in South Carolina. The plan is to send more programming into the Caribbean, Central, and South America. The transmitter is already on site. The cost of installation is estimated at around \$100,000; once on the air, the cost of operation is expected to be about \$10,000 per month.

## North Korea Denounces Radio Broadcasts From The South

North Korea has accused South Korean conservatives of stepping up propaganda radio broadcasts against Pyongyang in collaboration with the United States and Japan. A spokesman for the Central Committee of the Democratic Front for the Reunification of the Fatherland, a Communist Party-run body, warned the broadcasts would only increase tension in inter-Korean ties.

The spokesman claimed radio stations, such as "Broadcasting for the North," "Missionary Broadcasting for the North," and "Voice of Freedom" were "an intolerable confrontation campaign against the nation and reunification." For decades Pyongyang's regime has banned its residents from accessing outside broadcasts, with all radios and TV sets tuned to state-run domestic media to tighten control over the country.

The spokesman said recently launched South Korean radio channels were teaming up with Japanese and U.S.-funded radio broadcasts like "Radio Free Asia" and "Voice of America" to intensify their campaigns against Pyongyang. "The South Korean conservative ruling quarters...should be held fully accountable for all the consequences to be entailed by their smear broadcasting moves," the spokesman said.

## U.S. Government Planning Azeri Broadcasts To Iran

The U.S. government is planning to beam Azeri-language radio broadcasts into Iran in a bid to influence opinion among the significant ethnic Azeri population there.

*(Continued on page 66)*

# Big Savings on Radio Scanners

## Uniden® SCANNERS



### Bearcat® 796DGV Trunk Tracker IV with free scanner headset

Manufacturers suggested list price \$799.95  
CEI Special Price \$519.95

1,000 Channels • 10 banks • CTCSS/DCS • S Meter  
Size: 6<sup>5/16</sup>" Wide x 6<sup>9/16</sup>" Deep x 2<sup>3/8</sup>" High

Frequency Coverage: 25,000-512,000 MHz., 806,000-956,000 MHz. (excluding the cellular & UHF TV band), 1,240,000-1,300,000 MHz.

When you buy your Bearcat 796DGV Trunk Tracker 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 headset 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](http://www.usascan.com) web site. For fastest delivery, order on-line at [www.usascan.com](http://www.usascan.com).

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CEI Special Price \$169.95

250 Channels • 5 banks • PC Programmable  
Size: 7.06" Wide x 6.10" Deep x 2.44" High  
Frequency Coverage: 25,000-54,000 MHz., 108,000-174,000 MHz., 400,000-512,000 MHz., 806,000-823,985 MHz., 849,0125-868,9950 MHz., 894,0125-956,000 MHz.

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.



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APCO 25 9,600 baud compact digital ready handheld TrunkTracker IV scanner featuring Fire Tone Out Paging, Close Call and Dynamically Allocated Channel Memory (up to 6,000 channels), SAME Weather Alert, CTCSS/DCS, Alpha Tagging. Size: 2.40" Wide x 1.22" Deep x 5.35" High

#### Frequency Coverage:

25,000-512,000 MHz., 764,000-775,9875 MHz., 794,000-823,9875 MHz., 849,0125-868,9765 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

organized so that it more closely matches how radio systems actually work. Organize channels any way you want, using Uniden's exclusive dynamic memory management system. 3,000 channels are typical but **over 6,000 channels are possible** depending on the scanner features used. You can also easily determine how much memory you have used and how much memory you have left. **Preprogrammed Systems** - The BCD396T is preprogrammed with over 400 channels covering police, fire and ambulance operations in the 25 most populated counties in the United States, plus the most popular digital systems. **3 AA NiMH or Alkaline battery operation and Charger** - 3 AA battery operation - The BCD396T includes 3 premium 2,300 mAh Nickel Metal Hydride AA batteries to give you the most economical power option available. You may also operate the BCD396T using 3 AA alkaline batteries. **Unique Data Skip** - Allows your scanner to skip unwanted data transmissions and reduces unwanted birdies. **Memory Backup** - If the battery completely discharges or if power is disconnected, the frequencies programmed in the BCD396T scanner are retained in memory. **Manual Channel Access** - Go directly to any channel. **LCD Back Light** - A blue LCD light remains on when the back light key is pressed. **Autolight** - Automatically turns the blue LCD backlight on when your scanner stops on a transmission. **Battery Save** - In manual mode, the BCD396T automatically reduces its power requirements to extend the battery's charge. **Attenuator** - Reduces the signal strength to help prevent signal overload. The BCD396T also works as a conventional scanner to continuously monitor many radio conversations even though the message is switching frequencies. The BCD396T comes with AC adapter, 3 AA nickel metal hydride batteries, belt clip, flexible rubber antenna, wrist strap, SMA/BNC adapter, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO or ESAS systems. Order on-line at [www.usascan.com](http://www.usascan.com) or call 1-800-USA-SCAN.

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Bearcat 796DGV Digital 1,000 ch. TrunkTracker IV base/mobile.....	\$519.95
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.....	\$184.95
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 92XLT 200 channel handheld scanner.....	\$105.95
Bearcat 72XLT 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 AR16B0 Wide Band scanner with quick charger.....	\$199.95
AOR AR3000AB Wide Band base/mobile receiver.....	\$1,079.95
AOR AR8200 Mark IIIB Wide Band handheld scanner.....	\$594.95
AOR AR8600 Mark II Wide Band receiver.....	\$899.95
Deluxe Independent Dual Volume Control Racing Headphone.....	\$29.95
ScanCat Gold For Windows Software.....	\$99.95
ScanCat Gold For Windows Surveillance Edition.....	\$159.95

### 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., 806,000-823,9875 MHz., 849,0125-868,9875 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](http://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



ID, custom search range, and S.A.M.E. group using 16 characters per name. **Memory Backup** - When power is lost or disconnected, your BC246T retains the frequencies that were programmed in memory. **Unique Data Skip** - Allows the BC246T to skip over unwanted data transmissions and birdies. **Attenuator** - You can set the BC246T attenuator to reduce the input strength of strong signals by about 18 dB. **Duplicate Frequency Alert** - Alerts you if you try to enter a duplicate name or frequency already stored in the scanner. **22 Bands** - with aircraft and 800 MHz. The BC246T comes with AC adapter, 2 AA 1,800 mAh nickel metal hydride batteries, belt clip, flexible rubber antenna, wrist strap, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. For more fun, order our optional deluxe racing headset part #HF24RS for \$29.95. Order now at [www.usascan.com](http://www.usascan.com) or call 1-800-USA-SCAN.

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## Capitol Hill And FCC Actions Affecting Communications

### 9-1-1 Education Month Strongly Endorsed By U.S. House

By a 381-to-0 vote, "National 9-1-1 Education Month" was endorsed by the U.S. House of Representatives in March, putting "Congress behind a national effort by seven national organizations dedicated to advancing public safety," the E9-1-1 Institute reported. House Resolution 537, "directing the Administration to establish a National 9-1-1 education month," was sponsored by Representatives Anna Eshoo (D-CA) and John Shimkus (R-IL) and 56 House co-sponsors.

Organizations calling for the 9-1-1 education program include the E9-1-1 Institute, National Emergency Number Association, 9-1-1 for Kids, National Association of State 9-1-1 Administrators, Association of Public-Safety Communications Officials International, CTIA-The Wireless Association, and COMCARE Emergency Response Alliance.

"They are calling upon public safety officials, schools, government officials and industry leaders to engage in a national effort to educate children, seniors and the general public about the importance of, and appropriate use of 9-1-1," the Institute said.

"9-1-1 is a life-saving service that everyone should know how to use, especially children and senior citizens," said Rep. Eshoo. "I'm very proud to have these dedicated national organizations join with me to expand 9-1-1 education for all Americans." Rep. Shimkus said that "while most people know how to call 9-1-1 in an emergency situation, not everyone is aware of the limitations of the system, given the expanding variety of wireless devices we all use and the variations in service by location. Ensuring that 9-1-1 callers know when and how to use the 9-1-1 system must be a priority."

### 2008 Global EmComm Conference Set For This Month In Germany

The state of emergency communications preparedness in each International Amateur Radio Union (IARU) region will be among the focuses of the Global Amateur Radio Emergency Communications (GAREC) Conference being held this month in Friedrichshafen, Germany.

The June 26-27 conference will also review the 2006 and 2007 EmComm Parties-on-the-Air, discuss the future of the Global Simulated Emergency Test, and WRC-03 modifications to Article 25 of the Radio Regulations regarding third party traffic during emergencies and exercises.

Three IARU region presidents will update conferees on EmComm in their areas. According to a news item from the American Radio Relay League (ARRL), Seppo Sisatto, OH1VR, and Juha Hulkko, OH8NC, will talk about the plausibility of emergency communications centers across the globe.

"There will also be a talk on D-STAR (digital voice and data protocol specification developed for amateur radio) in emergency communications," the ARRL said. "GAREC's schedule is continuously being updated and subject to change," the organization's news release said. Dr. Hamadoun Toure, HB9EHT, secretary general of the International Telecommunication

Union (ITU) is expected to make opening remarks at the conference. Ole Garpestad, LA2RR, will also participate.

The part of Article 25 concerning emergency communications says "amateur stations may be used for transmitting international communications on behalf of third parties only in case of emergencies or disaster relief. An administration may determine the applicability of this provision to amateur stations under its jurisdiction," and "administrations are encouraged to take the necessary steps to allow amateur stations to prepare for and meet communication needs in support of disaster relief."

GAREC delegates "will also have the opportunity to look at and discuss the Memorandum of Understanding (MOU) between the IARU and the International Federation of Red Cross Red Crescent Societies (IFRC), as well as the MOU between the IARU and the ITU," the ARRL said. "IARU vice president Tim Ellam, VE6SH, with assistance from IFRC Secretary General Markku Niskala and IARU International Coordinator for Emergency Communications Hans Zimmerman, HB9AQS/F5VKP, will lead the discussion. A representative from the ITU will also be on hand."

### Radio Amateurs Work With Homeland Security In Michigan

Michigan radio amateurs have been working with the Homeland Security Division of the Michigan State Police Emergency Management "to align the capabilities of the Amateur Radio Public Service Corps (ARPSC) more closely with the communications needs of the state's public service agencies," according to a report from the American Radio Relay League.

Leading the effort have been ARRL Michigan Section Manager Dale Williams, WA8EFK, and Michigan Section Emergency Coordinator John McDonough, WB8RCR.

"ARPSC—Michigan's integrated ARES/RACES program—also participates in the Michigan State Department Emergency Management Coordinators Quarterly meetings at the State Emergency Operating Center," the League said. It's here, Williams said, "that discussion of the Public Safety communications grants are discussed and their investment justifications detailed.

"We have been afforded the opportunity to discuss amateur radio's involvement with communications interoperability, as well as our ability to fill gaps in disparate networks and outages. As a result of these conferences, I was asked to include a list of ARPSC's needs for the next three years," Williams said.

Williams told the ARRL that they have been successful in incorporating the ARPSC Program into the Michigan State Preparedness Priorities. "Michigan intends to develop the ARPSC into a fully integrated communications team operating under common standards and procedures, including maintaining and enhancing the statewide amateur radio communications system; establishing suggested standards for amateur radio capabilities in local emergency operations centers, and developing a public awareness and education program to bolster the ranks of amateur radio participants." The hope, Williams said, "is to have all this implemented by 2010."

Williams said that "since the early 1980s, Michigan has oper-

ated an integrated ARES, RACES and NTS program referred to as the Michigan Amateur Radio Public Service Corps. By combining the forces of these normally separate structures, these valuable resources are pulled together to form an active trained and unified organization. The Section Emergency Coordinator also holds the positions of Section Traffic Manager and RACES Radio Officer. Membership in ARPSC is open to all amateurs and is structured to allow a beginning ham to progress from an entry-level position to a RACES-qualified operator by meeting specific training milestones."

## Emergency Communications Is In Fine Focus At Nevada Convention

The ARRL in May hosted EMCOMM-WEST 2008—"a specialty convention devoted entirely to emergency communications"—in Reno, Nevada.

The League's Emergency Preparedness and Response Manager Dennis Dura, K2DCD, was called upon to host an Emergency Communications forum and deliver the keynote address. The event was held at the Circus Circus Hotel Resort May 2-4.

Gordon West, WB6NOA, was on the agenda as special guest for the Saturday night banquet—also bringing his mobile communication unit and presenting an "Introduction to Emergency Communications" forum during the convention, the ARRL said.

According to the ARRL, there were four tracks of programs scheduled for EMCOMMWEST: General/Technical EmComm (covering public relations, HAZMAT awareness, recruiting EmComm teams and more), EmComm 101 (including an introduction to Emergency Communications, Net Control Station training, message handling training, EmComm go-kits and a message handling competition), EmComm Served Agencies (including a weather spotter class, emergency operation centers, search and rescue, Salvation Army, MARS and CERT), and Education and Recruiting (including a Technician "Ham Cram" and VE sessions). The Ham Cram was "for anyone interested in obtaining their Technician class license without suffering through a classroom environment," the ARRL said.

There was also a special event station, N7Z, on HF, UHF, and VHF with a special QSL card for confirmation of the contact. ■

## OUR READERS SPEAK OUT

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

### A Solar Fan

The following letter was sent to "Homeland Security" columnist Rich Arland:

Dear Rich:

I subscribe to *Pop'Comm* and read your article "Solar Power—For EmComm Volunteer, Its Time Has Come" in the January 2008 issue. I found it to be most informative. I did some searches on the Internet to find the briefcase PV system. After checking many sites I found one. I purchased it from Silicon Solar, which is located in Bainbridge, New York. The cost of the unit was \$114 plus \$6.51 shipping. I received it January 16, 2008, and tried it the next day. The unit worked well as long as the sun stayed out. I am very happy with it. Will be using it to power my radio scanner and my shortwave receiver. I can also use it for my GPS device. Keep these kinds of articles coming.

Joseph Minenna,  
Via email

### Scanning And NASCAR

Dear Editor:

That was a nice primer on how one goes about listening to NASCAR or Indy communications while trackside ["NASCAR—Hot Cars, Hotter Scanning," Ed Muro, K2EPM, February, 2008]. Unfortunately the author left out a semi-important bit of information regarding legal issues of scanning in some states with NASCAR or INDY-style tracks. Those being Florida, Kentucky, New York, and Indiana, which have tracks; and Minnesota and South Dakota which may have touring race fans en route to or from neighboring states.

While certainly not a high priority of the police, these states in some way, shape, or form ban either transportation or use of a scanner in a vehicle, especially if programmed with public safety band frequencies in some manner. New York and Indiana have been known to hassle even hams with scanners, and rumor has

it that Kentucky State Patrol places your scanner under the rear tire of their Crown Vics and destroys them at roadside.

Again the article was mostly about scanning at the track, but safe transport of the needed gear to and from the track should also be the budding racing scanner's concern until a time when their state laws are modified to further embrace the hobby.

Mark Bajek  
Westland, Michigan

The author responds...

Dear Mark:

Thanks for your comments on my NASCAR article—I hope you enjoyed it. It was my intent to impart to the reader how one could enhance the excitement of being a spectator at a race by listening in to the comms at the track.

As I stated in the article, over the last 15 years or so a cottage industry has developed "at the track" and scanners and accessories are sold and rented by vendors side by side with people selling hats, T-shirts, and other sanctioned souvenirs.

If I understand your point correctly, you have some concern about the transportation of a scanner in states that have laws prohibiting the use of a scanner in a motor vehicle. If that's the case, I really don't think this topic falls under the scope of an article about NASCAR scanning. In fact, NASCAR's primary sponsor NEXTEL markets its own scanner at the track called a "fan scan." I've never heard of anyone having their scanner confiscated at a race...a scanner at the race is just as natural as a pair of binoculars, a seat cushion, a box of popcorn, and a can of beer.

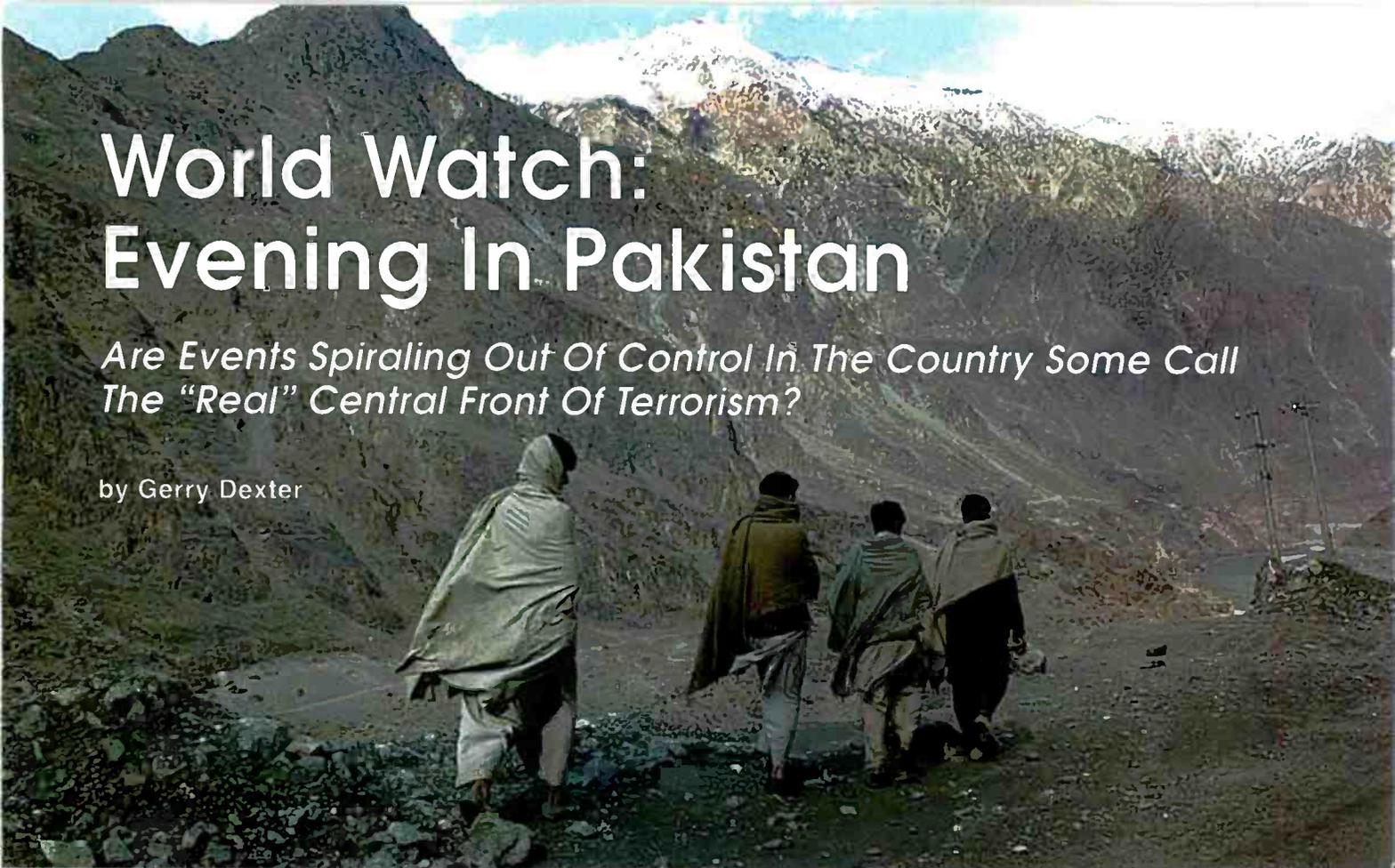
With regard to the transportation of your gear to and from an event, all radio hobbyists should be mindful of whatever laws are in place for the jurisdictions in which they'll be traveling and take prudent measures to make sure they're in compliance with such laws and regulations. In such a case, traveling to the race-track would be no different than traveling to your grandmother's house.

Ed Muro, K2EPM

# World Watch: Evening In Pakistan

*Are Events Spiraling Out Of Control In The Country Some Call The "Real" Central Front Of Terrorism?*

by Gerry Dexter



*A rugged and forbidding landscape in northern Pakistan. (Photo by Steve Evans, via Wikimedia Commons)*

Things had not been going at all well for Pakistan long before that terrible December Thursday last year when former Prime Minister Benazir Bhutto was assassinated in Rawalpindi while attending a rally of her supporters. Bhutto, leader of the Pakistani People's Party, had already twice served in that position. Her administrations were seriously corrupt, which led to her removal from power both times. Nevertheless, she remained enormously popular. Having recently returned from a self-imposed exile, she had hoped to claim the prize for yet a third time. Those hopes died along with the popular leader and over 20 others at the hands of a suicide bomber.

Half of the Pakistani population believes the government of President Pervez Musharraf was behind the killing (you've heard of conspiracy theories?). However, most experts believe al-Qaeda or a connected group was responsible and, indeed, arrests have since been made which tend to confirm that notion. Whoever was responsible, the assassination sent Pakistan into a whirlwind of rioting and violence and propelled the nation's political situation to a very dark place.

## A Global Tinderbox

Pakistan is believed to be the hiding place of Osama bin Laden; he's thought to be in the Waziristan area in the rugged mountains along the border with Afghanistan. Or, if he has since de-caved, then perhaps he hides in the shadowy, tangled alleyways of Peshawar. Tribalism, ancient blood feuds and antago-

Gerry Dexter is *Popular Communications'* "Global Information Guide" columnist.

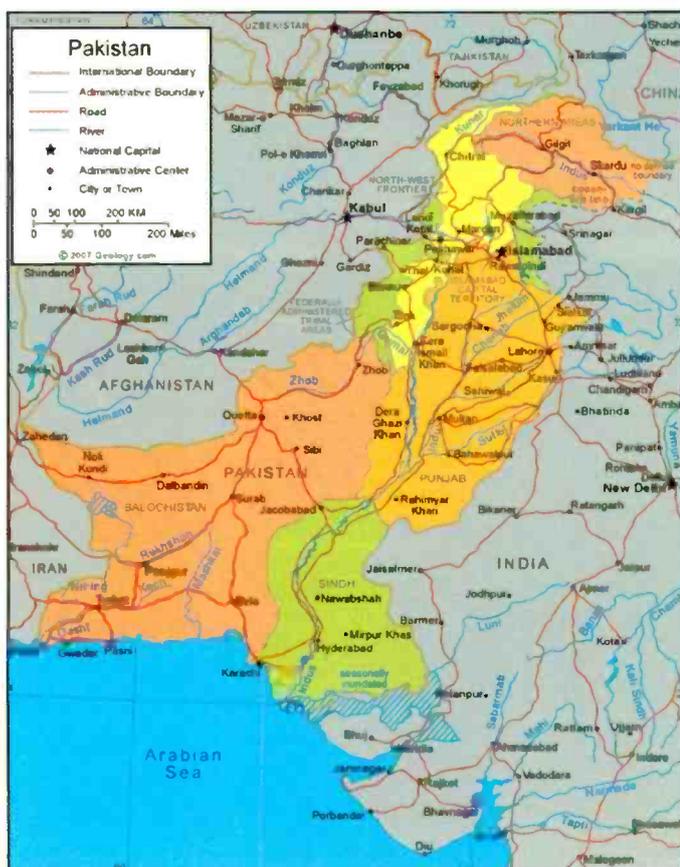
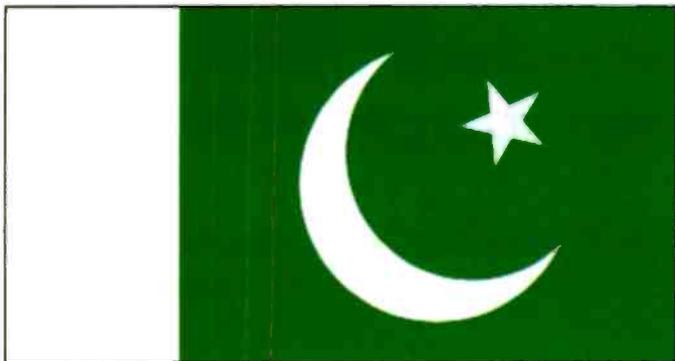
nism towards outside authority are thick in this area and it has proven very difficult for the government to make much progress in the anti-terror war, although Musharraf appeared to cooperate with the U.S. as best he could given the circumstances.

Of course, those circumstances changed drastically for Musharraf himself after the assassination. His relationship with the Pakistan military, already damaged, went further south and a growing outcry for his resignation as head of the armed forces came to a head. They demanded he resign. Hoping to keep the presidency, he stepped down. Meanwhile his popularity continues to tank and there is real doubt about his future moving forward.

When the election finally came off, Bhutto's Pakistan People's Party and the Pakistan Muslim League-N pulled a combined majority of votes and have since agreed to form a government.

In the meantime another car bomb goes off every couple of days, the military just shut down three (unlicensed) FM radio stations and arrested employees after the stations aired a speech by a pro-Taliban cleric, and Islamic extremists are apparently targeting aid workers. It's business as usual. Now the world waits to see what will happen next in this shaky, nuclear-capable third-world country on the Indian subcontinent, which it also shares with equally unfortunate Bangladesh.

If all this doesn't create a sufficient fear factor, you can add the seemingly permanent antagonism Pakistan has toward India (they've fought two wars, in 1947 and 1965), then stir in the craving both have for the disputed Kashmir region. Add a toxic jigger of opposing religions (Pakistan is Muslim, India, Hindu), Pakistan's jealousy over India's growing economy, and any number of other problems and it's a boiling brew indeed.



*PBC's Broadcasting House in Islamabad is draped with light—probably not for Christmas.*



<b>Radio Pakistan</b>	
<b>KARACHI:</b> APK-1 APK-2  <b>HYDERABAD:</b> APH-1  <b>LAHORE:</b> APL-1 APL-2  <b>RAWALPINDI:</b> APR  <b>PESHAWAR:</b> APP-1 APP-2  <b>DACCA:</b> APD-1 APD-2 APD-3  <b>RAJSHAH:</b> 223-9 M 1340 Kch  <b>CHITTAGONG:</b> 344-8 M 870 Kch	303-6 M 825 Kch Shortwave. Shortwave. Shortwave.  297-09 M 1010 Kch  875-2 M 1040 Kch Shortwave.  360-7 M 1150 Kch  379-7 M 790 Kch Shortwave.  256-4 M 1170 Kch Shortwave. Shortwave.  223-9 M 1340 Kch 344-8 M 870 Kch

Radio Pakistan gratefully acknowledges your communication of recent date and confirms your reception report as correct.  
 Time: West Pakistan → GMT. + 5 hrs. East Pakistan → GMT. + 6 hrs.  
 ©PPK—N 11 NP—27-855—4,000

*Radio Pakistan's QSL card. Don't count on those frequencies.*

One is reminded of the old cliché sports announcers used to throw around: "These two teams don't like each other!"

## The Sounds Of Unrest

For news junkies and SWLs who like to hear about "other cultures" live and direct on shortwave, receiving Radio Pakistan is anything but automatic. Even if you live in an area amenable for Asian reception, you'll find that pulling in a readable signal—any signal—from Radio Pakistan is, to put it mildly, an uncommon event. You'll need all your DXing abilities and a large dose of S-9 luck just to get anything out of these folks. However, now that a fresh sunspot cycle is working to our advantage we can at least hope for slightly better results.

Beyond such natural changes there is another positive. Pakistan's official broadcaster, the Pakistan Broadcasting Corporation, of which Radio Pakistan is the external service, is due for a bit of a pump up. Broadcasts in Chinese, Hindi, Pashto, Dari, Bangla, and Farsi are all destined to receive increased

focus. On the rupee's reverse, those in Turkish, Nepali, Sinhali, Turki, Turkish, Russian and Arabic have spoken their last. There's also talk of improved transmission facilities, of employing higher power, even (gasp!) relay sites! One wonders if this is an outgrowth of that jealousy of India, since All India Radio is a much larger operation, with its General Overseas Service being well heard in much of the world.

The move to expand and modernize has brought with it a few speed bumps. English to Europe at 0730 to 0830 on 15100 and 17835 has been dropped. (Well, we couldn't hear that one anyway.) The broadcast continues from 0830 to 1100, mostly in Urdu but with some very brief English segments dropped in here and there. Also remaining is the 1600 to 1615 English broadcast airing on 7520, 11550, and 11570 plus some 60- and 49-meter frequencies that never survive the trip to our shores.

Other sites you might try for include (transmitter site in parenthesis):

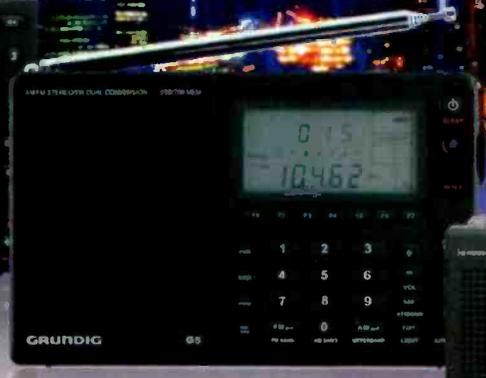
- 3975—Pindi III pgm, 0730–0925 (Rawalpindi)
- 3975—Pindi III pgm, 0545–0715 (Peshawar)

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Receives  
FM Band



Receives  
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*Paratroopers from the 173rd Special Troops Battalion and Afghan border police patrol the bridge between Afghanistan and Pakistan February 28, 2008. (U.S. Army photo)*

- 4835—Current Affairs, 0700–0900 (Islamabad)
- 5025—Quetta, 0545–0904 (Quetta)
- 5055—Haya Alla Falah pgm, 0545–0700 Islamabad)
- 5055—Kashmiri pgm, 1730–1830 (Islamabad)
- 5055—Balti News, 1850–1900 (Islamabad)
- 5055—Islamabad pgm, 2115–2200 (Islamabad)
- 5860—Punjabi News, 1203–1207 (Islamabad)
- 5925—Rawalpindi II pgm, 1300–1700 (Islamabad)
- 6065—Balti Svc, 0930–1015 (Rawalpindi)
- 7155—Quetta, 0900–1320 (Quetta)
- 7220—Chitrali Svc, 1600–1900 (Peshawar)
- 7265—(domestic) 1945–2315 (Rawalpindi)

Remember, though, that these are among the rarest of short-wave signals, and many of the time/frequency pairings simply do not work for us North Americans. Also, considering the state of flux this broadcaster is in, some of these channels may not be currently active.

Ham radio operators don't do much better than we SWLs. For one thing there aren't all that many amateur radio operators in Pakistan and they are limited to fairly low wattage (400 watts on the HF ham bands). Your best shot at hearing or working one (on phone) is on 20 meters between 14.112 and 14.350 and 15 meters from 21.151 to 21.450. AP2 is the most commonly used prefix. The Pakistan Amateur Radio Society station, AP2ARS, is probably one of the most active stations.

One of the reasons it's so difficult to hear Pakistani hams on the air is the country's rather draconian licensing requirements. Potential hams must be citizens and at least 18 years of age. They also must speak fluent English and have spent at least three years as an active, QSL-card-seeking SWL. And here's the kicker: Unless they have a friend who works at the Pakistan Telecommunication Authority (Pakistan's equivalent



*Benazir Bhutto, back when she was the Prime Minister of Pakistan, speaking to press upon her arrival for a state visit. (DoD photo)*

of the FCC), they must also have a degree or diploma in telecommunications from a recognized university, domestic or foreign. Wow!

Further complicating matters is Pakistan's total lack of reciprocal operating agreements with other governments. Many countries make it easy for hams from other countries to obtain temporary operating privileges when visiting or vacationing, but Pakistan has no such agreements. Foreign hams can't even get a Pakistani license the old-fashioned way, as all hams must be citizens. There's even some doubt about the legality of visiting foreign hams operating established Pakistani club stations in the presence of licensed local operators.

All these factors, combined with Pakistan's remote location, make it a difficult catch, indeed.

Of course, you can also follow Pakistan news on the Web. Radio Pakistan's website ([www.radio.gov.pk/](http://www.radio.gov.pk/)) lets you listen to its live newscasts, although it appears these are only available in real time (they don't seem to be archived). Look under the "News Bulletins" link. You can also read the text-only version, which may be available a bit longer. There are a handful of English language newscasts to choose from, as well as several others if you happen to be up on your Urdu.

Other on-line news sources include the Associated Press of Pakistan ([www.app.com.pk/](http://www.app.com.pk/)), the government's Press Information Department (<http://www.pid.gov.pk/>) and Pakistan TV ([www.ptvworldnews.com.pk/](http://www.ptvworldnews.com.pk/)), which is also government-owned.

If you're really serious and don't mind spending a few bucks for the service you can sign up with EINnews ([www.einnews.com/](http://www.einnews.com/)), which supplies news about both Pakistan and India. Advertised as being "for global professionals," the service costs around \$60 per month. For that you get the whole enchilada, from business news to government relations to industry, politics, and stories of a general nature, plus the ever-popular "miscellaneous."

There are a number of other on-line sources that provide subject-specific news; it's just a matter of doing a Google search. For that matter Google itself provides something along this line, though it takes a minor bit of setting up.

## The Watch Continues...

Pakistan may be half a world away, but what happens in this strategic, and extremely volatile, part of the globe could have quite an impact on your world. Reason enough to try and stay up with the situation.

It may very well be "Evening in Pakistan" these days. But we can hope that won't always be the case, that Musharraf or "somebody" will come along, somehow work a miracle, and get the country's act together. Then perhaps, one day, the dim light of evening will fade and a new dawn will rise over Islamabad and the rest of that troubled country. ■

Thanks to Kirk Kleinschmidt, NTØZ, for his assistance with the amateur radio info.—gld

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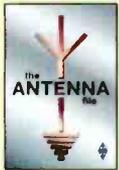
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# A High-Performance D-I-Y Store Yagi For 6 Meters

**Whether You Need “Ears” For Field Day Or The Operating Season, This Easy, Optimized Wideband Antenna Is A Great Performer**

by Chip Margelli, K7JA

**H**ave you ever had a beam blow down just before a contest weekend? Or maybe you’ve suddenly gotten a last-minute invitation to run the VHF station at your local radio club’s Field Day effort. Coming up with a high-performance beam on short notice may seem impossible, but a solution may be as close at hand as your local D-I-Y (Do-It-Yourself) home-improvement store.

This article describes the design and construction of a high-performance six-element Yagi for the 50 MHz band, using materials largely found at the hardware store. I’ve also included a sidebar about building a version of this antenna for Channel 2 TV DXing.

Sound like fun? Read on!

## Electrical Design Concept

This antenna is based on the “OWA” (Optimized Wideband Antenna) Yagi concept<sup>1</sup> pioneered by Nathan Miller, NW3Z, and Jim Breakall, WA3FET; all credit for this innovative and useful original design belongs to them. I favor the OWA design for several reasons.

For one, the beam presents a natural 50-Ohm impedance, so it may be connected directly to 50-Ohm coaxial cable (through a 1:1 balun), without the need for an impedance-matching network like a Beta or T-match. Secondly, the impedance is very stable over a wide frequency range, making the design forgiving of minor tolerance issues that can quickly arise on the VHF bands. Finally, the pattern of the OWA is very clean, with side and back lobes well suppressed, so this beam is very quiet on the receive side, thanks to the reduction of noise arriving from a direction other than that of the desired signal.

The OWA achieves these objectives, in part, through the use of a first director that is very closely spaced in front of the driven element. The tight coupling to the driver raises the feedpoint impedance and broadens the bandwidth at the same time (much as a “very fat” driven element might). The OWA design forfeits a tiny amount of gain (less than half a dB) compared to a gain-optimized design, but this difference can’t be heard in operation and the other advantages, namely ease of construction and excellent overall performance, far outweigh this “compromise.”

L.B. Cebik, W4RNL, has a wealth of information on the OWA design on his website ([www.cebik.com/radio.html](http://www.cebik.com/radio.html)), and

Chip Margelli, K7JA, has been a licensed amateur for 45 years and is a long-time DX and contest operator. He’s the Vice President for Amateur Sales and Marketing for Heil Sound, Ltd.

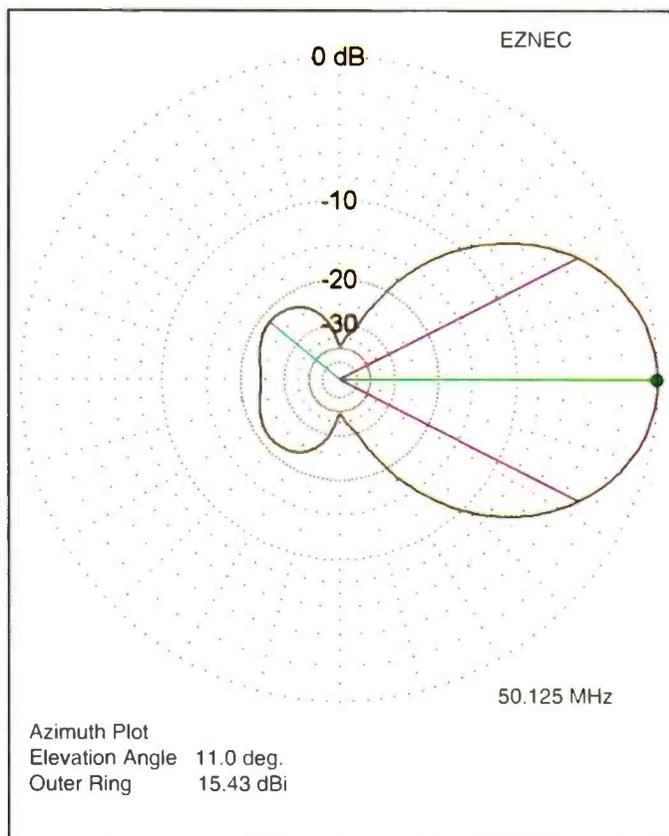


Figure. Horizontal pattern for the six-element OWA Yagi at a height of 24 feet and a take-off angle of 11 degrees. Note the very clean pattern, which results in very quiet reception.

I used his article on 6-meter OWA Yagis (<http://www.cebik.com/vhf/66.html>) as the starting point for my final design. I claim no credit for any innovation regarding the electrical designs presented here; I just enjoyed the exercise of coming up with scrounged materials to build the actual beams.

For the purpose of this design exercise, I chose a six-element OWA Yagi design, which consists of a driven element, with a reflector behind it and four directors in front of the driver. The boom length, on 50 MHz, is 13.1 feet (about 4 meters) and slightly less than 12 feet (3.7 meters) for TV Channel 2 (see “Building The Six-element OWA Beam For TV Channel 2 DX”).

I modeled and optimized the design for the 50 MHz band using EZNEC by Roy Lewellyn, W7EL<sup>2</sup>, using 50.125 MHz as my chief frequency of interest. The element diameters are all



*Photo A. This is the finished mount for an element. Note the square lengthwise slot that will help hold the element level and the curved cutout that helps hold the mount snugly on the boom.*



*Photo B. The element is secured to the mount using UV-resistant cable ties. Be certain the element is centered on the mount.*

0.625 inch (15.875 mm), and all elements are insulated from the boom, making the modeling task very easy for this beam.

The resulting design has a free-space gain of 10.21 dBi (8.06 dB over a dipole), with a front-to-back ratio of almost 27 dB. At a height of 24 feet above ground (the height of the mast I used on Field Day, where I tested the design), the gain is 15.43 dB at a takeoff angle of 11 degrees, with a front-to-back ratio of about 24 dB. The pattern, shown in the accompanying **Figure**, is very clean, with no odd side lobes. And the impedance, at 50.125 MHz, is 44 Ohms, yielding an SWR (referenced to 50 Ohms) of 1.13:1; the SWR stays below 1.5:1 up to 51.5 MHz. The SWR bandwidth could have been made even broader, but I chose to peak and tweak the pattern, at the expense of bandwidth, because I didn't need to cover more than 50.0 to 50.2 MHz in my actual operating plans.

## Materials And Construction

I wanted to use, to the greatest extent possible, materials from my local D-I-Y center. You'll probably find everything you need at a Home Depot, but you can also try the hardware store nearest you, and use your imagination a bit!

For elements, I chose "half inch" copper pipe, which has an outside diameter of 0.625 inch (15.875 mm). Yes, copper is very expensive these days, but my objective was to build a Yagi on the premise that I might need to do so in a big hurry, and my local stores don't have aluminum tubing. Ten-foot lengths of copper pipe are a standard length, and the reflector (the longest element) in this beam is just under 10 feet in length. This means you don't need to be splicing copper in order to come up with the proper length.

If your local store has aluminum with a 5/8-inch outside diameter, this would be the preferred material. It's less expensive, and much lighter than copper. Some ham dealers, such as Texas Towers ([www.texas Towers.com](http://www.texas Towers.com)), sell aluminum in six-foot lengths. If you can find that, use two pieces, spliced using an insert of 0.5-inch diameter aluminum about 8 feet long and secured with pop rivets or small stainless-steel screws, lock-washers, and nuts.

The boom I used was a piece of 2-inch OD aluminum tubing left over from another antenna project. You can use about



*Photo C. A typical reflector or director element, mounted on the boom during initial testing of the antenna.*

any kind of metallic tubing, if it's stiff enough, and if you use aluminum elements you can use a smaller-diameter boom, perhaps using TV mast sections with an overhead support rope, if needed, to keep the boom straight. A total boom length of 14 feet is required for the 50 MHz beam.

Finding a method of mounting the elements to the boom involved pure serendipity, and here's where you may need to use some original thinking, based on what's available at your local D-I-Y center. My local Home Depot just happened to have some pieces of square wood, about 1.375 by 1.375 inches (34.925 x 34.925 mm), with a square notch about a 1/2 inch wide cut out down its entire length. I saw this and thought to myself, "Why not use cable ties to hold elements to the wood, using the slots to maintain the position of the element on the wood block?"

Needing an insulated mounting system for the elements, I bought a couple of pieces of this wood, and cut it into about 8-inch (203.2 mm) lengths. The exact length of the blocks isn't critical, nor is their exact size; the lengthwise slot is the important aspect of this wood, and whether it's square or a "V" shape.

**Table 1. Dimensions Of 50 MHz Six-element OWA Yagi (in inches)**

Element	Position*	Total Length	Length from Ctr
Reflector	0	117	±58.5
Driven Element	31	114	±57
Director 1	43	107.5	±53.75
Director 2	76.2	104.5	±52.25
Director 3	108.7	104.5	±52.25
Director 4	157.2	100.5	±50.25

*Notes:*

1. All elements are 0.625-inch Outside Diameter.
2. The position of element is referenced to the center of the Reflector (rearmost element).

The elements need to be centered on the block, so mark the center point between the U-bolt holes, then secure the element loosely onto the block at first; then go back and forth and center the element on the block, and tighten the cable ties. Note: the center point between the U-bolt's legs is the critical point here; the U-bolt sets the actual position of the block on the boom, making any drilling imperfections (off-center) of no consequence. See **Photo B** for a photo of the finished element, mounted and ready for installation on the boom (**Photo C**).

**Important:** I should stress, at this point, that *this mounting technique is not suitable for permanent installation*. Cable ties will eventually succumb to the effects of sunlight, and the elements will fall off the mounts. But UV-resistant (usually black) cable ties are perfectly suitable for Field Day, or even for one-season antenna installations. Put it up in the spring, then take it down in the fall after the sporadic-E (Es) season is over!

The driven element is split in the middle. Just leave a space of about an inch between the element halves of the driver, and secure the leads from your 1:1 balun (I use a Cal-Av Labs model EB-2) using a 1-inch #8 stainless steel machine screw with lockwasher and nut. I put a small piece of wood dowel inside the boom, at the mounting point, to prevent collapse of

Just look around to see what's available at your hardware store.

Now, you'll need to attach the mounts to the boom. Use a single U-bolt of a proper size based on the diameter of the boom you've chosen. I used 2-inch U-bolts that are about 5 inches long so as to allow plenty of thread length. Find the center point on each wood block, and carefully drill the block so the slot will be on the side once the element is mounted.

The wood blocks will not hold still on the boom unless you round out the bottom side. I used a Ryobi grinder to make a

curved surface on the mount; this is not an exact science, but get it close and then the clamping pressure will take care of minor imperfections in your work! Finally, give the mounting blocks a coat of primer paint, then several coats of Latex-based house paint, to protect the blocks from weathering and also to maintain their insulating properties. See **Photo A** for a view of the finished mounting block.

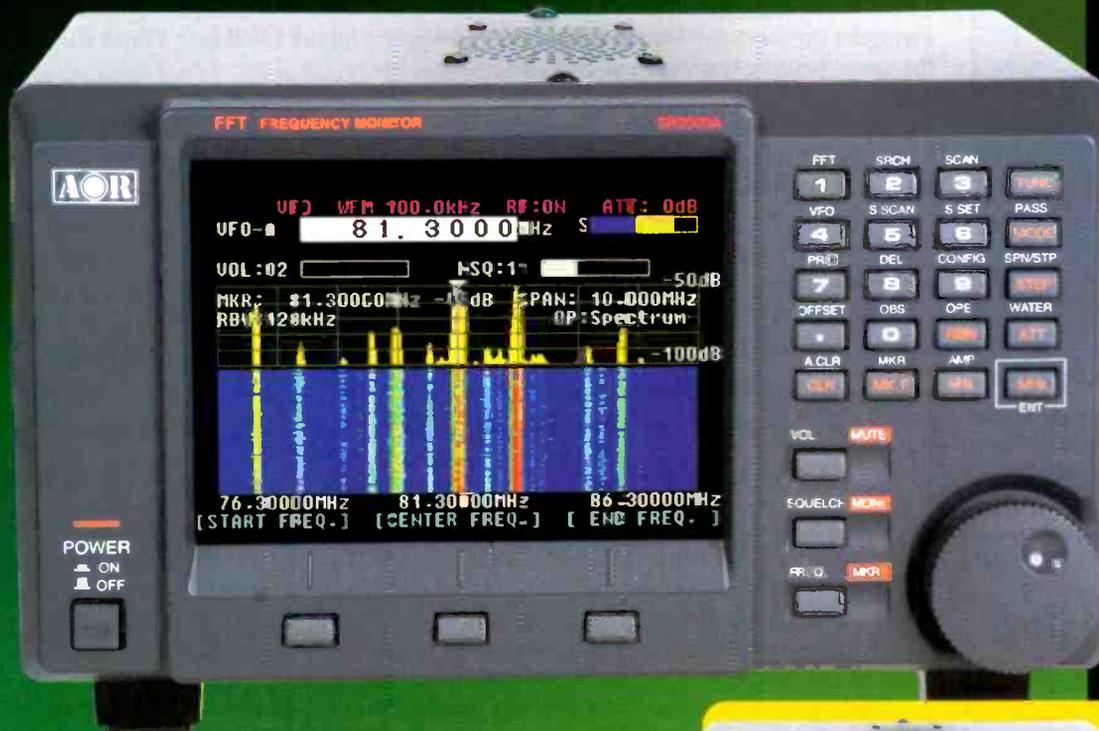
The elements now are mounted to the wood blocks. I used UV-resistant cable ties, two on each side of the block, to secure the elements to the wood blocks.



*Photo D. The beam is initially assembled on the ground, to assess mechanical integrity and to get the elements level.*

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\*\*\*No audio available while displaying video signal on the LCD. If both video and audio need to be monitored simultaneously, an optional (external) TV2000 is required.



Photo E. Detail of the driven element and the attachment of the leads from the 1:1 balun connected to your coaxial cable.

the element during tightening. For portable work, you could also just secure the lead from the balun using a hose clamp on each element.

Final assembly is very quick. Mount the blocks in position on the boom, per **Table 1**, remembering to maintain the spacing with as much accuracy as possible. Set the boom up on two sawhorses to allow easy leveling of the elements, and secure the U-bolts to hold the elements in the proper position. Be sure to watch the horizontal angle of each element; the tips of each element should be the same distance from surrounding elements on both sides (not skewed toward the front or back on one side). **Photo D** shows the beam assembled and ready for testing in my backyard.

### Testing

The antenna should require no adjustment, if you've followed my dimensions.

To check the SWR, mount the antenna temporarily in a clear field at a height of about 10 feet (about 3 meters), or a little higher, if you reasonably can. Check the SWR using an antenna analyzer or a low-power transceiver; the SWR should be below 1.25:1 at 50.125 MHz. If it seems a little high, check the positions of the leads from the balun to the feedpoint; they should be parallel to each other until they reach the driven element, then they should make a right-angle turn to join up with the mounting screws. Wider spacing can lead to slightly higher SWR (see **Photo E**).

### Performance

This antenna has performed brilliantly well. In its debut at the 2007 W6ZE Field Day effort (**Photo F**), on a weekend when conditions were rather poor, we worked 160 stations, with many of them being single hop *Es* contacts from our location in the Los Angeles area to Texas, Oklahoma,

## Good News for the VHF/UHF Enthusiast

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## Building The Six-element OWA Beam For TV Channel 2 DX

The six-element OWA beam described in this article may easily be adapted for TV Channel 2 DX work. The horizontal beamwidth (at the -3 dB points) is 55 degrees, so aiming the beam precisely at a distant TV station is not mandatory. The deep rejection off the sides, however, helps you separate signals when the lower VHF region is open in multiple directions, as often happens during the peak of the sporadic-E propagation season in the late spring and summer.

Scaling the dimensions for a different frequency is not just a matter of changing the lengths of the elements; the spacings between the elements must also be modified. In **Table 2** I've provided a set of dimensions that will provide great gain (15.3 dBi over average ground at a height of 24 feet), along with 20 dB of front-to-back ratio and a very clean pattern. The SWR, referenced either to 50 or 75 Ohms, is in the vicinity of 1.2:1 at 57 MHz, so you may connect coax of whichever impedance matches your receiver.

This is a great beam for the serious Channel 2 DXer, or for the Ham who watches Channel 2 for indications of 6-meter propagation.

**Table 2. Dimensions Of TV Channel 2 (57 MHz) Six-element OWA Yagi (in inches)**

Element	Position*	Total Length	Length from Ctr
Reflector	0	104	±52
Driven Element	27.5	100	±50
Director 1	35	92	±46
Director 2	66	90	±45
Director 3	93.5	90	±45
Director 4	135.25	86	±43

### Notes

1. All elements are 0.625-inch Outside Diameter
2. The position of element is referenced to the center of the Reflector (rear-most element).



Photo F. The six-element 50 MHz OWA, working DX from the W6ZE 2007 Field Day site in Los Alamitos, California.

Kansas, Nebraska, and north to Washington State. The antenna height was 24 feet, and we were running 150 watts of transmitter power. Many stations reported that we were the only California station they were hearing.

For several years I've used an identical version of this antenna at my home station at a height of 75 feet and have worked many stations in Japan and the Pacific, along with CT1HZE in

Portugal! Needless to say, to work Europe from California on Es with a little beam with a 14-foot boom (and no amplifier) speaks very well for its capabilities, and I've been very impressed with its performance.

Whether you build this beam out of copper or aluminum, if you follow the dimensions in the tables, it will perform splendidly for you, and it's a fun project to tackle in advance of an event like Field Day. Using the cable-tie mounting method, the antenna goes together in minutes, making it perfect for field deployment. Try it out, and enjoy being loud on 6 meters!

## Acknowledgments

I would like to thank the members of the Orange County Amateur Radio Club (W6ZE) for their help in setting up this antenna at their Field Day site (we ended up with the #2 score overall!). Thanks also to NW3Z and WA3FET for their original work in designing the OWA Yagi, and to W4RNL for his extensive and inspiring website. And special thanks to my wife Janet, KL7MF, who cheerfully puts up with my saw horses and odd pieces of metal strewn across our back yard as I design and build these multi-element portals to the world of DX. ■

## References

1. *The Optimized Wideband Antenna (OWA) Yagi*, by Nathan Miller, NW3Z, and Jim Breakall, WA3FET ([www.naic.edu/~angel/kp4ao/hant/owa.html](http://www.naic.edu/~angel/kp4ao/hant/owa.html)). This article describes the OWA concept and provides design examples for several HF bands.

2. EZNEC by W7EL ([www.eznc.com](http://www.eznc.com)) is a popular and very easy-to-use antenna modeling software package for Windows 98, ME, XP, 2000, and Vista.

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# The AOR SR2000A Frequency Monitor

Part communications receiver, part spectrum display, part TV receiver but all cool is about the only way to describe this unique piece of equipment. AOR recently announced a revision to its SR2000 frequency monitor that represents a unique combination in the communications receiver area.

The most prominent feature of the SR2000A is the large, bright LCD screen on the front panel. This screen is used to present most of the information about the operation of the radio as well as a spectrum display up to 40 MHz wide and live television pictures where possible. Soft keys at the bottom of the LCD change their function depending on the mode.

To the right of the LCD panel is a keypad and a rotary knob used for controlling most of the functions of the receiver. The knob can be used for tuning as well as making selections depending on the control mode that's active at the moment. The knob is very convenient for entering data or for short frequency changes, but it's not weighty enough to use for large frequency panning.

## The Basics

First and foremost, the SR2000A is a communications-grade receiver that covers 25 MHz to 3000 MHz (3 GHz). Currently only the government model is available in the United States, which means there are no blocks on the cellular frequencies in the 800 MHz band, but those will be blocked as required by law for the civilian version when it is released (hopefully by the time you read this, according to AOR).

The receiver is a triple conversion design and seems to perform quite well and without interference in the frequency areas I was able to check. It's an impressive receiver by any standard. One thousand memories are available for storing frequencies, although you could happily own this receiver and never need anything beyond the 10 VFO positions available.

The receiver is also one of the first to feature the SFM or Super Narrow FM mode for listening to the new split channels with a bandwidth of 6 kHz, as opposed to 15 kHz for the usual Narrow



*The AOR SR 2000A is a full-featured communications receiver with a spectrum display attached...or a full-featured spectrum display with a scanner attached, or...This view of its screen is showing simulated video; the SR 2000A receives NTSC, PAL, and SECAM video formats.*

FM that is currently in use with public safety systems. There's also an AM mode and a Wide FM mode for TV audio and FM broadcast reception.

The receiver can have an optional P25 board installed for decoding APCO-25 transmissions. There is no action required by the user once the board is installed; rather if an APCO-25 signal is encountered, the decoder starts operating. There is a slight delay while it kicks in, and it should be noted that like all digital signals it takes a bit stronger signal to get good decoding (this seems to be true of all APCO-25 decoders I've tested and not a flaw of the SR2000A). The only thing missing for the scanner enthusiast is a trunking mode to go along with the APCO-25 decoding, and some more flexible scanning options. There is also a computer interface, so perhaps software could make up for that limitation.

## Spectrum Display

The spectrum display has long been a highly desired tool for finding new frequencies or spotting transmitters that are in use. A center frequency is selected that's actually received (audio comes out of the

speaker) in the normal operation mode. Up to 5 MHz above and below that frequency is scanned and any signals present represented by a line of the spectrum display. The taller the line, the stronger the signal. In the 20 MHz and 40 MHz wide mode, audio of the center frequency is not heard, but a wider spectrum display is presented. Using the Fast Fourier Transform (FFT) algorithm allows the receiver to make a full scan of 10 MHz of spectrum in just 2/10ths of a second. It's incredibly fast even in the 40 MHz wide mode.

The spectrum display has several features to help with locating frequencies of interest or jumping to active frequencies. All are selectable from the soft keys in combination with options for markers that can track a signal automatically or allow for manual movement. All in all, just about everything you'd want from a spectrum analyzer is here and works very well.

## Video Mode

The spectrum display can also be used to display video signals of analog televisions or surveillance cameras, either on the LCD or an external monitor. It's very easy to enter the video mode—you simply press



Computer interface jacks are provided both with USB and RS-232 serial. An external speaker, video out, and the standard AOR power and accessory jacks are also available. Note the separate headphone jack, which disables the internal speaker audio.

a couple of keys. If there's a video signal present, it will be displayed. Putting the receiver in Wide FM mode will also provide the audio. The configuration menu allows for selection of NTSC (North America) or PAL (European) standards of video output to an external video jack as well. The small LCD screen provides an excellent picture from broadcast signals.

## Scanning

The SR2000A features 10 banks of 100 channels each that can be scanned. Unfortunately like many communications receivers, it is not a particularly good scanner. Only one bank can be scanned at a time. There is a Select Scan that will only scan the channels within the bank that have been selected (kind of a reverse lockout function) so you do have some control, but scanning is not the strong suit of this receiver. It's really intended as a tool for finding and analyzing frequency information.

## Searching

Searching is where the SR2000A really shines. There are 40 search setting banks where upper and lower frequency limits can be stored. Each of the 40 search banks has 50 "pass" channels that can be programmed to skip known frequencies or troublesome signals that might cause the receiver to stop unnecessarily.

An alpha tag can also be applied to the bank as a quick memory aid. In the search mode, a list of the frequencies that have

been found active is displayed on the LCD panel. Up to 30 frequencies can be displayed. You can use the soft keys to select one of the frequencies listed and then jump to that frequency in VFO mode for further investigation. Very cool indeed!

There's also a FFT Search mode where a spectrum display is provided that is sampled 15 times per second. A couple of additional parameters can be set, including a threshold level for signal detection (nothing below that signal strength will count as a received signal). Once that mode is entered, the receiver again starts displaying frequencies, but this time the color of the frequency indicates its relative signal strength.

## Summary

The SR2000A is a highly specialized receiver and diagnostic tool that would make an excellent addition to the shack of anyone who is serious about scanning, or as a professional tool for all sorts of analysis functions. A 12-VDC input for base or mobile use enhances its versatility. It's a capable communications receiver in the 25-3000 MHz range and provides great reception functions as well as video and optional digital reception.

The package includes the spectrum display and receiver combination, power supply, and manual. While the basic functions were easy to figure out without the manual, you'll want to take a read-through anyway to find all the hidden settings and options you didn't know existed. If your budget can handle the list price of \$3,355 you won't be disappointed! ■



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# The Watergate Rig: The Most Infamous Spy Radio

## One Radio's Role In A President's Unraveling

by Terry O'Laughlin

**T**hirty-six years ago, a former U.S. intelligence agent, James McCord, used personal connections and presidential money to buy a radio. The political intrigue resulting from his use of that radio eventually forced the resignation of President Richard M. Nixon. Yet, this radio has disappeared from public memory even among most radio hobbyists.

McCord purchased a Communications Electronics, Inc. (CEI), RS-111. It was a specialized radio designed for use by the Department of Defense (DoD) and various intelligence agencies. Radios like this are typically designed, deployed, and destroyed with very little fanfare, and the general public rarely becomes aware of their existence. But this RS-111 became a notable exception. Its photo was printed in the *Washington Post* and the *Washington Star*. It was also a star exhibit in the Watergate Congressional hearings and was seen by the millions of Americans glued to their television sets. How did this all happen?

### \$3,500 Cash, In Crisp \$100 Bills...

In May of 1972, James McCord walked into the Watkins-Johnson, CEI division offices, a nondescript office building at 6006 Executive Boulevard in Rockville, Maryland, with a crisp wad of new \$100 bills in his pocket. He handed his business card to the receptionist and asked to buy an RS-111, a radio he knew from previous jobs as a wireman.

But not just anybody could walk off the street and purchase these specialized radios. One had to work for an authorized agency and have the proper security clearance. Very few people even knew that in this building, innocuously nestled in an office park, radios were produced that were highly prized by a variety of secretive government agencies. Who did this guy think he was?

McCord had retired early from government intelligence work on August 31, 1970, after 19 years of service (although in the book *Secret Agenda*, a detailed account of the actual wire-tapping, author Jim Hougan questions McCord's retired status). McCord then started his own technical security consulting business, McCord Associates. On the surface, running McCord Associates did not pay nearly as well as his previous job, though he appeared to be doing fine.

Terry O'Laughlin is the director of the electronics department at Madison Area Technical College.

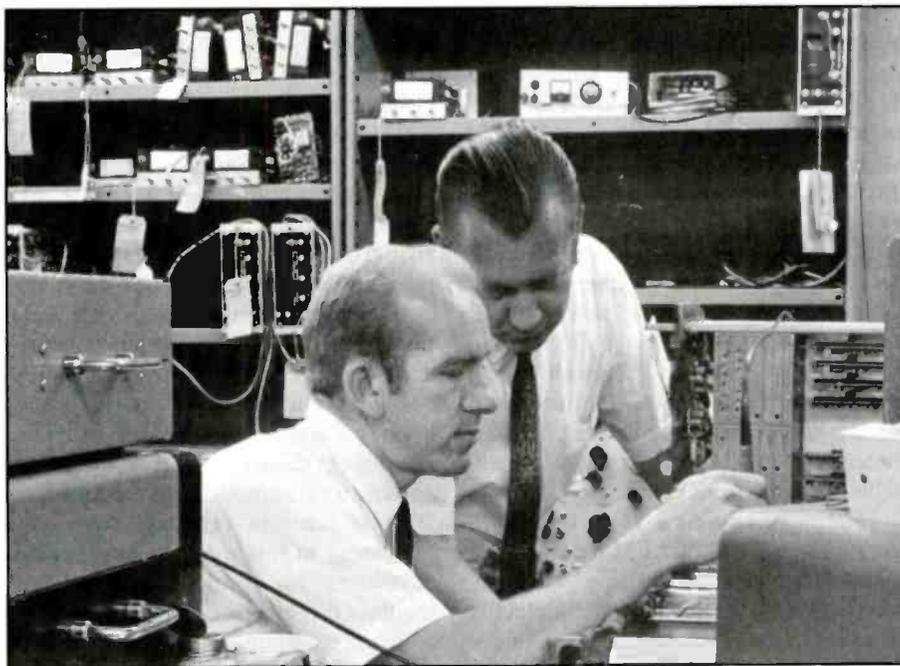


*James McCord at the Senate Select Hearings on Watergate shown with the Watkins-Johnson RS-111 receiver and Bell & Howell telephone bug.*

On October 1, 1971, McCord was retained as a part-time consultant by Richard Nixon's Committee to Re-elect the President (CRP) based on the recommendation of his longtime friend, Secret Service agent Albert Wong. He was promoted to security director for CRP, a full-time position, on January 1, 1972.

As McCord did not have the agency connections or proper clearance to purchase a radio from Watkins-Johnson, the receptionist returned his card and sent him across the street to the sales department. There McCord talked to Jack Bussler and Tracy Estabrook, both of whom he knew well from his days working for the government.

Bussler arranged for McCord to purchase an older demonstration RS-111 for \$3,500. McCord peeled off thirty-five \$100 bills to complete the transaction. Paying in cash was highly irregular, but the spy business is not regular business. The money came from \$65,000 he received from G. Gordon Liddy. Liddy was the head of President Nixon's Special Investigations Unit. (In *Secret Agenda*, Hougan incorrectly asserts that the receiver



*Senior Test Technician Jack Howard, the expert at aligning RS-111 steel box tuners, consulting with engineer Archie Fosdick.*

came from Bell & Howell, although later in the book he cites FBI transcripts stating it was a "Communication Electronics, Inc...Receiving System.")

A salesman's demo RS-111 was pulled off a shelf, sent to the test department, bench tested, and aligned to specification. Barry Wright, head of quality control, did the final inspection, signed the form and placed it inside the box with the radio. He wheeled it to the rear entrance and loaded it into McCord's van. Thus began the unraveling of a presidency.

### Inside The RS-111

The first RS-111 receivers were designed and produced above a garage in Bethesda, Maryland, by Communication Electronics, Inc., an independent company founded in 1960. By 1967, business was booming and CEI needed money to expand. Watkins-Johnson, a Palo Alto-based microwave component and systems manufacturer, purchased the company and CEI became a division of Watkins-Johnson. The name changed, but the business did not.

CEI made the best VHF and UHF radios. They outperformed everything on the market and were smaller and lighter.

The DoD and U.S. intelligence agencies were regular customers. Government agents regularly sought out CEI engineers for help on tricky surveillance problems. Agents often dropped by the Executive

Boulevard facility to pick up equipment for assignments. In the intelligence community, CEI quality and commitment to excellence were legendary.

The RS-111 was designed by CEI founder, Ralph Grimm. Grimm knew that surveillance customers would love a suitcase sized 30–1000 MHz, "all band" VHF/UHF radio with a built-in spectrum monitor. He conceived the idea in the early 1960s, but the project had to be put on hold

in 1962 when several engineers left to form Astro Communication Labs (ACL).

As new hires replenished the staff, the RS-111 was assigned to mechanical engineer William Bruff as his first project. CEI already produced receiving systems with the same capabilities using separate tuners, demodulators, and monitors. The feature set desired in the RS-111 took 15 inches of rack space with existing equipment. Squeezing all this into one suitcase sized package was a daunting task.

Tuner designs from production 900 and 700 series radios were repackaged to fit four abreast across the bottom of the RS-111. A newly designed, all solid-state intermediate frequency (IF) amplifier strip was fitted along the rear of the chassis. The spectrum monitor was nestled on top of the tuners by repackaging the electronics in a broad flat box that hinged off the scope tube.

Despite the large number of sub-assemblies crammed into the small space, the internal components were surprisingly accessible. The front panel had a clean, pleasant layout with the controls and displays arranged in a logical, accessible manner. The RS-111 was a nice piece of engineering and a joy to operate.

The four tuners used nuvistors and ceramic planar vacuum tubes. Grimm felt the transistors just coming onto the market were not good enough for serious radio frequency designs.

The three lower band tuners covering 30–60 MHz, 60–300 MHz, and 235–500



*The Watkins-Johnson facility at 6006 Executive Blvd in Rockville, Maryland, where McCord came to purchase the RS-111.*

MHz used Mallory "Inductuner" filters, which offered sharp tuning and exceptional stability. The top band tuner for 490–1000 MHz was a multi-section tuned transmission line unit designed by Peter Pao and referred to as the "steel box tuner." These tuners worked well but were difficult to construct and align. Only Senior Test Technician Jack Howard learned to master the mysteries of the "steel box tuners."

The circuit design was optimized for minimum noise figure. The performance specifications were pushed to the max using the best components available at that time. The vacuum tubes were hand selected during alignment to meet published specifications. Forty-five years later, these radios are still impressively quiet and stable. Their weakness is adjacent strong signal handling, but no VHF/UHF radio in the 1960s had solved that problem.

The receiver was single conversion on the tuners below 300 MHz using a 21.4 MHz IF. For the tuners above 235 MHz, the receiver offered dual conversion with a 60 MHz first IF and a 21.4 MHz second IF. The 21.4 MHz IF is standard on many surveillance receivers to this day. Grimm unintentionally created this standard in the 1950s when he chose the frequency while designing radios for Nems-Clarke,

which produced the first telemetry and space receivers. Several sources report the 21.4 MHz frequency was chosen because it was twice the 10.7 MHz IF used in most FM broadcast radios and would support wider bandwidths. It also simplified image rejection when tuning to higher frequencies.

The RS-111 had two independent IF amplifiers, each with its own detectors. One had three front panel selectable IF bandwidths, most commonly 20, 75, and 300 kHz. The narrower bandwidths used crystal filters and the 300 kHz bandwidth used L-C tuned circuits. This IF chain fed detectors for AM, FM, and CW, selectable from the front panel.

The other IF was 2 MHz wide with simultaneous AM and FM detectors for video surveillance applications. On many versions of the RS-111, the detected video outputs for this IF were available at all times through two BNC connectors on the rear panel.

Various versions of the RS-111 were shipped with different tuning meters depending on the date or the original customer specifications. The earliest radios had center tuning meters. Most of the later radios had a regular signal strength meter, albeit not calibrated like an S meter.

The 3- by 1-inch cathode ray tube in the upper left corner of the front panel

provided the signal monitor that displayed up to 3 MHz of the received spectrum. Starting with the RS-111-1B-12, a center marker was added with a switch just to the right of this display. Early versions of the radio used a 3XP1 display tube; later versions used a 3ASP1. The signal monitor circuitry completely changed as the tube changed and the parts were not interchangeable.

According to one engineer, 105 variations of this radio were shipped. The variations appear on the nameplate as number/letter combinations placed with a hyphen after the model number. Employees referred to this as the "dash" number for that model, and most CEI and Watkins-Johnson products were type numbered in this manner. Surveillance customers are project oriented and requests for special configurations were common resulting in many dash numbers for popular models.

Technicians aspiring to be engineers and newly hired engineers were often assigned to "dash" work adding these special features for customers. Being a dash engineer enabled them to learn the products and develop their skills as engineers. Many fine Watkins-Johnson engineers rose through the ranks via this route.

On most CEI and Watkins-Johnson radios, including the RS-111, the dash

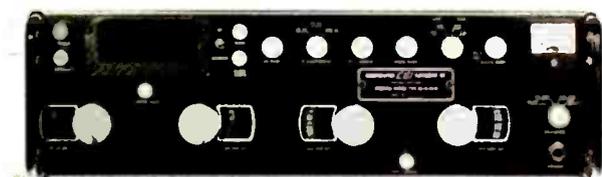
### RS-111-1B-7 VHF-UHF RECEIVING SYSTEM



For complete coverage of the frequency range from 30 to 1000 MHz. AM, FM, CW reception. Displays RF signals with built-in signal monitor. Internal relays provide single AM or FM video output. System operated from single antenna input. Four IF bandwidths: 20 kHz, 75 kHz, 300 kHz and 2 MHz. Front panel tuning meter. AGC output available for remote monitoring.

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**\$6,250**

*Two versions of the RS-111 listed in the 1968 Watkins-Johnson, Communications Electronics division, catalog.*

An RS-111 pre-detection recording system. Undemodulated signals were captured on magnetic tape for later analysis and/or decryption. →

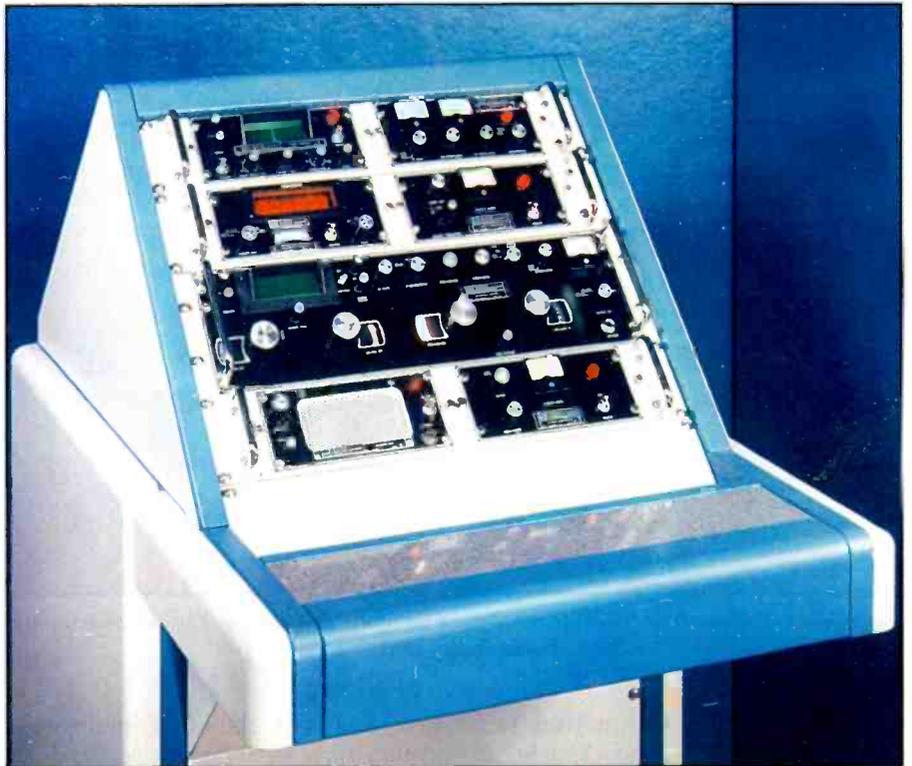
variations represented small changes like special IF bandwidths or additional outputs and/or inputs. A few added new features like "slideback," a specially designed variable Automatic Gain Control for ferreting out pulsed signals, or Digital Automatic Frequency Control for interfacing with digital frequency readout units like the DRO-333. In almost all cases, the fundamental radio design was unchanged.

Many dash numbers were produced in small quantities of a few dozen, some in larger quantities. The RS-111-1B-12, for example, started production in 1967 and remained in the catalog for 13 of the 17 years RS-111s were sold. A military version, the AN/URR-52 was also produced. It is closely related to the RS-111-1B-7.

The high level of customization was possible because everything manufactured in the Bethesda and Rockville facilities was hand-built from start to finish. The chassis were punched, formed, and welded from raw sheet stock, the front panels milled from aluminum blanks, the overlays silk screened, the circuit boards etched, plated and stuffed, the sub-chassis formed and plated with real gold. Even the transformers were wound, potted, and packaged in house. This explains the \$6,250 list price for a 1972 model RS-111. Back then this amount would buy a new Corvette with money left over for a new Volkswagen Beetle.

The RS-111 became, according to one source, "an industry workhorse." Over 1,000 were manufactured and deployed all over the world. They were parts of systems installed in listening posts on remote military bases. They were in systems hidden in back rooms of embassies. They traveled in suitcases across borders on assignments. They were even used in the Vietnam War by Special Forces for Technical Security Counter Measures.

Examining unrestored radios often yields historic insights. A faded typewritten paper sticker on one RS-111 reads, "Property of VQ-1 Det Atsugi Special Projects." This reveals it came from the U.S. Naval Air Facility on the island of Honshu in Japan. Atsugi was the largest U.S. Navy air base in the Pacific. It also served as a base for EC-121 reconnaissance planes, which carried Watkins-



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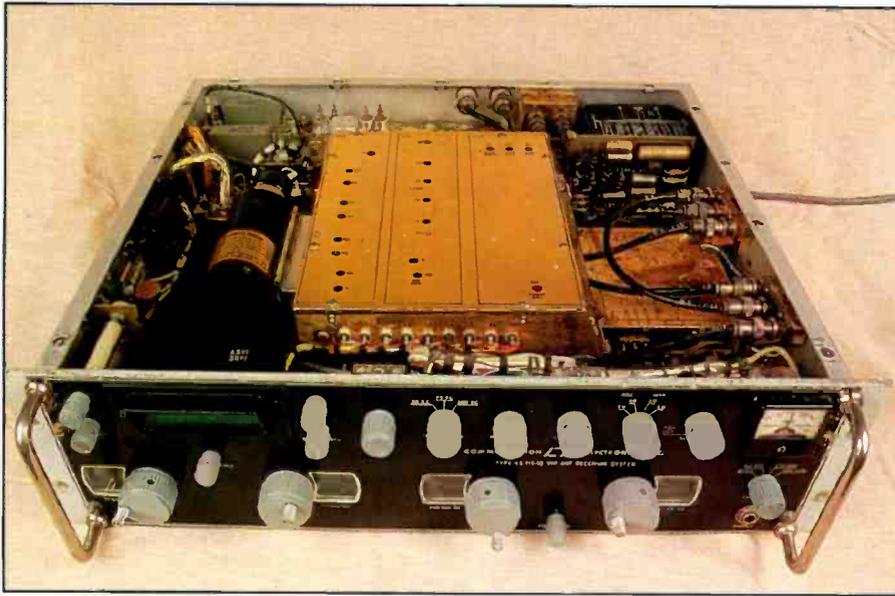


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The RS-111 is compact and well designed for ease of use and service. The sub-chassis are plated in real gold.

Johnson radios disguised in black face and labeled as Ling-Temco-Vought, an aerial surveillance systems integrator.

Another RS-111-1B, this one obtained surplus from the FBI, has "used only by the good guys" written in pencil across the top. Perhaps this is an agent's sly comment on Watergate or a reaction to the counterculture view of the FBI during those turbulent times.

## The Fallout And Unwanted Scrutiny

For McCord's fateful mission, he set up the RS-111 in Room 419 of the Howard Johnson Motel across the street from the Watergate complex. His ostensive target was the Democratic National Committee (DNC) headquarters on the 6th floor of the Watergate. He left his hired man, Alfred Baldwin, III, to monitor 118.9 MHz for the bug that he had purchased from Bell & Howell.

Baldwin later told the *Los Angeles Times*, "I would keep an eye on the little TV-type screen on the monitoring unit. A constant line ran across the screen when the tapped phone was not in use. When someone started using the phone, the line would scatter and I would quickly put on the earphones."

The political upheaval that followed the arrest of the Watergate "burglars" is well known. But beyond Baldwin's words, the real role of the RS-111 in the actual wiretapping is unclear, mired in conflicting testimony, political obfusca-

tion, and still classified intelligence agency files. Inexplicably, McCord did not tape record the conversations even though he was an electronic surveillance expert. Transcripts of the intercepted conversations that Baldwin collected and typed were never obtained by any investigator.

The strangest aspect of the whole affair is that no bugs were found in the DNC headquarters. The FBI swept the rooms after the burglars were arrested and found nothing. The only bugs entered as evidence in the trial were found among the belongings of the burglars.

As for the RS-111 radio receiver, after the break-in crew was discovered, McCord returned to room 419. He told Baldwin to pack everything into his van and take it to his home in Rockville, Maryland. Oddly, the FBI never searched McCord's home or the van.

Eventually the radio was turned over to the FBI as evidence in the burglary trial. This trial was overshadowed by the Senate investigations and hearings, which centered on the Presidential cover-up. Resources that might have been used to ascertain the truth about the bugging shifted to pursuing the Oval Office.

For Watkins-Johnson, the fallout from Bussler's sale of the RS-111 to McCord created chaos. McCord had removed the nameplate from the radio, but the final inspection letter signed by Barry Wright was found in the case. McCord allegedly billed Nixon's CRP \$15,000 for the radio, far more than he paid Watkins-Johnson.

The FBI descended on the Watkins-Johnson's Executive Boulevard headquarters to investigate.

Watkins-Johnson's corporate lawyers flew in from California to coach employees on how to handle the testimony and depositions. Wright was deposed to identify the radio. John Wilburn, head of the receiver products department, was called down to the hearings to testify about the company's role. This one radio cost the company far more than they made on its bargain priced sale.

The media also pounced. Woodward and Bernstein of the *Washington Post* came calling. When they interviewed Ralph Grimm, he told them the radios were not designed to pick up bugs or wiretaps but that that was "a possible use" for them. He told the reporters the radios are normally sold to "government and those who work for the government," though he added there was no law against selling them to others.

Investigative journalist Jack Anderson hounded the receptionist for access and information. He published a scathing column on what he felt was the cozy relationship between Watkins-Johnson and officials of the intelligence community. This once quiet purveyor of specialized government radios found itself uncomfortably on a floodlit national stage.

One source told me a major government intelligence agency took particular offense to this attention and was displeased to see one of its key technical resources for solving signal intercept problems dragged into a national spotlight. The agency allegedly sent a letter to Watkins-Johnson founders, Dean Watkins and Dick Johnson, chastising them for the indiscretion and warning them to avoid further dubious activities.

## Forgotten Infamy

After all the fuss died away, the RS-111 quietly slipped back into obscurity. An industry favorite, it remained in production for years after the introduction of newer synthesized digital VHF/UHF receivers like the Watkins-Johnson WJ-8617 and WJ-8618.

McCord's RS-111 is presumably locked away with the other evidence from the Watergate legal proceedings. Only a few collectors remember its infamous role in the downfall of a president. Even fewer know of its positive role and proper place in the history of electronic intelligence gathering. ■

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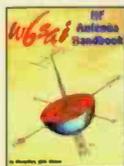
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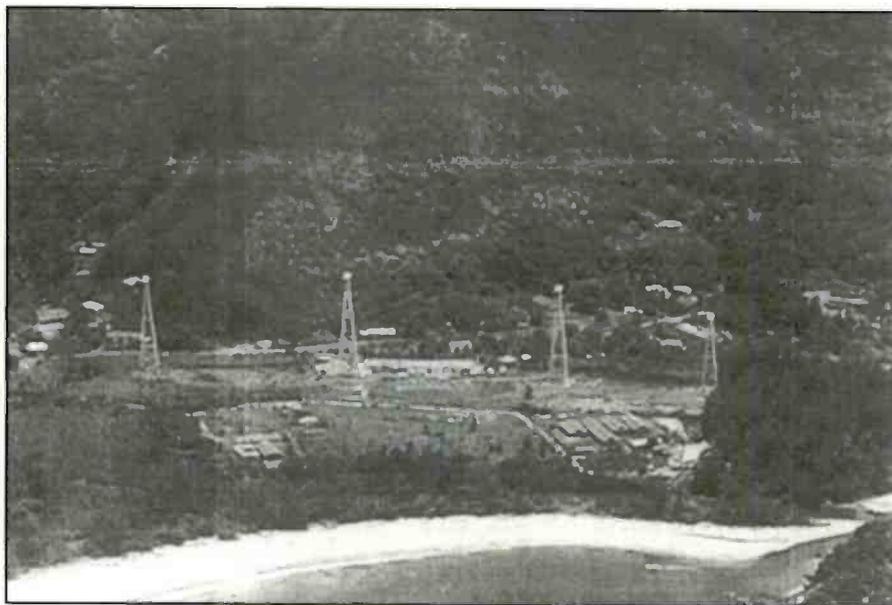
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## Venezuela Strikes Out On Its Own, Plus Other Radio Regalings

**W**e all hear Radio Nacional Venezuela relayed via Radio Havana Cuba, thanks to the buddy-buddy relationship between Fidel Castro and Hugo Chavez. Now the YV guys are ready to go out on their own. Radio Nacional Venezuela will soon have its own in-country facility active with a 50-kW transmitter on 60 meters and five 100-kW units operating in the international bands. It's been an eternity since the Caracas government had an official shortwave voice—their last splash in 1993 made only intermittent use of 9540. Based on the content of their current broadcasts we'll probably get more enjoyment out of listening to the Venezuelan time station! However eagerly you await this momentous event I'm sorry that I can't yet provide times or frequencies. Oh, the suspense!

During last winter's attempted coup in Chad news reports said Radio Nacional Tchadienne had been taken over by opposition forces and implied that all sorts of pandemonium followed. Yet, once government forces had driven the rebels out of N'djamena, RNT was doing business as usual on 4905. It was later revealed that the damage done was mostly at the studios and that the resumed broadcasts were from a remote site. Well done! Over the year or so since RNT returned to 60 meters the station has been inching up from its long-used 4904.5 split frequency. The briefly used 6165 continues, as well as a new as yet unnoted outlet on 9515, and possibly even a frequency in the 11 MHz band!

Win one, lose one? I've mentioned recently the coming return of CFRX in Toronto on 6070 with its much-missed 24-hour relay of local CFRB-1010. Now there are bad vibes concerning the future of CKZN in Vancouver, which relays local CBU-960. Canada is urging their broadcasters to leave the AM band in favor of FM, and apparently CBU has a position in that in that parade. Someone needs to explain to them why such a move wouldn't make it even more important to keep the shortwave relay alive.



*The BBC Relay station in the Seychelles Islands—officially the BBC Indian Ocean Relay—sent Rich D'Angelo this QSL.*

RTV Malienne/Radio Mali has begun to use 9635 again, in addition to 5995. The 31-meter band frequency is in use from 0800 to 1800, after which it switches back to 5995.

### 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 by the station's home 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, see here! My patience is running on empty! Someday soon you may have an unexpected visit from one of our "GIG" agents. So, if you'd rather not wake up some morning to find your antenna has been painted green, then send in that photo of you at your listening post I keep asking for!

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 heard at 0825. (Paterson, Philippines)

**ALBANIA**—Radio Tirana, 7465 at 1955 ending EE and going into FF. (Maxant, WV)

**ANGOLA**—Radio Nacional, 4950 in PP at 0220. (Schiefelbein, MO) 0243. (Wood, TN) 0258. (D'Angelo, PA) 0320. (Taylor, WI) 2330 (Strawman, IA) 2335 (Ronda, OK)

**ANGUILLA**—Caribbean Beacon, 11775 with University Network at 1935. (Wood, TN)

**ARGENTINA**—RAE/Radio Nacional, 15345 at 1956 open with IS and into GG. (Wood, TN) 2206 in SS. (MacKenzie, CA) 2226 in SS. (Ronda, OK)

### In Times Past...

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

**ANGOLA**—Radio Clube do Benguela, CR6RF, 9502 in PP at 0604 on 14 May, 1962. 1 kW. (Dexter, WI)

## Help Wanted

The "Global Information Guide" consistently presents more shortwave broadcast loggings than any other monthly SW publication! (An incredible 787 shortwave broadcast loggings were processed this month!\*) Why not join your fellow SWLs, let us know what you're hearing, and also become eligible for our monthly shortwave book prize! Send your logs to Gerry Dexter, "Global Information Guide," 213 Forest St., Lake Geneva, WI 53147. Or e-mail them to [gdex@genevaonline.com](mailto:gdex@genevaonline.com) (please see the column text for basic formatting tips.) Come join the party—we look forward to hearing from you!

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

**ASCENSION**—BBC Atlantic Relay, 7105 at 0435 in FF, 7160 at 0325 and 15400 at 2230. (MacKenzie, CA) 17830 at 2023. (Wood, TN)

**AUSTRALIA**—Radio Australia, 6020-Shepparton at 1224. (Ronda, OK) 11880-Shepparton at 2002, 15230-Shepparton at 2350, 15515-Shepparton, at 2148, 17785-Shepparton at 2217 and 17795-Shepparton at 2217. (MacKenzie, CA) 12010-Darwin at 2250. (Ronda, OK) 15160-Shepparton at 0650. (Patterson, Philippines) 15515 at 2125. (Maxant, WV)

## 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	LSB	— lower sideband
(l)	— (after a frequency) lower sideband	LV	— La Voz, La Voix (the voice)
(p)	— presumed	MW	— mediumwave (AM band)
(t)	— tentative	NBC	— National Broadcasting Corporation (Papua New Guinea)
(u)	— (after a frequency) upper sideband	OA	— Peru/ Peruvian
v	— variable time or frequency	OC or O/C	— open carrier
//	— in parallel	PBS	— People's Broadcasting Station
AA	— Arabic	PP	— Portuguese
ABC	— Australian Broadcasting Corporation	PSA	— public service announcement
AFN	— Armed Forces Network	QQ	— Quechua
AFRTS	— Armed Forces Radio TV Service	QRM	— man-made interference
AIR	— All India Radio	QRN	— noise (static)
Alt	— alternate	QSL	— verification
AM	— amplitude modulation, AM band	RCI	— Radio Canada International
Anmt(s)	— announcement(s)	Rdf.	— Radiodifusora, Radiodiffusion
Anncr	— announcer	REE	— Radio Exterior de Espana
AWR	— Adventist World RadioBC broadcast(er)	RFA	— Radio Free Asia
BSKSA	— Broadcasting Service of Kingdom of Saudi Arabia	RFE/RL	— Radio Free Europe/Radio liberty
CA	— Central America	RNZI	— Radio New Zealand International
CC	— Chinese	RR	— Russian
Co-chan	— co-channel (same frequency)	RRI	— Radio Republik Indonesia
comml(s)	— commercial(s)	RTBF	— RTV Belge de la Communate Françoise
CP	— Bolivia, Bolivian	Relay	— transmitter site owned/operated by the broadcaster or privately operated for that broadcaster
CRI	— China Radio International	relay	— transmitter site rented or time exchanged.
DD	— Dutch	SA	— South America
DJ	— disc jockey	SEA	— Southeast Asia
DS	— domestic service	SCI	— Song of the Coconut Islands (transition melody used by Indonesian stations)
DW	— Deutsche Welle/Voice of Germany	s/off	— sign off
EE	— English	s/on	— sign on
ECNA	— East Coast of North America	SIBC	— Solomon Is. Broadcasting corp.
f/by	— followed by	sked	— schedule
FEBA	— Far East Broadcasting Association	SLBC	— Sri Lanka Broadcasting Corporation
FEBC	— Far East Broadcasting Company	SS	— Spanish
FF	— French	SSB	— single sideband
freq.	— frequency	SWL	— shortwave listener
GBC	— Ghana Broadcasting Corp	TC	— time check
GG	— German	TOH	— top of the hour
GMT	— Greenwich Mean Time (UTC)	TT	— Turkish
HH	— Hebrew, Hungarian, Hindi	TWR	— Trans World Radio
HOA	— Horn of Africa	Unid	— unidentified
ID	— station identification	USB	— upper sideband
II	— Italian, Indonesian	UTC	— Coordinated Universal Time (as GMT)
Int/Intl	— international	UTE, ute	— utility station
Irr.	— irregular use	Vern	— vernacular (local) language
IRRS	— Italian Radio Relay Service	via	— same as "relay"
IS	— interval signal	VOA	— Voice of America
JJ	— Japanese	VOIRI	— Voice of Islamic Republic of Iran
KK	— Korean	WCNA	— West Coast of North America
		ZBC	— Zimbabwe Broadcasting Corporation



*The all-female English staff of Radio Tirana, with Drita Cico, head of the monitoring service in the center. (Thanks Rich D'Angelo, PA)*

ABC Northern Territories Service, VL8A, Alice Springs, 2310 at 1206. Also VL8K, Katherine at 1334 (Taylor, WI) VL8A at 1245. (Strawman, IA)

CVC International, 13685 via Tashkent at 0320. (Patterson, Philippines) 13820 in unid Lang at 1345. (Brossell, WI) 15360-Darwin at 0855. (Patterson, Philippines)

HCJB Australia, 15525 in Mandarin monitored at 2347. (MacKenzie, CA)

AUSTRIA—Radio Austria Intl, 6155-Moosbrunn in GG at 2040. (Patterson, Philippines) 9870 at 2355 to sudden off at 2358. (MacKenzie, CA) 13680 at 1644 with multi-lingual IDs and into EE. (Ronda, OK)

BANGLADESH—Bangladesh Betar, 7250 from 1230 open to 1259 close, then returned at 1313 in listed Nepalese. (Alexander, PA) 1254 to 1300\* with a strong hum and ARO QRM. (Schiefelbein, MO)

BOLIVIA—Radio Loyola, Sucre, 5996.4 in SS with CP music at 1008. Poor. (Alexander, PA)

Radio Mosoj Chaski, Cochabamba, 3310 in SS heard at 2350. (Strawman, IA)

BONAIRE—Radio Nederland Relay, 7120 at 1945. (Maxant, WV) 17810 in DD at 2120. (MacKenzie, CA)

BOSNIA—Radio Serbia Intl, 6100 in FF at 2130. (Paradis, ME) 7115 heard at 0113 to 0130 close. Hampered by difficult accents. (Wood, TN)

BOTSWANA—VOA Relay, 12080 in FF at 1915; 2010. (Brossell, WI; MacKenzie, CA)

BRAZIL—Radio Cancao Nova, Cachoeira Paulista, 9675 in PP at 2326. //4825 poor but readable. (Ronda, OK)

Radio Bandeirantes, Sao Paulo, 6090 in PP at 0705 with Caribbean Beacon off. (Alexander, PA)

Radio Clube do Para, Belem, 4885 in PP at 0423. (Wood, TN)

Radio Brazil Central, Goiania, 4985 in PP at 0610. (Wood, TN) 11815 at 2305, //4985. (Ronda, OK)

Radio Difusora, Macapa, 4915 in PP at 0155. (Taylor, WI)

Radio Aparecida, Aparecida, 5035 in PP at 0137. (Taylor, WI)

Radio Nacional Amazonia, Brasilia, 6180 in PP at 2330.

BULGARIA—Radio Bulgaria, 7400-Plovdiv at 0115. (Wood, TN) 9400 at 0030. (MacKenzie, CA) 2035 in GG. (Patterson, Philippines) 15700 at 1335. (Brossell, WI)

BURKINA FASO—Radio Burkina, 5030 in FF at 2330 with call-ins and Afro-pops. Closed at 2359. Also 7230 at \*0802 in FF. (Alexander, PA) 5030 in FF at 2302. (Schiefelbein, MO) 2317. (Brossell, WI) 2326. (Strawman, IA) 2340-0000. (Ronda, OK)

CANADA—Radio Canada Intl, 9610 at 1715. (Fraser, ME) 9880 via Kunming at 0020. (Schiefelbein, MO)

CBC Northern Service, 9625 at 1431. (Schiefelbein, MO)

CFVP, Calgary, at 1310 mixing with China. (Strawman, IA)

CHU, Ottawa, 3330 with time anmts at 0341. (MacKenzie, CA)

CHAD—RN Tchadienne, 4905 at 0425 in FF. News at 0500. (D'Angelo, PA) 0430 open. Also at 2132 close. (Alexander, PA) 0516. (Wood, TN) 0030 in FF excited M in FF during the coup attempt. (Taylor, WI) 0521. (Ronda, OK)

CHINA—China Radio Intl, 7120-Shijazhuang in RR at 1320 and 7170 via Mali in CC at 2323. (Brossell, WI) 9435 in CC at 0055. 9665 via Brazil in SS at 0335, 9750 via Cuba at 0350, 9800 in SS at 0008, 9860 in Hakka at 0002 and 17645 via Chile at 2133. (MacKenzie, CA) 9570 via Albania in Mandarin at 0250. (Patterson, Philippines) 9700-Kashi at 1404. (Schiefelbein, MO) 13740 via Cuba at 1440. (Fraser, ME)

CPBS/China National Radio, 4460-Beijing (t) in Mandarin at 1316. 4820-Xizang, Lhasa, (p) in Mandarin at 0008. Also 5995-Beijing in listed Mongolian at 2210. (Ronda, OK) 4820-Lhasa in Mandarin at 2335. (Schiefelbein, MO) 7375 CNR-2 in CC at 1215. (Alexander, PA) 9845 in CC at 0006. (MacKenzie, CA) PBS Xinjiang, Urumqi, at 1250 in listed Kazakh service. Also Voice of the Strait, Fuzhou, 4900 at 1338, Guangxi Foreign BC station, Nanning, in listed VV at 2320. Voice of the Strait, Fuzhou, 4900 at 1302. (Strawman, IA) 1315. (Wood, TN) Voice of Pujiang, Shanghai, 4950, at 1250 in CC, Voice of Jinling, Nanjing, 5860 in Mandarin at 1250 and Nei Menggu PBS, Hohhot, 9750, at 2352 in listed Mongolian. (Schiefelbein, MO)

Firedrake Music Jammer, 7140 against VOA-Thailand at 2257, 6280 against Sound of Hope at 2314 and 11980 against RFA at 0340. (MacKenzie, CA)

COLOMBIA—Marfil Estero, Puerto Lleras, 5910 in SS at 0010. (Strawman, IA) 0448 with SS and lively music. (D'Angelo, PA) 2350 (p) (Taylor, WI)

LV del Guaviare, San Jose Guaviare, in SS at 0127. (Taylor, WI)

CYPRUS—Cyprus BC Corp., Limassol, 9760 from 2215 with Greek music at sign on in Greek. Runs Fri-Sun only. (Alexander, PA)

CZECH REPUBLIC—Radio Prague, 5930 with news pgm at 2100 and 7345 in FF at 2304. (Brossell, WI) 7345 at 0103. (Wood, TN) 13580 at 1420. (Fraser, ME)

DJIBOUTI—Radio Djibouti, 4780 at 0347 with African vocals and FF at 0347. (Ronda, OK)

ECUADOR—HCJB, 3220 in QQ at 1126. (Ronda, OK) 11975 in DRM mode in PP at 2352. (Schiefelbein, MO)

La Voz del Napo/Radio Maria, Tena, 3280 in SS at 0410. (Taylor, WI) 0455. (Ronda, OK) 1056 with several IDs heard at 1100. (D'Angelo, PA)

Radio El Buen Pastor, Saraguro, 4815 in SS at 0257. (D'Angelo, PA) 0301\* (Schiefelbein, MO)

EGYPT—Radio Cairo/Egyptian Radio, 6250-Abis, in FF at 2150. (Patterson, Philippines) 2120 with pgm anmts. (Maxant, WV) 2130 with news. (Paradis, ME) 2133. (Fraser, ME) 6290 in AA at 2315. (Brossell, WI) 0039. (Wood, TN)

ENGLAND—BBC, 3255 via South Africa at 0320. 7105 Thailand Relay in CC at 1317 and 7430 via Tajikistan in an Asian Lang at 1329. (Brossell, WI) 7120 via South Africa at 0438. 7135 Singapore Relay in II at 1314. (MacKenzie, CA) 7120 via South Africa at 0417 and 7165 9435 via Armavir/Krasnodar in Bengali at 1341. (Strawman, IA) 7165 Oman Relay in listed Farsi at 0318 and 7205 via South Africa in PP at 0531. (Ronda, OK) 9410-Cyprus Relay with soccer at 1428. (Schiefelbein, MO) 15575 Cyprus Relay heard at 0715. (Patterson, Philippines)

Far East Broadcasting Assn. (p) 11985 via Ascension at 2148 in listed Pulaar. (Taylor, WI)

EQUATORIAL GUINEA—Radio Nacional, Malabo, 6250 at \*0500, other times noted at variable \*0535. (Alexander, PA) 0604 with IDs in SS. (Wood, TN)

ERITREA—Voice of the Broad Masses, 7100 at 0410 in listed Tigrinya. (Alexander, PA)

ETHIOPIA—Radio Ethiopia, 7110 at \*0259 in Amharic. (Alexander, PA) 0418 talk and local vocals. (D'Angelo, PA) 9704 at 1435. (Maxant, WV)

**FRANCE**—Radio France Intl, 7380 via Taiwan in unid Lang at 1326. (Brossell, WI) 9955 via Taiwan in Mandarin heard at 2330. (Patterson, Philippines)

**GABON**—RTV Gabonaise, 4777 in FF at 0523 and 7125 at 2258. (Ronda, OK) 4777 at 0520. (Wood, TN) 7270 with FF sign on at 0759. (Alexander, PA)

Africa No. One, 15475 with live sports in FF at 1745. (Wood, TN)

**GERMANY**—Deutsche Welle, 5900-Novosibirsk in Mandarin at 1313, and 7380 Madagascar Relay, in Indo at 2357. (Ronda, OK) 5910 via Russia in GG at 0418 and 11725 Rwanda Relay in GG at 1953. (MacKenzie, CA) 6075 via Wofferton in GG at 1915. (Patterson, Philippines) 7380 9690 Rwanda Relay, at 2052. (Fraser, ME) 12080 Portugal Relay, in RR at 1653 and 12090 in unid Lang at 1345. (Brossell, WI)

**GREECE**—Voice of Greece, 9420 at 0100, //7475. (MacKenzie, CA) 0437. (Wood, TN) 15630 in Greek at 0720. (Patterson, Philippines)

RS Makedonias, 7450 in Greek at 2120. (Paradis, ME)

**GUATEMALA**—Radio Verdad, Chiquimula, 4052.5 at 0424 with SS religious pgms. (D'Angelo, PA)

Radio Cultural Coatan, San Sebastian, 4780 with vocals and marimbas to 0259 close. (D'Angelo, PA) 0259 to past 0330. (MacKenzie, CA)

Radio Buenas Nuevas, San Sebastian, 4800, at 0024 with SS ID. (Ronda, OK) To 0435 close. (Alexander, PA) 0437\*.



Radio Belarus sent this multi-view card to Rich D'Angelo.

(D'Angelo, PA) 1140. (Ronda, OK) 1235. (Schiefelbein, MO)

**GUAM**—Adventist World Radio/ Voice of Hope, 9720 at 2135. (Patterson, Philippines) 11690 at 1600 with Jordan off the air, //9585. (Alexander, PA) 11685 in Mandarin at 2235, 11700 in Mandarin at 2303

and 15320 in EE at 2245. (MacKenzie, CA) Trans World Radio, 7485 in CC at 1335. (Brossell, WI)

**GUINEA**—Radio Conakry, 7125 in FF with Afro-pops. (Schiefelbein, MO) 2347 with a long FF talk. (Ronda, OK) 2352. (Strawman, IA)

## Pop'Comm June 2008 Reader Survey Questions

This month we'd like to ask you about how (or if) you share your interests and experiences with other hobbyists. Please use the Reader Survey Card and circle all appropriate numbers. Thanks for participating.

### How much do you talk to or otherwise interact with others involved in the hobby?

- Never, it's a solitary pursuit ..... 1
- Occasionally, when I encounter someone ..... 2
- I frequently seek out others who share my interest in radio ..... 3
- I'm always talking radio, it's what I do for a living. . . . 4

### How do you socialize with like-minded hobbyists?

- Over the air ..... 5
- Over the Internet ..... 6
- Club meetings ..... 7
- Club-sponsored events ..... 8
- Informal get-togethers with friends ..... 9
- Hamfests and seminars ..... 10
- Through my job ..... 11
- Through my school ..... 12

### Do you attend hamfests?

- Yes ..... 13
- No ..... 14

### If not, why not?

- None nearby ..... 15
- No time ..... 16
- Too expensive ..... 17
- Just not interested

### If yes, how many/often do you attend?

- One per year ..... 18
- Two to three per year ..... 19
- Four or more per year ..... 20
- Less than once per year ..... 21

### What is your main reason for attending?

- To see what's new ..... 22
- To buy/sell gear ..... 23
- To catch up with friends ..... 24

### Have you ever stopped by Pop'Comm's booth (CQ Communications) at a hamfest?

- Yes ..... 25
- No ..... 26

**HAWAII**—KWHR, 17525 heard at 0436 with discussion about Christian rock/rap. (Ronda, OK)

**HONDURAS**—Radio Misiones Intl, Tegucigalpa, 3340 at 0004 with SS pop/rock. (Schiefelbein, MO) 0235 with SS pops and contemporary Christian mx. (Alexander, PA) 0435. (Ronda, OK) 0510. (Wood, TN)

Radio Luz y Vida, San Pedro Sula, 3250 in SS at 0335 and 1236. (Ronda, OK) 0322. (Brossell, WI)

**HUNGARY**—Radio Budapest, 6145 in GG at 0240. (MacKenzie, CA)

**INDIA**—(In Hindi, except where noted—gld) All India Radio, 4760-Leh (p) possibly in Kashmiri at 1250, 4820-Kolkata (p) at 1232, 4840-Kohima (p) at 1305, 4860-Delhi (p) at 1307, 4880-Lucknow at 1244, 4895-Kuresong (p) at 1312, 4920-Chennai (p) at 1317, 4940-Guwhati (p) at 1320, 5010-Thiruvananthapuram (p) at 1325 and 5040-Jeypore, (p) at 1329. (Taylor, WI) 4820-Kolkata at 1333, 4920-Chennai at 1412, 5010-Thiruvananthapuram at 1259, 5040-Jeypore at 1344 and 11585-Delhi at 1342. (Strawman, IA) 4840-Mumbai at 1318, 4920-Chennai at 1309, 5010-Thiruvananthapuram at 1225, 5040-Jeypore at 1340, 9820-Panaji (Goa) in Sinhalese at 1358 and 9870-Bangaluru at 1345. (Ronda, OK) 4860-Delhi at 1241 and 9470-Aligarh in listed Sindi at 1321. (Schiefelbein, MO) 9445 at 2205. (Maxant, WV) 9870-Bangaluru in EE at 0250. (Patterson, Philippines) 11620-Aligarh in presumed Hindi at 1930. (Brossell, WI)

**INDONESIA**—(All in II—gld) Radio Republic Indonesia-Manokwari, 3987 at 1302, 3995-Kendari at 1350, 4750-Makassar at 1352, 4790-FakFak at 1355 and 4920-Biak at 1356. (Strawman, IA) 4605-Serui at 1324, 4750-Makassar at 1356 and 4790-FakFak at 1358. (Ronda, OK) 4790-FakFak at 1348. (Taylor, WI)

**IRAN**—VOIRI, 9625 via Sitkuani, Lithuania, in SS at 2055 to 2128\*. Also 7320 at 1934 to 2030 close. (Alexander, PA) 7160 in EE at 0143. (Wood, TN) 9660 in an Asian Lang at 1313. (Brossell, WI) 13740-Alwaz in Dari at 0325. (Patterson, Philippines)

**ISRAEL**—Kol Israel, 7545 in FF at 0450. (Maxant, WV) 1840 with commentary. (Fraser, ME) 2303 with phone-ins in HH. (Ronda, OK)

**JAPAN**—Radio Japan/NHK World, 11665 in JJ at 2305, 13640 at 2217, 13650 at 0015, 15220 via Ascension in JJ at 2212, 15265 via Bonaire in JJ at 2345, 17605 via Bonaire in JJ at 2330 and 17810 in Indonesian at 2310. (MacKenzie, CA) 15300-Yamata in RR at 0340. (Patterson, Philippines)

Radio Nikkei, 3925 in JJ heard at 1243. (Ronda, OK)

**JORDAN**—Radio Jordan, 11690 heard at 1525 with all FF pgmg leading up to EE at 1603. Many '96.3 FM IDs. (Alexander, PA)

**KUWAIT**—Radio Kuwait, 11990 at 2020. (Maxant, WV) 15115 at 0645. (Patterson, Philippines)

**LIBERIA**—ELWA, 4760 heard at 2250



*A colorful pennant from Radio Santa Ana in Cusco, Peru.*

with Christian music, EE ID and closing annms. (Alexander, PA) 2213 to 2303 close. (Taylor, WI)

**LITHUANIA**—Radio Vilnius, 7320 heard at 1950. (Maxant, WV) 2313 in LL. (Brossell, WI)

**MADAGASCAR**—RTV Malagasy, 5010 at 0300 with talk in presumed Malagasy f/by a church service. Also noted at 2313. (Alexander, PA) 0228 with western-sounding pop. (Taylor, WI) \*0228 in Malagasy. (D'Angelo, PA) 0303 with lively conversation. (Ronda, OK) 2325 in FF and vernacular, running to past 0345. (Schiefelbein, MO) 2335. (Strawman, IA)

**MALI**—RTV Malienne, 5995 in FF heard at 2225 with African drums. (Ronda, OK; Taylor, WI) 2245 with low audio. (Strawman, IA)

**MALAYSIA**—Voice of Malaysia, 15295-Kajang in MM at 0850. (Patterson, Philippines)

Voice of Islam service, 9750 in MM at 1500. (Strawman, IA)

**MEXICO**—Radio UNAM, Mexico City, 9599v at 1418 with classical music and SS annms. (Strawman, IA) 2225 with classical music then into discussion pgm at 2300. (D'Angelo, PA) 2305 in SS until Vatican opened at 2312. (Alexander, PA)

Radio Mil, Mexico City, 6010, ballads and SS ad strings at 1318. (Strawman, IA)

Radio Educacion, Mexico City, 6185 with SS pop vocals at 0430. (MacKenzie, CA)

**MOROCCO**—RT Marocaine, 5980 in AA at 0110. (Patterson, Philippines) 7135 in AA at 2305. (Brossell, WI)

**MYANMAR**—Myanmar Radio, 5040 in

BB with M/W alternating news items, //5985.6. (Schiefelbein, MO) 1350 talk and local music. Too weak for any detail. (Strawman, IA) 1403 with an apparent speech. Poor. (Taylor, WI)

**NEW ZEALAND**—Radio New Zealand Intl, 9765 at 0715. (Patterson, Philippines) 0809 with requests, TC and ID. (D'Angelo, PA) 15720 at 0430 with ID, news summary. (Ronda, OK) 2336 with interview. Also 17675 at 2130. (MacKenzie, CA)

**NETHERLANDS**—Radio Nederland, 9345 via Tashkent at 1420. (Patterson, Philippines) 1400. Also 11805 via South Africa on African schools at 1910. (Brossell, WI) 9895 Madagascar Relay in DD at 2254. (MacKenzie, CA)

**NIGER**—La Voix du Sahel, 9705 at 1712 in AA/FF and possibly vernacular. Several mentions of "Niamey" and "Sahel." (Taylor, WI) 2150 with Afro-pop, FF and vernacular. Covered by India at 2245. (Alexander, PA)

**NIGERIA**—Radio Nigeria, Kaduna, at 0435 with choral singing, news at 0500. (D'Angelo, PA) 0444 with news. (Brossell, WI) 0450 with light pops. (Ronda, OK) 2220-2301 close with EZL. (Schiefelbein, MO) 6089.9 at 0620 with Anguilla off the air. (Anderson, PA)

Voice of Nigeria, 9690 at 1430. (Maxant, WV) 15120 at 1730 with their "60 Minutes" pgm. (Wood, TN) 15120 at 2000 with EE ID, news. (Ronda, OK)

**NORTH KOREA**—Voice of Korea, 7570 with news at 1335. (Brossell, WI) 13650 in Mandarin at 0345. (Patterson, Philippines)

**OMAN**—Radio Sultanate of Oman, 15140 at 1408 with Euro-pop, into EE news at 1431. (Alexander, PA)

**OPPOSITION**—Denge Mesopotamia, 11530 via Ukraine, 1403 with Kurdish music, ID. (Taylor, WI)

Radio Republica (to Cuba) 6155 via Rampisham in SS heard at 0115 mentioning "Directorio Democratico Cubano." (Taylor, WI)

Radio Liberty, 7175 via Morocco at 0503 with news in RR. (D'Angelo)

Voice of Iraqi Kurdistan, 6335 at 0337 with ME-type music and Koran, unid Lang. (Alexander, PA)

Radio Nacional de la RASD, (to Morocco) 6300 at 0849 in AA. Pgm ended at 0900 i/by six minutes of dead air. (D'Angelo, PA) 2225. (Strawman, IA) 2310 with Euro-pops and FF ID at 2330. (Ronda, OK)

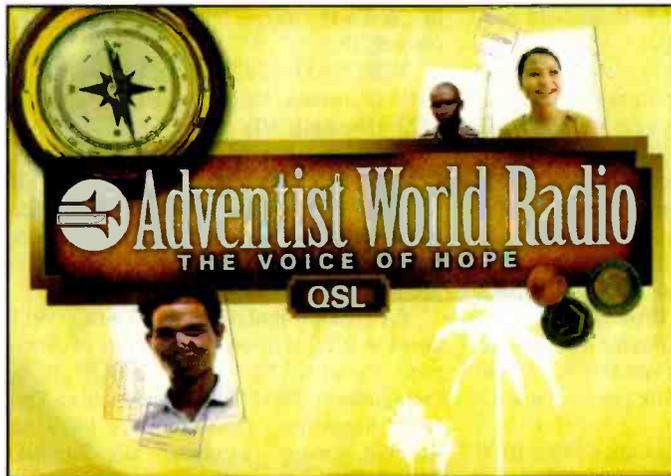
Radio Free Afghanistan, 12140 via Kuwait in Pashtu at 0325. (Patterson, Philippines)

Radio Okapi (to Congo), 9635 via South Africa, at 0445 in FF. (Ronda, OK)

Radio Voice of the People, (to Zimbabwe), 11610 via Madagascar at 0400 sign on. Music loop jammer began at 0420. (Alexander, PA)

Sound of Hope (to China), 7105 in CC at 2225. Music jammer in the background. (Brossell, WI)

Radio Free Asia, 7470 via Mongolia in an Asian Lang at 1332 and 12100 via Sri Lanka at 1345. (Brossell, WI) 13610 via Northern



Another in the endless variety of QSLs from Adventist World Radio

Marianas in Mandarin at 0315. (Patterson, Philippines) 15430 via Northern Marianas in CC at 2358 and 15565 via Vladivostok in VV at 2340. (MacKenzie, CA)

Korean National Democratic Party, (to South Korea) 2850 in KK at 1310. (Strawman, IA) Korean 4450 in KK and into opera 1310. Tnx Jerry Strawman for the tip. (Ronda, OK)

**PAKISTAN**—Radio Pakistan, 15100-Islamabad in Urdu at 0640. (Patterson, Philippines)

**PALAU**—T8BZ/Voice of Hope. 9965 heard at 1356 in Mandarin with EZL gospel and presumed long sermon. No EE ID or other anmts as noted a few months ago. (Schiefelbein, MO)

**PAPUA NEW GUINEA**—Radio Sanduan (New Guinea), Vanimo, 3205 at 1235 with island music and vernacular; M/F anncrs. (Schiefelbein, MO)

Radio West New Britain (New Guinea), Kimbe, 3235 monitored at 1242 with pops and occasional anmts. (Strawman, IA) 1344, not //3315. (Ronda, OK)

Radio East Sepik (New Guinea), Wewak, 3335 at 1241 with W, island music and light pops. An apparent EE relay of national news at 1300 and close at 1305. (Schiefelbein, MO) 1250. (Strawman, IA)

Radio Manus (Admiralty Is.), Lorengau, 3315 at 1248 with pops. (Strawman, IA) 1256 with variety of pops. (Schiefelbein, PA)

**PERU**—Radio LV del Rondero, Huancabamba, 6535.8 monitored at 0225 with SS talk, OA music. Very weak with presumed sign off round 0405. (Alexander, PA)

Radio Madre de Dios (p), Puerto Maldonado, 4950 in SS/QQ with lively accordion mx. (Taylor, WI) 1253 with ballads, just above the noise. (Strawman, IA)

Radio Maranon, Jaen, 4834.9 heard with ballads. SS anmts. promos. ID. (Alexander, PA)

**PHILIPPINES**—Radio Filipinas, 12035 in EE at 0315. (Patterson, Philippines)

FEBC, 15465 in BB monitored at 2350. (MacKenzie, CA)

**PIRATES**—WBNY, 6925u noted at 1330, \*1340 and 2244 with Commander Bunny.

Once using the theme of the old Lincolnshire Poacher numbers station, some rock, said was using FM, and offered a t-shirt. No address anncd but uses Belfast. (Zeller, OH)

Artificial Intelligence Radio, 6925u at 1650 but barely fished out of the noise. Two guys talking, one with a chipmunk voice, and much new age space music. (Zeller, OH)

Puxatony Pothead Radio, 6925u, heard at 1644 and 1713 anncng as from Puxatony, Pennsylvania, with rock, anncng Belfast address. (Zeller, OH)

Conelrad Radio, 6925u at 0030-0034\*. Rock and blues mixed with sirens. At 0333 the anncr said this was a test of the Conelrad system. No address heard. (Zeller, OH)

Light Shop Radio, 6925u, at \*2316 with rock and disco, some talk about the greater Akron area. No address. Went off at 2330. Similar heard at 2308 with rap/rock combo and ID as "Black Shop Radio." Could even have been anncng "White Shop Radio." This seems to be a developing new one. (Zeller, OH)

WMPR, 6925, at 2216 with techno and several IDs heard at 2234 close "Thank you for listening to WMPR—Micro Power Radio." (Wood, TN)

Sycko Radio, 6925u, variously at 1806, 2252 and 2322 with rock things, one a relay of WBNY, talk of pirate operations. Also IDing as Kracker Radio. (Wood, TN)

Long Range Radio, 6925u, at 0120 and 0148 with comedy material, parodies of CNN, also some rock. (Zeller, OH)

Captain Morgan, 6924.5u at 2111 with rock, but mainly cell phone calls involving waitresses. Also some "Outer Limits" material. No address. (Zeller, OH)

WBCQ Relay, 6925u with the "William Tell Overture" recorded from an Alan Weiner pgm. (Zeller, OH)

Weekend Music Radio Scotland, 6400.8 at 0045 with instl and DJ. (Alexander, PA)

Radio Barretina (Spain), relaying Radio L'Arboc, (t) 6311.1 at 0635, 2150 and 2225 with pops and unid lang. (Alexander, PA)

World Music Radio (Denmark) relaying Radio Space Shuttle, 5815 heard at 2125 with techno, oldies pop, echo anmts that were impossible to understand (*they never learn—gl'd*). Supposed to be 7 kW. (Alexander, PA)

**PORTUGAL**—RDP Portugal, 9795 in PP heard at 2140. (Patterson, Philippines)

**ROMANIA**—Radio Romania Intl, 6115 at 2300 with news. (Paradis, ME) 9640 at 1844 with pgm of folk and jazz. (Wood, TN) 11940 at 2007 in SS. (MacKenzie, CA) 15150 heard at 1948. (Fraser, ME)

**RUSSIA**—Voice of Russia, 9900-Samara, in an Asian Lang at 2337 and 11630-Moscow in RR at 1340. (Brossell, WI) 6240-Moldova at 0225, 12030-Petropavlovsk at 0342 and 12040-Vladivostok at 0345. (MacKenzie, CA) 6195-St. Petersburg in RR monitored at 0200. (Ronda, OK) 7350 with classical music at 0455. (Maxant, WV) 9665-Novosibirsk in Urdu heard at 1239. (Strawman, IA)

Russian Radio Intl, 7125 via Moldova in RR at 0131. (Wood, TN) Magadan Radio, 7320 in RR at 2331. No reply after 5 reports over the past 66 weeks! (Brossell, WI)

Murmansk Radio, 5930-Monchegorsk with opera and RR talks at 1249. (Brossell, WI)

**RWANDA**—Radio Rwanda, 6055 at 2010 with Afro-pops and vernacular to 2100 close. (Alexander, PA)

**SAO TOME**—VOA Relay, Pinheira, 4960 at 0432. (Wood, TN) 0445. (Brossell, WI) 6080 at 2118 to 2200\* (Ronda, OK) 2130 with "Music Mix" pgm. (Paradis, ME)

**SAUDI ARABIA**—BSKSA, 15285-Riyadh in Swahili at 0655. (Patterson, Philippines)

**SEYCHELLES**—BBC Relay, 6005 at 2130 beamed to Asia. (Paradis, ME)

**SINGAPORE**—Radio Singapore Intl, 6120-Kranji, in Malay at 0930. (Patterson, Philippines)

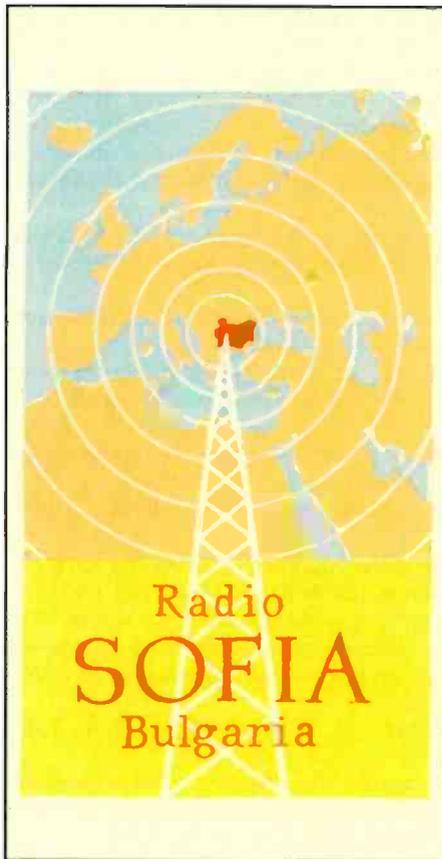
**SLOVAKIA**—Radio Slovakia Intl, 9440 at 0100. (Ng, Malaysia) 15460-Rimavska Sobota at 0710. (Patterson, Philippines)

Miraya FM, via IRRS, 9825 at 1459 open with African music, "Miraya 101" ID. (Alexander, PA) 1733 with correspondent reports in AA. (Taylor, WI)

**SOUTH AFRICA**—Channel Africa, 3345 at 0352 with African drums and vocals with M talk and 5 + 1 time pips at 0400. (D'Angelo, PA) 3345 at 0437, 7390 at 0400 going into FF and 9685 at 0505 with news in EE. (Ronda, OK) 7230 at 0505. (Maxant, WV)

Radio Sondergrense, 3320 in Afrikaans at 0340. (MacKenzie, CA) 7185 with ID at 0530. (Ronda, OK)

**SOUTH KOREA**—KBS World Radio, 5995 at 2200 with news and features. (Paradis, ME) 9570 at 1330. (Maxant, WV) 9805-In-Kimjae at 2320 with pops. (Ronda, OK)



*Radio Sofia (now Radio Bulgaria) back in the bad old days. (Thanks Mike Adams, FL)*

**SPAIN**—Radio Exterior de Espana, 3350 Costa Rica Relay in SS at 0344, 6040-Costa Rica in SS at 0247. (MacKenzie, CA) 9630-Noblejas in SS at 2120. (Patterson, Philippines)

**SRI LANKA**—SLBC, 11905-Ekala in Hindi at 0310. (Patterson, Philippines) 1410 in EE. (Schiefelbein MO)

**SWAZILAND**—Trans World Radio, 3200 with religious pgm at 0322 and 4775 in GG at 0422. (Ronda, OK) 3240 in local Lang at 0324. (Brossell, WI) 0331 to 0345 close. (D'Angelo, PA) 4775 in GG at 0400. (MacKenzie, CA)

**SWEDEN**—Radio Sweden, 7120 at 2145. (Maxant, WV) 15240 at 1330 with ID, news. (Brossell, WI)

**TAIWAN**—Radio Taiwan Intl, 7445 in CC heard at 1330. (Brossell, WI) 9785 with news at 1600. (Ng, Malaysia) 11640 in CC at 0330. (MacKenzie, CA) 15320-Paochung in EE heard at 0345. (Patterson, Philippines)

**THAILAND**—Radio Thailand, 9680 at 0020 with news items. Suddenly off at 0028 then returned at 0030 on 12095 with business news. (MacKenzie, CA)

**TANZANIA**—Radio Tanzania 11735-Zanzibar, 1800 with EE news from local Spice FM and back to Swahili at 1809. (Alexander, PA) 1932 in Swahili. (Wood, TN)

**TUNISIA**—RTV Tunisienne, 9720-Sfax at 0325 in AA with ME music. (Wood, TN)

**TURKEY**—Voice of Turkey, 6020 concluding news in EE at 0415. (Ronda, OK) 6055 at 1930 with ID, frequency info and news. (Paradis, ME) 6165-Emirler in TT at 1955. (Patterson, Philippines) 7205 at 0143 with discussion. (Wood, TN) 11735 at 1411. (Ng, Malaysia) 1420. (Maxant, WV) 12035 at 1343 on relations with Israel. (Brossell, WI)

**TURKMENISTAN**—Radio Turkmenistan, 5015 monitored at 1252 in presumed TT. Another QSL toughie: no reply to 4 reports over the past 60 weeks! (Brossell, WI)

**UKRAINE**—Radio Ukraine Intl, 5840 on Moscow film directors. (Maxant, WV) 7440 at 0149 with domestic folk music and artist interviews. (Wood, TN)

**UGANDA**—Radio Uganda, 4976 at 0208 with abrupt sign on, EE talks and Afro-pops. (Alexander, PA) 5026 at 2035. (Maxant, WV)

**USA**—VOA, 5750 Kuwait Relay in Dari at 1940. (Patterson, Philippines) 6040 Thailand Relay in Mandarin at 1326 and 7220 Philippines Relay at 2225. (Strawman, IA) 6045 Thailand Relay in CC at 2248, 7205 Thailand at 2308, 7390 Philippines Relay opening at 1300, 9390 Sri Lanka Relay with Radio Deewa service in presumed Pashto at 1304 and 12150 Sri Lanka at 1404. (Brossell, WI) 9620 Thailand at 0035, 11725 Philippines at 2310, 11815 Philippines in Indonesian at 2320, 13640 Saipan Relay at 2337 and 15580 Morocco Relay at 2140. (MacKenzie, CA) 13615 Morocco Relay at 1614. (Ronda, OK) 1620 with business lessons. (Schiefelbein)

Adventist World Radio, 3215 via South Africa in Malagasy/EE heard at 0317. (MacKenzie, CA)

Trans World Radio, 9745 via South Africa with multi-lingual ID. Off heard at 1920. (Brossell, WI)

Family Radio/WYFR, 6240 via Moldova, at 2045. (Patterson, Philippines) 2120. (D'Angelo, PA) 7175 via Armavir at 1305 and 7395 via Madagascar at 1928 (Brossell, WI)

**VATICAN**—Vatican Radio, 5805 at 2050 on the Holy Family. (Paradis, ME) 6140 via Chita in unid Lang at 1314. (Brossell, WI) 7365 at 2025. (Patterson, Philippines)

**VENEZUELA**—YVTO time station, 5000 heard at 0405 with signal about equal

to WWVH. (Schiefelbein, MO) 0516. (Wood, TN)

**VIETNAM**—5925-Xuan Mai in VV at 0910. (Patterson, Philippines) 7220 in CC at 1323. (Brossell, WI)

**YEMEN**—Republic of Yemen Radio, 9780 at 1815 with Euro and local pops, EE with ID, "You are tuned to the English service of the Republic of Yemen Radio, broadcasting from San'a/Aden." (Schiefelbein, MO) ME vocals and M in AA. (D'Angelo, PA)

**ZAMBIA**—Radio Zambia/ZNBC, 5915 heard at 0250 sign on and into lots of Afro-pop. Pestered by strong WBOH-5920. (Schiefelbein, MO) 0409 in vernacular. Txn Jerry Strawman. (Ronda, OK) 0419 in EE/vern, many mentions of Zambia. (Wood, TN)

The Voice-Africa, 4965 at 0424 and 2348. (Ronda, OK) 0026 with contemporary gospel music. (Schiefelbein, MO)

**ZIMBABWE**—Voice of Zimbabwe, 3396 with Afro-pops at 0014. (Schiefelbein, MO) 0312. (Brossell, WI) 0410, //4828. (Ronda, OK) (p) at 0247 with non-stop music, no pause or ID at ToH. (Taylor, WI) 0322 to past 0420 with continuous highlife and numerous short transmission breaks. (D'Angelo, PA) 0438. (Wood, TN)

And, once again, order is restored! A hundred gazillion thanks to those who did the good deed this time; Jim Ronda, Tulsa, OK; Mark Schiefelbein, Springfield, MO; Jerry Strawman, Des Moines, IA; Joe Wood, Greenback, TN; Brian Alexander, Mechanicsburg, PA; Stewart MacKenzie, Huntington Beach, CA; Charles Maxant, Hinton, WV; T.C. Patterson, Cebu, Philippines; Robert Fraser, Belfast, ME; George Zeller, Cleveland, OH; Peter Ng, Malaysia; Bob Brossell, Pewaukee, WI; Ray Paradis, Pittsfield, ME; Rich D'Angelo, Wyomissing, PA; and Mark Taylor, Madison, WI. Thanks to each one of you.

And until next month, good listening!

### This Month's Winner

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

This month's prizewinner is **Mark Schiefelbein of Springfield, Missouri**, who receives a copy of the 2008 *World Radio TV Handbook*, courtesy of Billboard Publications. You probably don't need reminding that this volume is an essential element of your DXing kit. Don't turn your receiver on without it! You'll find most radio dealers and large bookstores have copies in stock.

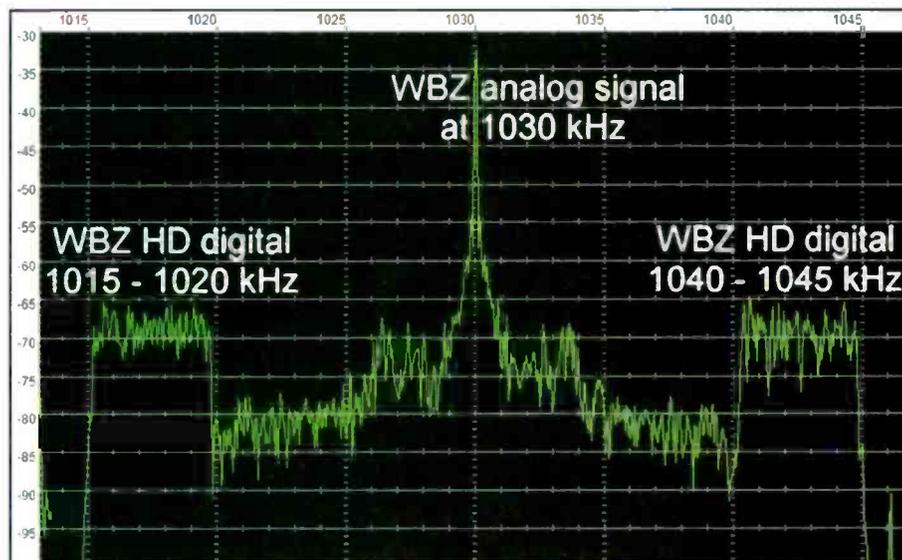
# Digital AM Doesn't Do It In The Dark

**W**hile digital FM HD broadcasting is gaining popularity, digital AM seems to have stalled. Limited bandwidth and nighttime skywave interference, combined with additional digital signals, are proving to be more than the already congested AM broadcast band can handle. Fully aware that digital AM broadcasting was problematic, the FCC still decided to let broadcasters duke it out rather than have digital delayed by regulatory bureaucracy. It's been a year since the FCC decided to let digital loose on AM, and broadcasters are now beginning to realize the impact of the decision.

## A Tight Fit For AM HD

Because the space between channels or assigned frequencies is only 10 kHz on the AM broadcast band, there just isn't enough bandwidth available for an analog signal plus additional digital content. So the digital signal is positioned on adjacent channels. For example, while 1030 WBZ Boston continues to broadcast its 50 kW analog signal with a reduced bandwidth of 6 kHz centered at 1030 kHz, its digital HD signal is broadcast on "sidebands" covering 1015 to 1020 kHz and 1040 to 1045 kHz, thus causing interference to analog radio stations on the assigned frequencies of 1020 and 1040 kHz. In turn, radio stations on 1020 and 1040 are allowed to cause digital interference to WBZ. In fact, with its HD signal 1040 WHO Des Moines has slashed the now-laughable WBZ self-proclaimed 38-state nighttime coverage area.

Normally an AM signal is limited to local groundwave coverage during the day due to energy from the sun and its effect on the ionosphere. At night, however, the ionosphere acts like a reflector, which allows mediumwave signals to bounce or propagate over hundreds, if not thousands, of miles, much like international shortwave broadcasts. In a rather feeble attempt by the FCC to lessen the impact of digital AM interference, the digital signal is required to be 6 dB below the analog power. Otherwise after submitting minimal paperwork to the FCC, radio stations are free to begin fulltime



*This is what the WBZ daytime analog and digital signals look like on a spectrum analyzer.*

digital broadcasting without regard to interference with adjacent frequencies.

## WYSL Complaint

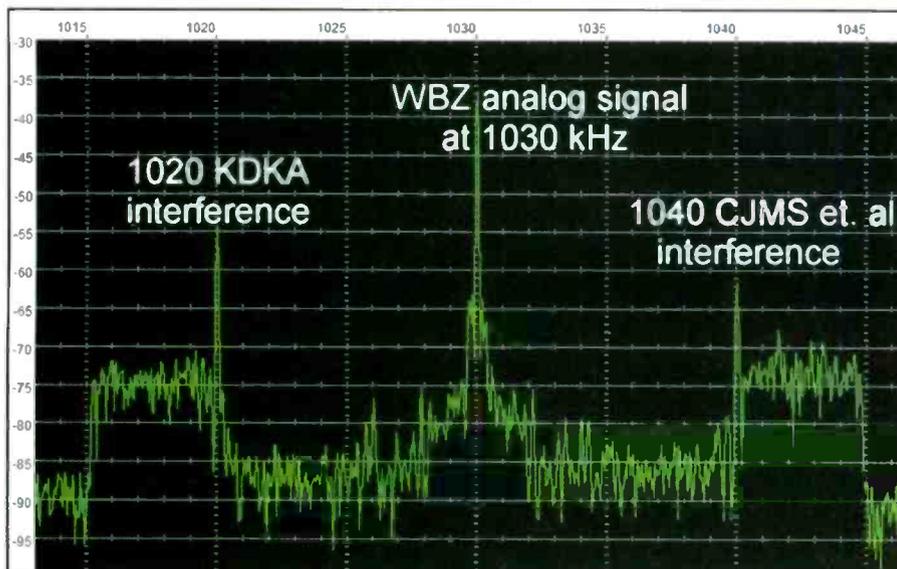
Last year, 1040 WYSL Avon-Rochester, New York, became the first to file a formal complaint with the FCC challenging nighttime digital AM broadcasting. Specifically WYSL alleged that WBZ HD was causing harmful interference within the WYSL primary coverage area, effectively reducing the coverage area enough that advertising revenue would be lost because listeners were no longer able to receive WYSL for local news, sports, and weather. Details aren't available to the public while the complaint is pending, but you can read general comments about HD posted online by WYSL Engineering at [www.wysl1040.com](http://www.wysl1040.com).

Although the WBZ HD signal is supposed to be at a power of 12.6 kW, or 6 dB below the analog 50 kW signal, WBZ has a directional signal beamed west so the effective radiated power is actually higher in that direction. Even so, the WBZ HD digital signal is relatively useless at night, limited to a 15-mile best-case coverage area due to skywave interference from radio stations on 1020 (KDKA Pittsburgh) and 1040 (CJMS Quebec, WHO Des Moines, WCHR New

Jersey, and WYSL upstate New York), yet WBZ HD is causing significant nighttime interference to those same radio stations. The digital signal produces a constant buzzing sound or loud white noise that, like a test tone or Morse code, can be heard over hundreds of miles at night, even though it's well beyond the range for a digital receiver to lock on the signal.

Of course, WBZ isn't the only 50 kW digital offender on the AM broadcast band. For instance, 700 WLW Cincinnati, 710 WOR New York, and 720 WGN Chicago are all buzzing each other with digital noise. WOR analog is no longer listenable beyond a couple hundred miles at night due to interference from both WLW and WGN, while at the same time WOR is making reception of WLW and WGN difficult in the east. The HD signals from 1080 WTIC Hartford and 1100 WTAM Cleveland are limiting the reach of 1090 WBAL Baltimore. The 840 WHAS Louisville digital signal is locked in a battle with 830 WCCO Minneapolis and 850 KOA Denver. The reception of the Grand Ole Opry and classic country music on 650 WSM Nashville once enjoyed by overnight truckers is now impossible in much of the east because of digital noise from 660 WFAN New York. The list goes on.

When nighttime AM HD broadcasting was given the go-ahead by the FCC a year



*This nighttime spectrum analyzer screen shot clearly shows the level of interference between WBZ HD and the analog signals on 1020 and 1040 kHz as received 35 miles away at a southern New Hampshire test site.*

ago, it was intended that broadcasters would self-regulate interference issues without agency intervention. The FCC essentially abrogated its responsibility to protect broadcasters from interference.

The Citadel Broadcasting Corporation, owner of 760 WJR Detroit and 770 WABC New York, both 50 kW, is an example of one good neighbor: Because of interference, it took drastic measures and shut down HD broadcasting at night on all its AM radio stations. More often than not though, the 50 kW AM powerhouses are choosing to ignore interference complaints. Therefore, the FCC needs to take immediate action to reduce the amount of interference caused by AM HD digital signals.

Nighttime digital power should at least be limited to a 3.2 kW maximum, which is 12 dB below 50 kW analog. Although not an ideal solution, the power limit would significantly reduce interference at night caused by 50 kW stations. Interference caused by radio stations at 10 kW analog or less power would already meet a 3.2 kW digital power limit. At 6 dB below 10 kW analog, the digital power is 2.5 kW. Further power reductions would have to be addressed by the FCC on a case-by-case basis.

## The FM Solution For AM HD

Interestingly as CBS-owned radio station WBZ continues to interfere with its neighbors, 1060 KYW Philadelphia, another CBS-owned 50 kW AM station, commenced HD broadcasting without

adding to the AM interference problem. KYW is utilizing the secondary HD channel of its sister station 94.1 WYSP-FM. This would seem like the perfect alternative; the KYW digital FM simulcast on WYSP-HD2 FM provides more reliable coverage than is possible on AM at night, and it exposes KYW to FM listeners who normally wouldn't listen to AM radio.

But there's one problem. When a digital HD receiver loses the lock on a digital signal, it will either mute or revert to the analog counterpart, which in this case would be the WYSP analog FM signal. WYSP is a rock music station, not exactly the best match with the KYW all-news format. A control bit is needed in the HD software that would allow the broadcaster to choose either the AM or FM analog signal as an automatic fallback position when digital lock is lost. Until such a control is added, if indeed possible, KYW HD listeners will have to learn to deal with the minor inconvenience of manually switching from WYSP-FM to KYW-AM when necessary to continue to get the latest news, traffic, and weather from KYW Newsradio 1060.

Other radio stations are following a similar approach. For instance, 820 WNYC New York not only broadcasts an HD signal on AM, but it also simulcasts on the secondary HD channel of its sister FM station. However WNYC broadcasts with a power of only 1 kW analog at night on AM, so the digital AM signal at 6 dB down with a power of 250 watts isn't contributing much to nighttime AM interference. Also, 850 WEEI Boston is 50 kW analog only

on AM, with HD available from FM and lower-power AM stations belonging to the WEEI Sportsradio Network that stretches from Maine to Rhode Island.

## 50 kW AM HD Stations

There are only 246 out of 4754 AM radio stations in the United States listed in the FCC online database at [www.fcc.gov](http://www.fcc.gov) as authorized for HD broadcasting, including the following 50 kW day/night AM flamethrowers:

- 640 KFI Los Angeles, CA
  - 650 KENI Anchorage, AK
  - 660 WFAN New York, NY
  - 670 KBOI Boise, ID
  - 700 WLW Cincinnati, OH
  - 710 WOR New York, NY
  - 720 WGN Chicago, IL
  - 720 KDWN Las Vegas, NV
  - 740 KCBS San Francisco, CA
  - 750 WSB Atlanta, GA
  - 760 WJR Detroit, MI
  - 770 WABC New York, NY
  - 780 WBBM Chicago, IL
  - 810 KGO San Francisco, CA
  - 810 WGY Schenectady, NY
  - 820 WBAP Ft. Worth, TX
  - 830 WCCO Minneapolis, MN
  - 840 WHAS Louisville, KY
  - 850 KOA Denver, CO
  - 880 WCBS New York, NY
  - 890 WLS Chicago, IL
  - 950 WWJ Detroit, MI
  - 1000 WMVP Chicago, IL
  - 1020 KTNQ Los Angeles, CA
  - 1030 WBZ Boston, MA
  - 1040 WHO Des Moines, IA
  - 1070 KNX Los Angeles, CA
  - 1080 WTIC Hartford, CT
  - 1080 KRLD Dallas, TX
  - 1100 WTAM Cleveland, OH
  - 1110 KFAB Omaha, NE
  - 1110 WBT Charlotte, NC
  - 1120 KMOX St. Louis, MO
  - 1140 KHTK Sacramento, CA
  - 1140 WRVA Richmond, VA
  - 1160 KSL Salt Lake City, UT
  - 1160 WYLL Chicago, IL
  - 1180 WHAM Rochester, NY
  - 1190 KEX Portland, OR
  - 1200 WOAI San Antonio, TX
  - 1210 WPHT Philadelphia, PA
  - 1500 WWWT Washington, DC
  - 1510 WLAC Nashville, TN
  - 1530 KFBK Sacramento, CA
  - 1530 WCKY Cincinnati, OH
  - 1540 WDCD Albany, NY
  - 1560 WQEW New York, NY
  - 1580 KMIK Tempe, AZ
- Although authorized, a few of these

stations are not broadcasting in HD at night because the digital signal is turned off at night or the station is in the process of upgrading for digital operation. The FCC database is not quite up to date either as some stations known to be HD broadcasting are not listed online but are included here.

## Dexterous DXing

While the 50 kW radio stations continue to buzz each other with digital noise, broadcast DXers can take steps to overcome HD digital interference. Obviously a directional antenna can be aimed to minimize or null interference. General coverage communications receivers capable of single sideband reception can be operated in exalted carrier selectable sideband (ECSS) mode to further reduce interference. In simplest terms, ECSS is the reception of an AM signal in either upper or lower sideband mode with a narrow intermediate frequency (IF) filter engaged. This trick of the trade is often employed by shortwave DXers to reduce interference from adjacent signals. An IF of 1.8 to 2.3 kHz in ECSS mode can produce a very readable signal when otherwise buried by interference in AM mode. Tuning slightly off frequency can sometimes achieve similar results on a radio lacking single sideband modes or extra narrow IF filters.

## Broadcast Loggings

Here's what some DXers are receiving despite nighttime digital interference. "I check 1140 every hour, never know what is going to turn up there," reports Rick Barton from Arizona. "I have had more variety on that frequency than any other so far." Mark Connelly and Marc DeLorenzo, both in Massachusetts, successfully logged the new TransWorld Radio outlet now on the air from Benin, Africa, while Patrick Martin in Oregon received a birthday surprise from Wyoming, and Bert New caught a moose among other things. Meanwhile, even though the sun has been spotless at the start of the new solar cycle, geomagnetic activity resulted in a good low band tropical opening for me in New Hampshire. All times are UTC.

**550 Radio Nacional de Colombia**, two locations, at 0500 a fair signal; Internet promo. "Radio Nacional de Colombia...punto com," and soft instrumental jazz music. New log. (Conti-NH)

**570 CMDC Radio Reloj, Santa Clara, Cuba**, at 0000 good with ID and time check, then time checks for various locations worldwide with chimes between each announcement, "Radio Reloj, doce de la noche en la Habana Cuba (chimes), nueve de la noche en Vancouver, Canada (chimes)..." (Conti-NH)

**680 HJZO Radio Nacional de Colombia, Sabanagrande**, at 0500 under WRKO, unequivocally parallel 550 with soft instrumental jazz music. (Conti-NH)

**690 HJCZ Radio Recuerdos, Bogotá, Colombia**, at 0400 over CINF, "Variedad musical es Radio Recuerdos," ranchera music. (Conti-NH)

**720 Nationwide News Network, St. Catherine, Jamaica**, at 0400 good with telephone talk in Caribbean-accented English through the top of the hour, talking about relationships and fear of getting hurt, parallel 700 kHz. At 0500, end of talk program, "Stay with Nationwide Radio, a revolution in media," and Eric Clapton "Wonderful Tonight." (Conti-NH) Per the 2008 *World Radio TV Handbook*, Jamaica has adopted HD as its digital AM standard.

**730 HJCU Radio Lider, Bogotá, Colombia**, at 0400 fair, "Radio Lider... Bogotá...en todo el país," with fanfare. (Conti-NH)

**740 Radio Angulo, Holguín, Cuba**, heard at 0400 a good signal but distorted audio; "Esta es CMKO Radio Angulo, transmitiendo de Holguín, Cuba," and chimes with time check, "Once punto." (Conti-NH)

The decibel (dB) is a unit used to express the ratio between two amounts of power.

$$\text{dB} = 10 \log \frac{P_1}{P_2}$$

Factors for calculating common dB values:

+/- 6 dB = 3.98

+/- 12 dB = 15.85

*Mathematical relationship between decibels and watts. Divide analog power by the factors provided for a simple and quick estimation of digital power at -6 and -12 dB.*

**870 WMTL Leitchfield, Kentucky**, at 2341 "AM 870. The Moose," with a country music countdown. A decent signal with fades. (New-GA)

**880 KGHT Sheridan, Arkansas**, at 0412 "AM 880. KGHT" and southern gospel music. A good signal in the null of WCBS New York. (New-GA)

**1080 WTIC Hartford, Connecticut**, at 2300 Connecticut Lottery ad and ID, "WTIC, WTIC-HD Hartford," with a good signal only to fade under WKJK Louisville. (New-GA)

**1140 KZMQ Greybull, Wyoming**, at 1320 with local weather, mentions of Cody, Powell, "basin" and "Yellowstone region." Alone on the frequency at this session with a good but fading signal. (Barton-AZ)

**1340 KSGT Jackson, Wyoming**, a homemade QSL card (by the station) with KSGT logo taped to postcard, received in 60 days after a follow-up report. "Barry" signed it. Address: 1140 State Hwy 22, Jackson WY 83001. My initial report was sent almost two years ago! Only my third graveyard Wyoming QSL, arrived a day late after my 59th birthday, but still a nice gift! MW QSL # 2984. (Martin-OR)

**1370 WGCL Bloomington, Indiana**, at 0400 "Monroe County's sports leader" with news, weather, and ESPN radio. A decent signal on top of the mix. (New-GA)

**1430 KWST El Centro, California**, at 1424 with ID, "KWST AM 1430," and co-channel interference from an unidentified "middle of the road" music station. (Barton-AZ)

**1548 Voice of Russia, Grigoriopol, Moldova**, at 0358 heard with test tones, then sign-on announcement and music followed by a woman in slow English, "This is the Voice of Russia," and program for Afghanistan. (Conti-NH)

**1566 TWR Parakou, Benin**, a good signal at 0300 sign-on with man saying, "You are tuned to a service of TransWorld Radio," then chimes into a soul-influenced Christian vocal. Blank carrier started up at about 0258. (Connelly-MA) At 0436-0450 fair in peaks with a Christian program in English. Noted a long hymn followed by a minister using phrases like, "...God loves you," and "...Jesus Christ in 2008." Signal peaked at 0443 with phrase "For God so loved the world..." Another hymn at 0450. MW country #96 heard from Massachusetts. (DeLorenzo-MA)

**1680 KGED Fresno, California**, at 0530 "Afternoon Delight" by the Starland Vocal Band, other oldies stuff and ID, "The All New KGED...Home of the hits, KGED Fresno." This is evidently the new format and callsign of former KAVT. (Barton-AZ)

Thanks to Rick Barton, Mark Connelly, Marc DeLorenzo, Patrick Martin, and Bert New for their logs. CBS radio stations KDKA, KYW, and WBZ chose not to respond to inquiries about HD.

Until next time, 73 and Good DX!

# 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 other parts of the world, as well as local and regional shortwave stations. Many of the transmissions listed here are not in English. Your ability to receive these stations will depend on time of day, time of year, your geographic location, highly variable propagation conditions, and the receiving equipment used.

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

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	7415	WBCQ, Maine		0300	6000	Radio Havana Cuba	SS/EE
0000	9800	China Radio Intl	SS	0300	3240	Trans World Radio, Swaziland	
0000	9680	Radio Thailand		0300	5014	Radio Altura, Peru	SS
0030	9400	Radio Bulgaria		0300	6110	Radio Fana, Ethiopia	
0030	6290	Radio Cairo/Egyptian Radio		0330	4885	Radio Clube do Para, Brazil	PP
0030	11905	Sri Lanka Broadcasting Corp.		0330	9750	China Radio Intl, via Cuba	
0100	3310	Radio Mosoj Chaski, Bolivia	SS	0330	3345	Channel Africa, South Africa	
0100	7115	Radio Serbia, Bosnia		0330	9720	RTV Tunisienne, Tunisia	AA
0100	7400	Radio Bulgaria		0330	11640	Radio Taiwan Intl	cc
0100	9420	Voice of Greece	GG	0345	13650	Voice of Korea, North Korea	CC
0100	6155	Radio Republica, to Cuba	SS	0400	4950	Radio Nacional, Angola	PP
0100	4790	Radio Vision, Peru	SS	0400	4780	Radio Djibouti	FF
0100	9440	Radio Slovakia Intl		0400	7100	Voice of the Broad Masses, Eritrea	Trgrinya
0100	11780	Radio Nacional Amazonas, Brazil	PP	0400	11610	Radio Voice of the People, to Zimbabwe	
0130	5035	Radio Aparecida, Brazil	PP	0400	4775	Trans World Radio, Swaziland	GG
0130	11815	Radio Brazil Central	PP	0400	7390	Channel Africa, South Africa	FF
0130	7160	Voice of Islamic Republic of Iran		0400	6020	Voice of Turkey	
0130	7125	Russian Radio Intl, via Moldova	RR	0400	4828	Voice of Zimbabwe	vern
0130	7205	Voice of Turkey		0430	5910	Marfil Estero, Colombia	SS
0130	7440	Radio Ukraine Intl		0430	7110	Radio Ethiopia	Amharic
0130	6135	La Voz du Guaviare Colombia	SS	0430	17525	KWHR, Hawaii	
0200	4915	Radio Difusora Macapa, Brazil	PP	0430	6185	Radio Educacion, Mexico	
0200	9800	China Radio Intl, via Chile	SS	0430	7545	Kol Israel	
0200	4052.5	Radio Verdad, Guatemala	SS	0430	9635	Radio Okapi, Congo, via South Africa	FF
0200	4835v	Radio Maranon, Peru	SS	0430	7350	Voice of Russia	
0200	6240	Voice of Russia, via Moldavia		0430	4960	VOA Relay Sao Tome	
0200	3396	Radio Zimbabwe	vern/EE	0430	4965	The Voice-Africa, Zambia	
0230	9570	China Radio Intl, via Cuba	CC	0500	4905	RNT, Chad	FF
0230	4815	Radio El Buen Pastor, Ecuador	SS	0500	6250	Radio Nacional, Equatorial Guinea	SS
0230	4780	Radio Cultural Coatan, Guatemala	SS	0500	4770	Radio Nigeria	
0230	6145	Radio Budapest, Hungary	HH	0500	9705	La Voix du Sahel, Niger	FF/vern
0230	5915	Radio Zambia	EE/vern	0500	7175	Radio Liberty, USA, via Morocco	RR
0230	5025	Radio Rebelde, Cuba	SS	0500	7185	Radio Sondergrense, South Africa	Afrikaans
0300	3330	CHU, Canada	time anmts	0500	5000	YVTO, Venezuela	Time signals
0300	3279v	La Voz del Napo, Ecuador	SS	0500	5005	Radio Nacional, Equatorial Guinea	SS
0300	3250	Radio Luz y Vida, Honduras	SS	0500	7255	Voice of Nigeria	
0300	3340	Radio Misiones Intl., Honduras	SS	0530	7205	BBC, via South Africa	
0300	7165	BBC Relay, Oman		0530	4777	RTV Gabonaise, Gabon	FF
0300	5010	Radio Madagasikara, Madagascar	Malagasy	0530	5025	Radio Benin	FF
0300	3350	Radio Exterior de Espana, Costa Rica Relay	SS	0530	6075	Radio Rossii, Russia	RR
0300	3215	Adventist World Radio, via Madagascar	Malagasy/EE	0600	4760	ELWA, Liberia	
0300	4976	Radio Uganda		0600	5995	RTV du Mali	FF
				0600	6090	Radio Nigeria	EE/vern

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0630	6010	La Voz de su Conciencia, Colombia	SS	1600	11690	KSDA, Guam	
0700	7125	RTV Guineenne, Guinea	FF	1600	12080	Deutsche Welle Relay, Portugal	RR
0700	4800	XERTA/Radio Transcontinental, Mexico	SS	1600	11690	Radio Jordan	
0700	6090	Radio Bandeirantes, Brazil	PP	1630	13680	Radio Austria Intl	
0700	6165	Voice of Croatia	PP	1700	9610	Radio Canada Intl	
0800	9765	Radio New Zealand Intl		1730	15475	Africa Number One, Gabon	FF
0800	7270	Radio Gabon	FF	1800	11735	Radio Tanzania, Zanzibar	EE/Swahili
0830	9615	KNLS, Alaska		1830	9640	Radio Romania Intl	
0900	15295	Voice of Malaysia		1830	7260	Radio Algiers, Algeria, via Germany	AA
0900	6150	Radio Singapore Intl	Malay	1900	9745	Trans World Radio, via South Africa	various
1000	4950	Radio Madre de Dios, Peru	SS	1930	7465	Radio Tirana, Albania	
1000	4732	Radio Universitaria, Bolivia	SS	1930	11775	Caribbean Beacon, Anguilla	
1030	6135	Radio Santa Cruz, Bolivia	SS	1930	11620	All India Radio	Hindi
1100	3925	Radio Nikkei, Japan	JJ	2000	17830	BBC Relay, Ascension Is.	
1100	15785	Galei Zahal, Israel	HH	2000	12080	VOA Relay, Botswana	FF
1100	4747	Radio Huanta 2000, Peru	SS	2000	11990	Radio Kuwait	
1130	3220	HCJB, Ecuador	QQ	2000	15120	Voice of Nigeria	
1130	5020	SIBS, Solomon Islands		2000	12085	Radio Damascus, Syria	
1130	12095	FEBC, Philippines		2030	9690	Deutsche Welle Relay, Rwanda	
1200	6020	Radio Australia		2030	6055	Radio Rwanda	vern
1200	6010	Radio Mil, Mexico	SS	2030	5840	Radio Ukraine Intl	
1200	4605	RRI, Serui, Indonesia	II	2030	5805	Vatican Radio	
1200	4750	RRI, Makassar, Indonesia	II	2100	17810	Radio Nederland Relay, Bonaire	DD
1200	4450	Voice of the Korean National Front, to S. Korea	KK	2100	17645	China Radio Intl, via Chile	SS
1200	5040	Myanmar Radio (Burma)	Burmese	2100	9795	RDP Intl, Portugal	PP
1230	7250	Bangladesh Betar		2100	9630	Radio Exterior de Espana, Spain	SS
1230	4900	Voice of the Strait, China	CC	2100	15345	RAE, Argentina	SS
1230	4800v	Radio Buenos Nuevas, Guatemala	SS	2130	6100	Radio Serbia Intl, Bosnia	FF
1230	3315	Radio Manus, Papua New Guinea		2130	11985	FEBA, England, via Ascension	unid
1230	3235	Radio West New Britain, Papua New Guinea		2130	6005	BBC Relay, Seychelles	
1230	4790	RRI, FakFak, Indonesia	II	2130	17675	Radio New Zealand Intl	
1230	2485	VL8K, Australia		2130	9780	Republic of Yemen Radio	AA
1300	6030	CFVP, Canada		2200	7450	RS Makedonias, Greece	GG
1300	7135	BBC Relay, Singapore	II	2200	5955	KBS World Radio, South Korea	
1300	7380	Radio France Intl, via Taiwan	unid	2200	9830	Radio Jordan	
1300	7105	BBC Relay, Thailand	CC	2200	6000	Radio Varna, Bulgaria	BB, wknds
1300	9660	V. of Islamic Republic of Iran	unid	2230	9760	Cyprus Broadcasting Corp	Greek, Fri-Sun
1300	7220	Voice of Vietnam	CC	2230	7380	Radio Nederland Relay, Madagascar	various
1330	13820	CVC Australia, via Uzbekistan	unid	2230	6300	Radio Nacional de la RASD, to Morocco	AA/SS
1330	7485	Trans World Radio, Guam	CC	2300	5030	Radio Burkina, Burkina Faso	FF
1330	12090	Deutsche Welle Relay, Sri Lanka	unid	2300	7345	Radio Prague, Czech Republic	FF
1330	7430	BBC via Tajikistan	unid	2300	11700	Adventist World Radio, Guam	CC
1330	9820	All India Radio (Goa)	Sinhala	2300	7135	RTV Marocaine, Morocco	AA
1330	7570	Voice of Korea, North Korea		2300	9600v	Radio UNAM, Mexico	SS
1330	7470	Radio Free Asia, via Mongolia	unid	2300	7325	Radio Vilnius, Lithuania	LL
1330	12100	Radio Free Asia, via Sri Lanka	unid	2300	15720	Radio New Zealand Intl	
1330	9965	T8BZ, Palau	CC	2300	9955	WRMI, Florida	SS
1330	9900	Voice of Russia	unid	2300	6115	Radio Romania Intl	
1330	15240	Radio Sweden		2300	9465	Radio Cairo, Egypt	
1400	13580	Radio Prague, Czech Republic		2300	15410	CVC-La Voz, Chile	PP
1400	9625	CBC Northern Service, Canada		2300	7360	Radio Belarus	RR
1400	9345	Radio Nederland, via Uzbekistan		2330	15525	HCJB, Australia	CC
1400	15140	Radio Sultanate of Oman		2330	17605	Radio Japan, via Bonaire	JJ
1400	11530	Denge Mesopotamia, via Ukraine	Kurdish	2330	15465	FEBC, Philippines	Burmese
1400	9525	Voice of Indonesia	various	2330	7320	Magadan Radio, Russia	RR
1430	9410	BBC Relay, Cyprus		2330	9750	Nei Menggu PBS, China	Mongolia
1500	9825	Miraya FM, Slovakia, via IRRS					
1500	15435	BSKSA, Saudi Arabia	AA				

## New, Interesting, And Useful Communications Products



Yaesu's FT-950 transceiver features a triple-conversion, super-heterodyne receiver with selectable first-IF roofing filters of 3, 6, and 15 kHz.

### HF/6m Transceiver From Yaesu

Yaesu has introduced a new transceiver, the FT-950, that according to the company's website was designed to fit the needs of casual operators, serious DXers, and new HF licensees anxious to jump on the HF and 50-MHz bands. The FT-950 features a triple-conversion, super-heterodyne receiver with selectable first-IF roofing filters of 3, 6, and 15 kHz. The radio has a multi-function 30-kHz 32-bit Floating Point IF DSP with IF Width, IF Shift, Notch, and Contour features. Its front end includes eight bandpass filters. The FT-950 offers an oversize, high-visibility fluorescent display (VFD) to provide more contrast, brightness, and wider viewing angles than typical TFT (thin-film-transistor) displays. Other features to aid both DXers and newer HF operators include quick split function, transmit-frequency watch (TXW), CW zero-in, and CW spot.

The FT-950 has an MSRP of \$1840. For more information, visit [www.yaesu.com](http://www.yaesu.com) or [www.vertexstandard.com](http://www.vertexstandard.com).

### Otter Products' OtterBox 1933

The OtterBox 1933 is a sleek, semi-rugged, fully-interactive case with a slim fit design to protect BlackBerry 8800



The OtterBox 1933 safeguards your BlackBerry 8800 Series smartphones with three layers of protection.

Series smartphones from Research In Motion (RIM), specifically the BlackBerry 8800, BlackBerry 8820, and BlackBerry 8830 (World Edition) versions. The 1933's features include additional bump, scratch, and drop protection; light rain protection; included belt clip; Donaldson Acoustic vents on the top and front speakers; fully interactive through-the-case design. It safeguards your smartphone with three layers of protection: thermal formed protective clear membrane protects the screen; hi-impact polycarbonate; and silicone skin to absorb bump and shock.

Note: This case is not fully protected against water. The case will provide some protection against water and dust. This case is not intended for underwater use.

The OtterBox 1933 sells for \$49.95. For more information, visit [www.otterbox.com](http://www.otterbox.com).

### Ultra-High Linearity Amplifiers From Spectrum Microwave

Spectrum Microwave introduced a new line of lower cost amplifiers, the QBH-8900 series, that provide ultra-high linearity and a low noise figure. These amplifiers feature a new lower cost surface mount package and are available with frequencies from 20 MHz to 4000 MHz, IP2 values to +75 dBm and noise figures as low as 0.9 dB; they offer gain from 10 dB to 28 dB and third order intercepts to +45dBm. Spectrum Microwave's ultra-high linearity amplifiers do not require external circuitry, only a DC power supply



A new line of lower cost amplifiers from Spectrum Microwave provides ultra-high linearity and a low noise figure for applications including mobile communications platforms and point-to-point and multipoint radios.

and feature internal blocking caps, biasing circuitry, and RF matching. In addition to being cost effective, the new packaging for these high performance amplifiers is lightweight, and they are ideal for a wide range of applications including mobile communications platforms and point-to-point and multipoint radios.

The QBH-8900 series amplifiers are priced from \$50 to \$99. For further information, visit [www.SpectrumMicrowave.com](http://www.SpectrumMicrowave.com).

### WAAV AirBox X2

WAAV offers mobile cellular routers, including the AirBox CM3 and AirBox X2, that let people access the Internet from wherever they are instead of having to wait to find a hot spot at



The AirBox X2 from WAAV offers is a multiple connection cellular router that's ideal for use on buses and other mass transit.

a hotel, café, or an airport. The AirBox allows them create their own secure mobile WiFi hot spot anywhere. With a wireless laptop, EmComm volunteers, mobile radio operators, or even hobbyists on the road who want access to the Web can benefit by being able to operate as they would from their home or office broadband Internet connection.

The AirBox design is engineered to maintain a broadband speed connection while in a moving vehicle. The mobile router provides a connection similar to cable or DSL, and even allows multiple devices such as PDAs, laptops, and gaming consoles to be connected online simultaneously. Proven reliable at over 100 mph, users plug directly into the router using Ethernet or by connecting wireless via WiFi. Even if the vehicle is stopped, the wireless connection will

remain available up to 300 feet away. Built-in security features provide a secure connection, and GPS options let you track vehicles in real time.

The AirBox CM3 costs \$599.99; the AirBox X2, a multiple connection cellular router that's ideal for buses and other mass transit that has many users, costs \$1,299.99. For more information, visit [www.waav.com](http://www.waav.com).

### GSI Labs' VOIP Recording Software

VoiceRip software from GSI Labs records all voice conversations on a VOIP telephone call. This product for VOIP telephone services like Vonage lets users record and retain every live call for archival and retrieval purposes. From directions to a house or fixing a computer, to verbal contracts among business people, this capability expands the usefulness of VOIP calling by providing records of all telephone conversations. The organizational benefits familiar to email users can now be applied to voice communications. For instance, you can access phone calls via VoiceRip by date, caller, subject and phone number. Access is within seconds and the entire phone call can be played or only snippets. You can fast forward or rewind the phone calls to find the important elements. VOIP service providers presently supported include AOL Aim, Bluesky, Broadvoice, ConnectVoip, JoiPhone, lingo, Net2-Phone, Verizon, ViaTalk, Voip.com, VoipYourLife and Vonage.

The VoiceRip full package (includes hub and software) costs \$79.95; software only costs \$59.95. For more information, visit [www.voicerip.com](http://www.voicerip.com).



GSI Labs' VoiceRip software will record and organize all voice conversations on a VOIP telephone call for convenient archival and retrieval.

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## Looking At The Far Side Of The Sun

In March 2000 the SOHO/MDI science team announced the first images of an active region on the far side of the sun. Using a technique called, "helioseismic holography," scientists are able to "see" the far side of the sun! This way of seeing the opposite side of the sun is a result of many years of analysis and modeling. In 1962, observers noticed patches on the surface of the sun that oscillate up and down with a typical period of about five minutes. For many years afterward these waves were a mystery.

In 1970, however, scientists identified the mysterious source of these oscillations, and confirmed their discovery by 1975. These five-minute-long surface oscillations are due to sound waves generated and trapped inside the sun. They refract away from the sun's hot core and reflect back and forth between different parts of the photosphere. Pressure fluctuations in the turbulent convective motions of the sun's interior cause the sound waves. The pressure fluctuations are about the size of California, and are like bubbles called "solar granulation."

The photosphere is the visible surface of the sun. Since the sun is a ball of gas, this is not a solid surface, but actually a layer about 100 kilometers thick. This layer is sort of like one of the layers in our own atmosphere, say the troposphere, for instance.

The photosphere is very thin compared to the 700,000-km radius of the sun.

A number of features can be observed in the photosphere with a simple telescope. (Note: Never look directly at the sun, including through a telescope. You should also use a good filter to reduce the intensity of sunlight to safely observable levels, as reflected sunlight may also cause damage to your eye). These photospheric features include dark sunspots, bright faculae (concentrated magnetic areas), and granules (see below). The flow of material in the photosphere may also be measured using the Doppler effect. These measurements reveal additional features such as the "supergranules" as well as large-scale flows and a pattern of waves and oscillations. These large-scale patterns contain the helioseismic information that reveals what is on the far side of the sun. The study of this phenomenon is "helioseismology."

After many years of careful observation and analysis, today's helioseismologists use these sound waves, and the modes of vibration they produce, to probe the interior of the sun the same way geologists use seismic waves from earthquakes to probe the inside of the Earth. This technique of seeing the far side of the sun using helioseismic information results in the hologra-

### 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 (Kp > 5 or Ap > 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>.

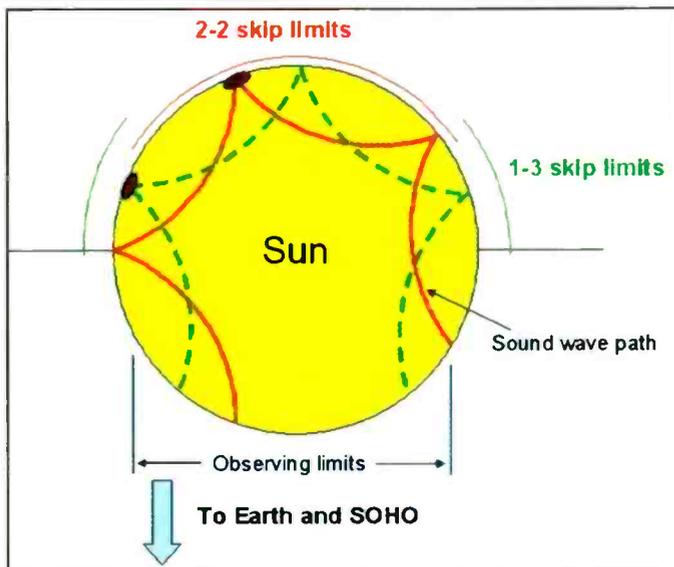


Figure 1. This diagram shows some sample sound wave paths connecting the front, or Earth side, of the sun with the back, or far side; see text. (Source: SOHO/MDI)

phy that gives propagation forecasters and scientists a view of what is coming around to the visible side.

The apparatus that has been created to view the far side of the sun is the Michelson-Doppler Imager (MDI). Using the MDI, we can detect the progress of old activity, and detect new activity a full week or so before a group of sunspots rotates around to the Earth-facing side.

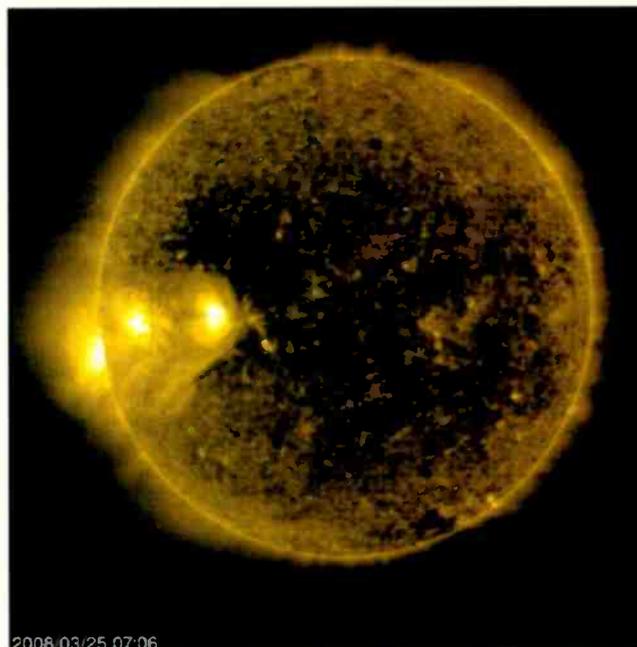
Since mid-2001 these far side images of the central area of the back of the sun have been prepared for each daily 12-hour period and made available on the Web. Also in that year a technique was developed that could provide sensitivity for the whole far side rather than just the central area possible with the original method. The new method was slow to compute and the transition between the central and surrounding regions was not smooth enough to make the method useful as it was, however.

The MDI team announced during February 2006 that they now had an improved analysis technique that revealed the entire far side of the sun, rather than just a region on the center of the side opposite the Earth. The new method is an extension and improvement to the original method. Analysts now combine the original method, of using the travel time of sound waves that bounce once from the underside of the surface going to and coming from each location on the far side, with a new method. The new method uses a one-bounce plus a three-bounce combination. By combining these methods, regions can be seen as they rotate right up to the visible limb and move onto the front side where we can view them.

Both the original and the new methods are subject to some random noise that can appear like active regions. One of the reasons that the new method is more useful is that by following a region for several days one can determine if an event is real or just some observational noise. We are, after all, looking through a star with sound waves! It's not at all surprising that sometimes the view is a bit indistinct.

**Figure 1** is a diagram showing some sample sound wave paths connecting the front, or Earth side, of the sun with the back, or far side. Sound waves are generated by the small-scale (California size) convection at the visible solar surface. When these convection cells called "granules" cool and fall back into

## The Sun Awakens In The Early Dawn Of Sunspot Cycle 24



During the week of March 24 through the first days of April, the sun became quite active. This, after many months of long stretches of quiet, sunspot-less days. March 25 images of the sun revealed a train of sunspots, NOAA AR 0987 (a beta configuration), 0988 (a beta configuration), and 0989 (an alpha configuration).

For many months prior, there would be an occasional sunspot, if any at all. These three sunspots indicate a sun that is waking up; there was even a strong M1-class solar flare on March 25, the first such strong flare in some time. The M1.7 magnitude flare originated in sunspot 0989, which was on the very edge of the sun, not facing us. As this sunspot group rotates into what is known as "geo-effective" position, it may well cause intense radio blackouts and storms, while also strengthening the ionosphere, in turn creating great DX opportunities on higher HF frequencies during non-radio blackout periods. Radio blackouts occur during solar flares.

On the same day, March 25, the solar flux (10.7-cm flux index) rose from the low 70s to a high of 89 (as of this writing), and the flare caused minor storming and a radio blackout on HF. This is the highest we've seen the flux in quite some time. We're in for the exciting start of a new solar cycle! Some forecasters speculate that this solar cycle will not be too active, but I still hold to one early forecast that speculates that the cycle may be a very active and exciting one, indeed. Time will tell; stay tuned to this column for the latest solar news.

the interior they cause sound waves to move into the sun in all directions. There are about 7,000 such wave sources going off each second. This diagram shows the path of some of the waves from one of these starting on the front side. As the waves move into the sun they get refracted (bent out) back to the surface because the sound speed is greater deeper into the sun. When they get to the surface (visible layer, photosphere) they get reflected back into the sun. When they get reflected the visible

Optimum Working Frequencies (MHz) - For June 2008- Flux = 65, Created by NW7US

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

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

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

layer recoils (moves) and we are able to measure that movement.

You can see the latest helioseismic image on my "Propagation Resource Center" at <http://prop.hfradio.org/>. From there, click on the "Visual Space Weather" link, and then look about halfway down that page. For a detailed look at how helioseismology works, check out <http://solarscience.msfc.nasa.gov/Helioseismology.shtml>.

## HF Propagation For June

June is a month of typical summertime radio propagation on the shortwave (HF) bands. Solar absorption is expected to be at seasonally high levels, resulting in generally weaker signals during the hours of daylight when compared to reception during the winter and spring months. Nighttime usable frequencies to most parts of the world are higher than at any other time of the year, while the daytime usable frequencies are generally lower than those during winter.

At the highest end of the HF spectrum, propagation from DX locations east and west are a rare event. North and south

paths will be hot, especially around sunrise and sunset. Nineteen and 16 meters will be the most reliable daytime DX band, while 19 and 22 may offer some nighttime openings on periods with higher flux levels.

Twenty-five and 31 meters will be fairly good in the evenings and mornings. At night, those paths that remain open will be marginal. The most reliable band for both daytime and nighttime should be a toss-up between these two bands.

Forty-one and 49 meters should offer good DX conditions during the night despite higher static. Look for Europe and Africa as early as sunset. After midnight, start looking south and west for the Pacific, South America, and Asia. Short-skip should be possible out to about 750 miles during the daytime.

Expect some openings on 75 and 90, similar to how 40 meters will be acting. Fairly frequent short-skip openings up to 1,000 miles are possible during darkness, but expect very few daytime openings with all the static and absorption. Mediumwave and 120-meter propagation is rough in the summer due to the high static and higher overall absorption

caused by the short nights and higher *D*-layer ionization.

Watch for solar coronal holes to cause degradation of HF propagation. These coronal holes spew out huge clouds of solar plasma toward Earth, resulting in geomagnetic disturbances that cause the ionosphere to lose its ability to refract HF radio waves. At least one week of poor propagation is expected during June because of coronal hole activity.

Thunderstorm noise and other natural static noise increases considerably during June and the summer months, masking exotic DX signals. This can make catching weak DX signals a true challenge.

## VHF Conditions

The summertime sporadic-*E* (*Es*) season for the Northern Hemisphere begins in force in May, with June seeing strong and frequent *Es* openings. Within the normal *E* layer of the ionosphere, regions of abnormally intense ionization are formed. Through June, you can expect to see 20 to 24 days with some *Es* activity. Usually these openings are single-hop events with paths up to 1,000 miles, but

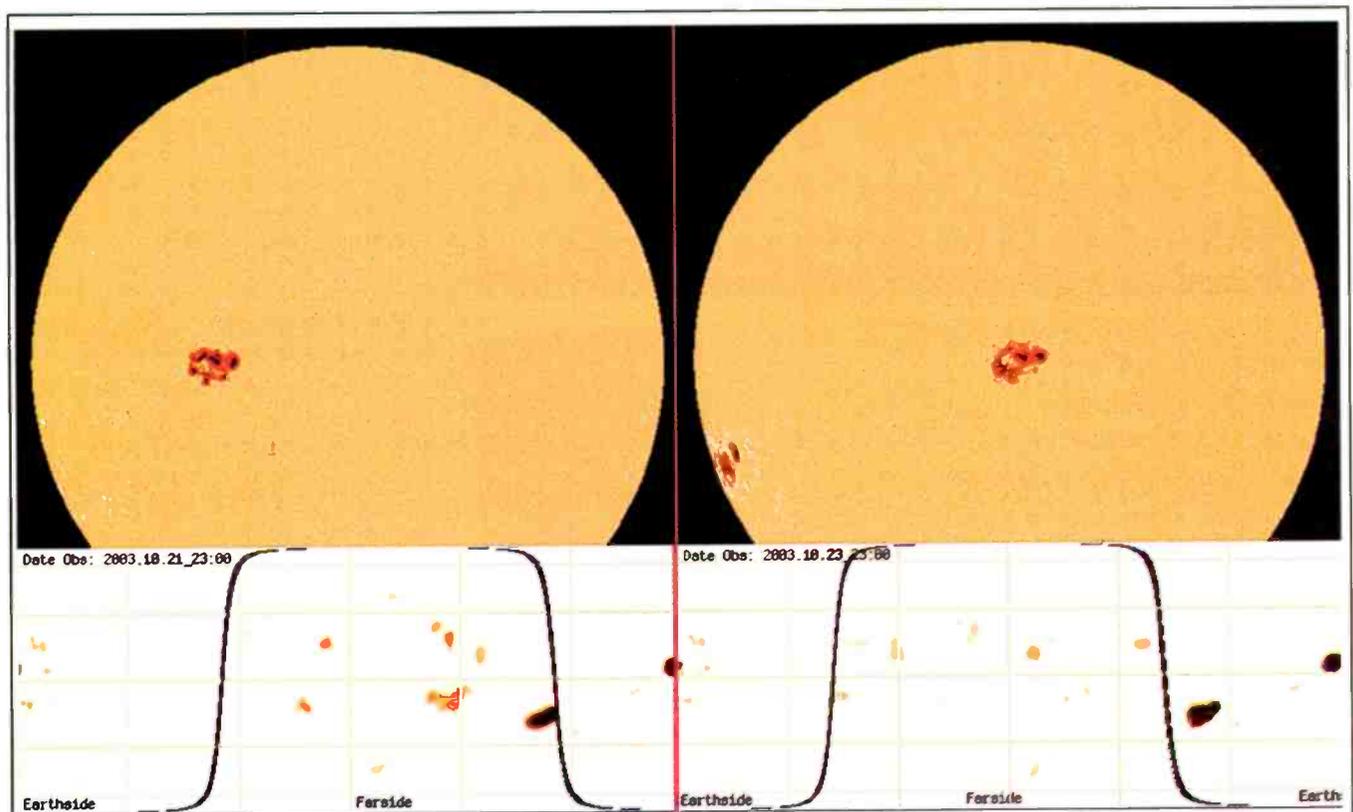


Figure 2. An illustration of the benefit of far side imaging of the sun. The top two MDI images show the sun on 22 October (left) and 24 October (right) 2003. The limb (edge) darkening has been removed by increasing the brightness toward the limb, allowing a better view of sunspots as they appear near the limb. You can see that a large region rotated onto the disk between these two dates. Below these images, far side processed images show the entire sun for the same two dates. Note that on October 22 (left) the large region can be seen before it rotates onto the front side of the sun (right). (Source: SOHO/MDI)

double-hop is possible during June. Look for *Es* on lower VHF frequencies throughout the day but especially in the afternoon.

A seasonal decline in trans-equatorial (TE) propagation occurs by June, though an occasional opening may still be possible on the low VHF bands toward South America from the southern tier states and the Caribbean area. The best time to check for 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.

It might be possible to catch a tropospheric ducting event. Watch for high-pressure weather systems, where ducting is most likely to develop. If the weather forecast maps show mean sea-level atmospheric pressure in millibars, look for tropospheric possibilities when a stalled high-pressure cell in your area reaches 1025 millibars over the path you're interested in. Of course, it's most likely to occur when this high-pressure cell develops over moist air. This is why the path between Hawaii and the West Coast has made possible communications

on VHF with as little as 5 watts, over a path of 2,500 miles.

Advanced visual and infrared weather maps can be a real aid in detecting the undisturbed low clouds between the West Coast and Hawaii, or farther, during periods of intense subsidence-inversion band openings. This condition occurs also over the Atlantic. There is a great resource on the Internet that provides a look into current conditions. Bill Hepburn has created forecast maps and presents them at [www.dxinfocentre.com/tropo.html](http://www.dxinfocentre.com/tropo.html); there you'll find maps for the Pacific, Atlantic, and other regions.

If you know that conditions are favorable for tropospheric ducting in your area, try tuning around the 162 MHz weather channels to see if you can hear stations way beyond your normal line-of-sight reception. It's possible to hear stations over 800 miles away. Amateur radio repeaters are another source of DX that you might hear from the other end of the duct.

These openings can last for several days, and signals will remain stable and strong for long periods during the opening. The duct may, however, move slowly,

causing you to hear one signal well for a few hours, only to have it fade out and another station take its place, from another area altogether.

## Current Cycle 23 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for February 2008 is 2.1. Solar scientists are now calling February 2008 the ending month and the lowest reading of Solar Cycle 23. The lowest daily sunspot value of zero (0) was recorded on February 5 through February 24, and on February 28 to 29. The highest daily sunspot count was 11 on February 1, 2008. The 12-month running smoothed sunspot number centered on August 2007 is 6.1. The forecast for June 2008 calls for a smoothed sunspot count of 5, 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 71.2 for February 2008. The 12-month smoothed 10.7-cm flux centered on August 2007 is 71.8. The predicted smoothed 10.7-cm solar flux for June 2008 is 65.

The observed monthly mean planetary A-Index (*Ap*) for February 2008 is 9, which is typical for the beginning of winter. The 12-month smoothed *Ap* index centered on August 2007 is 7.6. Expect the overall geomagnetic activity to be varying greatly between quiet to minor storm levels during June.

## 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've put together for you at <http://prop.hfradio.org/>. I also provide a WAP/WML resource for wireless devices, which I have recently updated to include solar images, graphs, and other visual resources that you can view on newer cell phones. If you have a cell phone that can browse the Internet and want the latest propagation information like the solar flux, *Ap* reading, and so forth, check out <http://wap.hfradio.org/>, the wireless version of my propagation site.

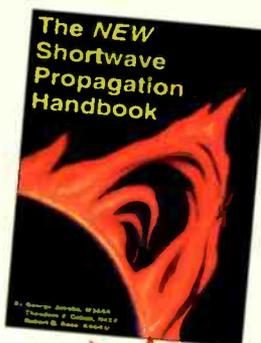
Please don't hesitate to write and let me know about any interesting propagation that you have noticed. Do you have questions about propagation? I look forward to hearing from you.

Happy signal hunting! ■

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## Edwards Air Force Base— More Of The Right Stuff

**D**eep in the Mojave Desert, a mere 100 miles or so northeast of Los Angeles, is the second largest base in the Air Force. Edwards Air Force Base. Edwards covers some 300,000 acres of the high desert, spanning Kern, Los Angeles, and San Bernardino counties in California. The base supports more than 10,000 military, federal civilian, and contract personnel that are assigned there. The 95th Air Base Wing is the host unit at Edwards.

### Edwards History

For over 60 years Edwards has been nestled in the remote southern California desert. It's home to 10 distinct flying squadrons, but it may be best known as the home of United States Air Force Test Pilot School (TPS). It's also a landing facility for the Space Shuttle Program.

The base originally started on the Rogers Dry Lake Bed as Muroc Army Airfield in 1933. In 1949 it was renamed for Captain Glen Edwards, who was killed while co-piloting an YB-49 jet-powered flying wing aircraft that crashed



A CH-53E Super Stallion at the Mojave Spaceport 9-207. (Photo via Wikimedia Commons)

near the base. Also in 1949 the USAF TPS moved from Wright Field, near Dayton, Ohio, to Edwards.

The Air Force Flight Test Center was activated there in 1951. As the program increased, the natural surfaces at both

Rogers and Rosamond dry lakebeds provided large emergency landing sites perfect for testing aircraft. In the early 1940s Edwards was the testing site for the United States' first jet-powered aircraft, the Bell XP-59A.



418th FLTS outfits a New York ANG C-130 with eight-bladed propellers. (Photo by Senior Airman Julius Delos Reyes, courtesy USAF)

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### Units And Aircraft Based At Edwards

Unit	Squadron	Aircraft Type	Tail Code
AFFTC	TPS	T-38A, AT-38B	ED
412th TW	18th FLTS Det 1	CV-22	
	411th FLTS	F-22A	ED
	412th FLTS	C-135C	ED
	416th FLTS	F-16 (All)	ED
	417th FLTS	YAL-1A	ED
	418th FLTS	C-12C, C-17A	ED
		MC-130E, KC-135R	
		T-39B	
	419th FLTS	B-1B, B-2A, B-52H	ED
	445th FLTS	T-38 (All)	ED
	452nd FLTS	RQ-4A, X-45A	
MAG-46 DET B	HMH-769	CH-53E	
	HMM-764	CH-46E	

### Aeronautical Operations

TOWER	120.7000	ARMY AIR OPS	141.1000
TOWER	236.6000	ARMY AIR OPS	339.8000
TOWER	318.1000	SOF	308.7000
TOWER	353.6000	419th OPS	266.3000
SPORT APP/DEP SOUTH	126.1000	419th OPS	276.6500
SPORT APP/DEP	132.7500	419th OPS	283.7000
APP/DEP EAST	133.1500	419th OPS	287.2000
APP/DEP N AND WEST	133.6500	419th OPS	297.0250
APP/DEP EAST	269.2000	419th OPS	315.1000
APP/DEP SOUTH	290.3000	SHUTTLE TRAINING	134.2500
SPORT APP/DEP	343.7000	SHUTTLE TRAINING	135.8250
APP/DEP WEST	348.7000	AIR TACTICAL	386.5000
JOSHUA APPROACH	134.0500	AIR TACTICAL	138.0500
COMMAND POST	304.0000	AIR TACTICAL	138.2500
COMMAND POST	138.4500	AIR TACTICAL	138.9000
COMMAND POST	381.3000	AIR TACTICAL	139.8000
NASA	135.8250	AIR TACTICAL	141.2000
NASA	373.1500	AIR TACTICAL	141.3000
NASA	371.1000	AIR TACTICAL	141.8000
PMSV	342.4000	AIR TACTICAL	149.1750
METRO	341.6000	AIR TACTICAL	149.2500
WX RECON	279.0000	AIR TACTICAL	149.3000
SHUTTLE CHASE	264.8000	AIR TACTICAL	228.2000
DISPATCHER	372.2000	AIR TACTICAL	229.6000
TRACKING OPS	314.6000	AIR TACTICAL	230.2750
AERIAL REFUELING	354.4000	AIR TACTICAL	230.4000
MAINTENANCE	291.8000	AIR TACTICAL	234.8000
410th OPS	226.6000	AIR TACTICAL	234.8250
410th OPS	322.7000	AIR TACTICAL	235.0000
411th OPS	139.7750	AIR TACTICAL	236.0000
411th OPS	373.5000	AIR TACTICAL	237.0000
412th OG OPS	138.0000	AIR TACTICAL	239.4000
412th OG OPS	290.7000	AIR TACTICAL	240.2000
416th OPS	311.2000	AIR TACTICAL	240.4000
418th OPS	123.1500	AIR TACTICAL	240.6000
418th OPS	288.7000	AIR TACTICAL	241.4000
418th OPS	379.7000	AIR TACTICAL	241.6000
445th OPS	300.8000	AIR TACTICAL	241.8000
445th OPS	351.4000	AIR TACTICAL	243.3000
445th OPS	385.9000	AIR TACTICAL	245.3000
452nd OPS	267.8000	AIR TACTICAL	248.6000

AIR TACTICAL	252.1750
AIR TACTICAL	252.4000
AIR TACTICAL	256.1500
AIR TACTICAL	256.3000
AIR TACTICAL	257.0000
AIR TACTICAL	259.7000
AIR TACTICAL	260.7000
AIR TACTICAL	261.6000
AIR TACTICAL	264.1000
AIR TACTICAL	264.6000
AIR TACTICAL	267.9000
AIR TACTICAL	268.1000
AIR TACTICAL	272.0000
AIR TACTICAL	272.1750
AIR TACTICAL	272.2500
419th OPS	398.1000

The Air Force has a Motorola Type II SmartNet system operating APCO-25 (Digital) audio. You would need a digital-capable scanner to receive it. NASA's Dryden Flight Research Center, located at Edwards, also has a trunked radio system in place. Right now we only have the system frequencies to pass along for both the Air Force system and the NASA system. Hopefully some of you will be able to fill in some of the gaps for these systems.

SYSTEM: Edwards Air Force Base  
 SYSTYPE: Motorola Type II SmartNet  
 SYSVOICE: APCO-25  
 SYSID: 8D1B

*Custom Frequency*

BASE: 406.1625  
 SPACING: 12.5 kHz  
 OFFSET: 380

*Frequencies*

001 AFRL	406.1625 407.4375 409.3625	406.1875 407.4500	407.2500 407.5625*	407.2875 409.20000
002 Main Base	407.2000 409.0000 409.5625*	407.3625 409.1625	407.8375 409.4250	408.0000 409.5375
003 Rosamond Hills	406.3250 407.2375 410.7625*	406.6375 407.4000 410.9000	406.8000 407.4750	406.9625 407.6375

*NASA Dryden Flight Research Center TRS Frequencies*

406.3500	406.7500	407.1500	407.9500	408.1750	409.1250
409.3500	409.5000	409.6500	409.7500	410.4000	

Some support frequencies may still be using VHF and UHF. If you find yourself in the area put your receiver in search mode for the following frequency ranges, or for those newer scanners with signal sweeping capability, see if you can "sniff" out more activity.

- 138-144 MHz
- 148-150.300 MHz
- 163-173 MHz
- 411-420 MHz

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Be sure to check out our July issue's special focus on radio fun and safety on the roads this summer travel season. We'll be featuring interesting and helpful articles on...

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- CB Radio, Alive And Rolling
- Radio Rescues: The People And Equipment Saving Lives

Other upcoming feature articles include The Demise Of Analog Cellular Service; West Goes West—Gordo At EMCOMM West 2008; and Pirate Profiles. Don't miss a single issue!

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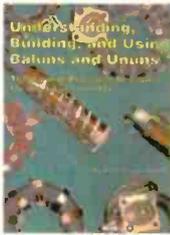


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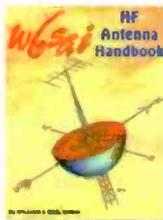


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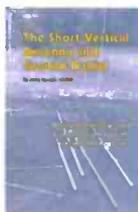


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An F-22 Raptor out of Edwards makes the first ever drop of a small diameter bomb from its weapons bay. (Photo by Darin Russell, courtesy USAF)

Other notable historic moments at Edwards have included Chuck Yeager's breaking of the sound barrier in the Bell X-1, the first Space Shuttle landing in 1981, and the around-the-world flight of the Rutan Voyager in 1986.

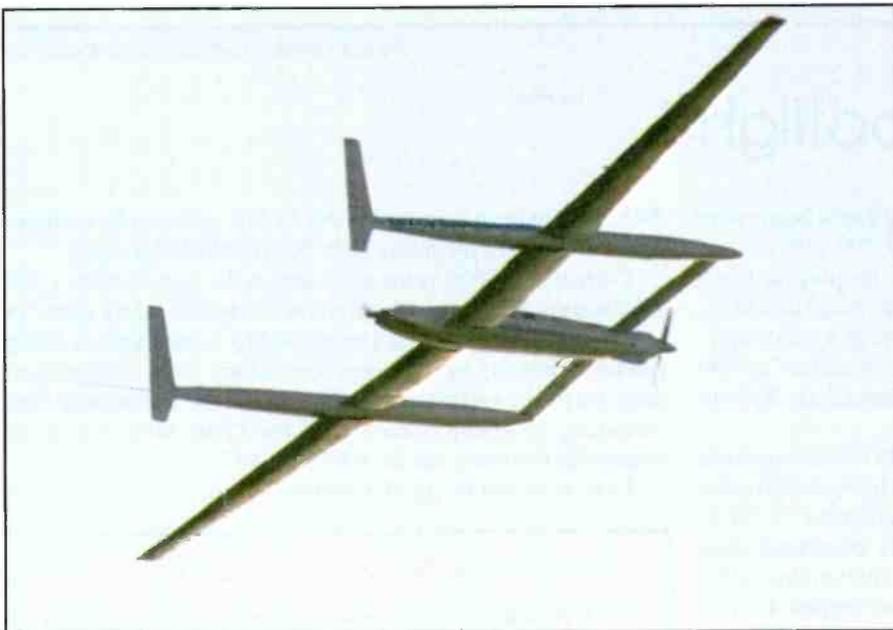
## Operations

Edwards hosts 21 runways, which

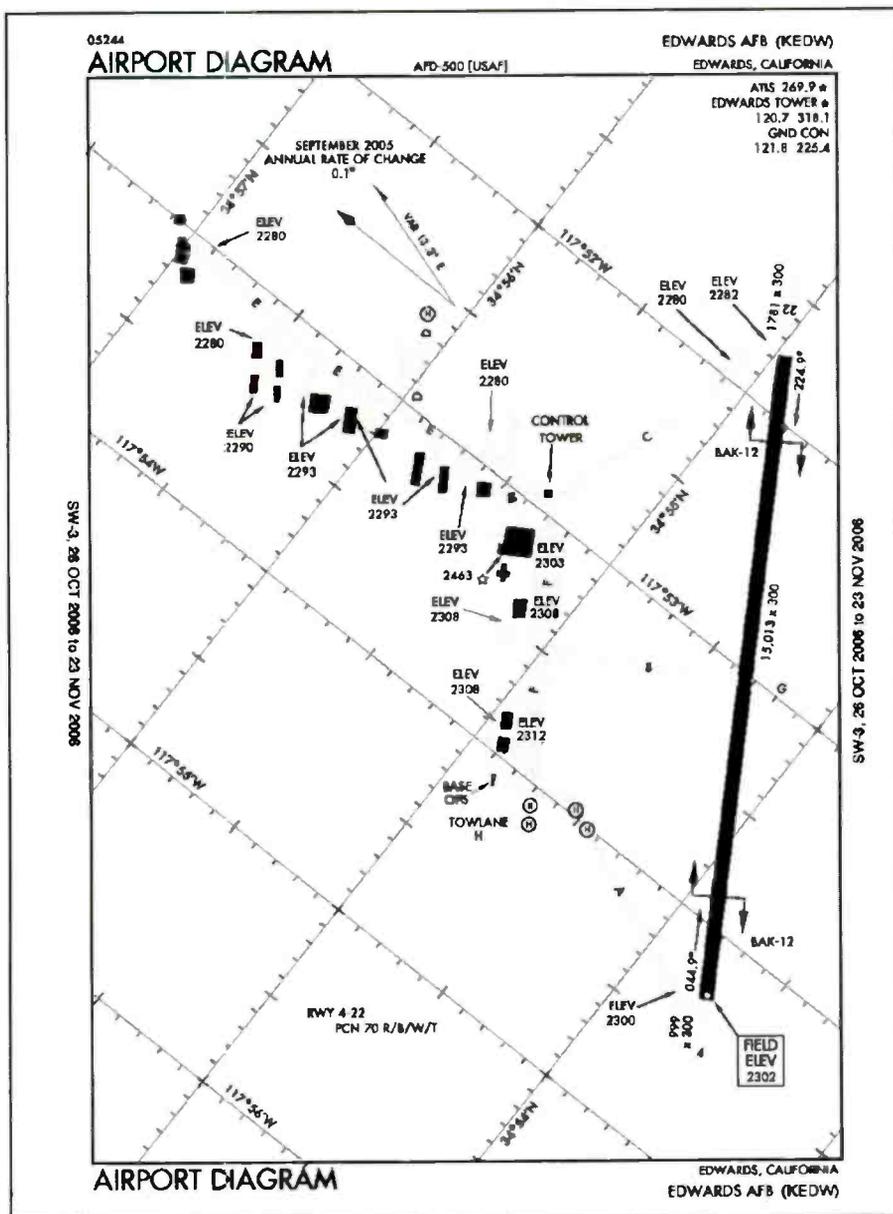
range from 4,000 to 39,000 feet. The main concrete runway is 4/22. This runs just over 15,000 feet and can be combined with an additional 9,000-foot overrun of the dry lakebed, giving pilots experiencing an in-flight emergency one of the longest and safest runways in the world. Overhead airspace is part of the R-2508 Range Complex of restricted airspace that contains some six different restricted



Space Shuttle Atlantis atop the NASA 747 takes off from Edwards in July 2007. (Photo by Carla Thomas, courtesy USAF)



The Rutan Voyager circles before landing at Edwards AFB after its record-breaking, non-stop, unrefueled flight around the world. (Photo via Wikimedia Commons)



flight areas, or Military Operations Areas (MOAs). Rogers Dry Lake itself has been declared a National Historic Landmark by the National Park Service because of the role it played in the development of the nation's space program.

One of Edwards Air Force Base main tenants is the 412th Test Wing. The 412th is comprised of several subordinate units (see "Units And Aircraft Based At Edwards"). Recently the 418th FLTS refitted one of the Wyoming Air National Guard's 153rd Airlift Wing C-130H with eight-bladed propellers in preparation for extensive testing. This is to support the New York Air National Guard's 109th Airlift Wing for that unit's "Operation Deep Freeze" mission in Antarctica.

Edwards is also home to Marine Air Group 46 Detachment B. Subordinate units Marine Heavy Helicopter Squadron 769 (HMH-769), known as "TITAN," and Marine Medium Helicopter Squadron 764 (MMH-764), known as "Moonlight," fly the largest helicopters in the military forces, the CH-53E Super Stallion and CH-46E Sea Knight, respectively. Both types are transport helicopters.

### Plan A Visit

Also located at Edwards is the Air Force Flight Test Center Museum. The museum is in a relatively new 12,000-square-foot facility. Unfortunately, due to current security restrictions, the museum is open only to those who have official business at the base or are a part of the tours booked through the public affairs office. Its hours of operation are 9 a.m. to 5 p.m. Tuesday through Saturday. It's closed Sunday, Monday, and federal holidays. The best part of all is that admission is FREE!

The Public Affairs Office can be reached at Public Affairs, 95 ABW/PA, 1 S. Rosamond Blvd., Edwards AFB, CA 93524; Phone: (661) 277-3510; Web: [www.edwards.af.mil/main/contactus.asp](http://www.edwards.af.mil/main/contactus.asp).

Edwards AFB diagram. (Courtesy of the Federal Aviation Administration)

# Ohio MARCS Spotlight!

**F**ormed in 1933, the Ohio State Highway Patrol began with a mere 60 officers. Currently about 1,400 officers and 1,000 support personnel are tasked with keeping the roadways of Ohio safe, emergency response services and investigations. The communications system is undergoing a major overhaul, as it is in many areas, with the implementation of an 800 MHz Digital Multi-Agency Radio Communications System (MARCS).

As in most states, agencies around the state of Ohio realized that they could not talk to each other using the independent radio systems that most are using. The events of September 11, 2001, underscored the need for rapid and reliable communication between agencies as first responders and administrators alike were trying to sort out the actual damage and prepare for any other attacks that might be forthcoming.

Begun in 2002, the system will be utilized by all Highway Patrol units and many agencies statewide (apparently any government agency that wishes to participate and can fund the equipment). It's a Motorola APCO-25 Digital Type II trunking system with Smartzones to facilitate statewide communications as needed.

The system is made available to agencies on a subscription basis. The government agency wishing to participate purchases the radio, and then subscribes to the MARCS service as a cost of operation. The current cost according to the MARCS website (<http://oit.ohio.gov/SDD/Marcs/MARCSInfo.aspx>) is about \$19 per month per unit.

MARCS provides three primary services to its subscribers. Mobile Voice for dispatching and communication operations, Mobile Data for Mobile Data Terminal operations and other

data that can be transmitted to the mobile units, and a computer-aided dispatch including GPS-based vehicle locations.

Currently, 23,000 voice units are on the system with 1,700 mobile data units spread throughout 500 public safety agencies in the state. The system is maintained by a state agency using funding from the subscription fees. Many Ohio communications are on the system or switching to it soon. For an overview, including excellent coverage of the Ohio State Patrol by radioreference.com, see the tables below!

Until next month, good listening!

## 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 the lucky winner a free one-year gift subscription, or extension, to *Pop'Comm*. Let's pick **867.800** this month from the MARCS system. Let me know if you hear anything, particularly digital. Of course, if you're listening to the MARCS system with a digital trunking scanner you won't know what frequency you're on, but just send in that information, too, along with what digital scanner you were using on your way to Hamvention!

Send your email to radioken@earthlink.net or via snail mail to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126. Please make sure you mark the email or the envelope with the frequency so it gets routed to the correct place!

## Where To Hear Ohio

*(The tables are courtesy of Radioreference.com and used with permission. Special thanks to Radioreference.com for frequency information!)*

Site No.	Name	Freqs						
101	Columbus (Franklin)	866.53750	866.78750	866.81250	867.17500	867.21250	867.42500	867.47500
		867.77500	867.80000	868.11250*	868.17500*	868.36250*	868.48750*	
107	Riverview (Delaware)	866.27500	866.32500	866.60000	866.63750*	866.95000*	867.33750*	867.85000*
108	Marysville (Union)	866.18750*	867.73750*	868.62500*	868.91250*			
109	Bellefontaine (Logan)	866.22500	866.30000	867.15000*	867.81250*	868.16250*	868.88750*	
111	Centerburg (Knox)	867.03750	867.37500	867.72500	867.98750	868.07500	868.73750*	868.95000
112	Clearfork (Morrow)	866.15000	866.65000*	867.26250*	868.96250*			
115	Brinkhaven (Knox)	866.82500	867.48750*	868.18750*	868.78750*			
117	St Louisville (Licking)	866.23750	866.36250*	866.85000*	867.95000*			
119	Linnville (Licking)	856.73750*	866.12500*	866.58750*	867.10000*			
125	Junction City (Perry)	866.15000	867.97500*	868.25000*	868.52500*	868.98750*		
126	Lancaster (Fairfield)	856.96250	866.06250*	867.57500*	867.83750*	868.61250*		
127	Circleville (Pickaway)	867.23750*	868.33750*	868.97500*				
128	Londonderry (Ross)	867.55000*	868.05000*	868.80000*				
129	Chillicothe (Ross)	866.61250*	866.87500*	867.30000*	867.60000*	868.07500		
130	Bainbridge (Ross)	866.98750*	867.92500*	868.31250*	868.72500*			
131	Orient (Pickaway)	866.35000	866.70000	867.13750*	867.40000*	867.66250*	868.95000*	
132	London (Madison)	866.92500	867.05000	867.27500*	867.56250*	867.58750*	867.82500*	

Site No.	Name	Freqs						
133	Dayton (Montgomery)	866.93750	867.12500*	867.32500*	868.32500*	868.60000*		
134	Springfield (Clark)	866.91250	867.18750	868.10000*	868.55000*	868.98750*		
135	Greenville (Darke)	856.93750	857.93750*	867.70000*	868.17500*			
136	Sidney (Shelby)	866.65000	867.60000*	868.12500*	868.78750*			
137	Wabash (Mercer)	855.96250	856.23750*	856.96250	866.03750*	867.21250	867.56250*	
139	New Madison (Darke)	866.26250	867.07500	867.75000*	868.82500*			
142	Granville (Licking)	866.11250	866.36250	867.76250	868.72500	868.90000*		
161	Richwood (Union)	866.27500	866.60000	867.11250	867.96250*			
199	Mt. Vernon (Knox)	866.91250	867.16250	868.65000				
201	Marion (Marion)	866.37500	866.40000	866.72500*	866.77500*	867.31250*	867.57500*	
203	Mansfield (Richland)	855.36250	866.45000	867.23750*	867.78750*	868.08750*	868.86250*	
218	Loudonville (Ashland)	867.41250	867.56250	867.82500*	868.16250*	868.33750*	868.88750*	
220	Bucyrus (Crawford)	866.42500	867.46250*	867.83750*	868.35000*			
221	Castalia (Erie)	866.61250	866.92500*	867.22500*	867.48750*			
222	Norwalk (Huron)	866.47500	867.38750*	867.66250*	867.92500*			
223	Carey (Wyandot)	866.05000	867.31250*	866.62500*	866.90000*	867.18750*		
225	Elyria (Lorain)	866.78750	867.20000*	867.70000*	867.98750*			
226	Toledo (Lucas)	866.58750	866.83750	866.88750*	867.31250*	868.26250*	868.51250*	
227	Sugar Creek (Holmes)	867.25000	867.53750*	867.88750*				
228	East Liverpool (Columbiana)	851.13750	866.73750*	867.15000*				
229	Lisbon (Columbiana)	866.55000*	867.70000*	867.92500*	868.33750*			
230	East Palestine (Columbiana)	866.22500	866.68750*	867.81250*	868.71250			
231	Salem (Mahoning)	867.05000	867.20000	867.62500*		868.80000*		
233	Campbell (Mahoning)	866.71250	867.17500	867.58750	867.90000	868.27500*	868.95000*	
234	Canton (Stark)	866.61250*	867.07500*	867.47500	867.80000*			
235	Massilon (Stark)	866.42500	867.27500*	867.83750*				
236	Millersburg (Holmes)	866.10000	866.57500*	867.35000*				
237	Ashland (Ashland)	866.35000	866.71250*	867.05000*				
238	Wooster (Wayne)	866.53750	867.17500*	867.61250*				
239	Aukerman (Wayne)	866.20000	866.68750*	868.22500*	868.77500*			
241	Grafton (Lorain)	866.93750	867.36250*	867.81250*	868.31250*	868.97500*		
242	Strongsville (Cuyahoga SW)	867.42500	867.87500*	868.17500*	868.48750	868.82500		
243	Cleveland (Cuyahoga North)	866.65000	867.60000	867.63750*	867.75000*	867.91250*	868.20000*	
244	Hopkins Arpt.(Cuyahoga West)	866.87500	867.30000*	867.85000*	868.57500*	868.73750*		
245	Beachwood (Cuyahoga East)	866.70000	866.96250*	867.78750*	868.10000*			
246	Richfield (Summit)	854.38750	866.98750*	867.93750*	868.35000*	868.60000*		
247	Nimisila Res (Summit)	866.40000	867.47500*	868.80000*				
249	Shalersville (Portage)	867.82500*	868.32500*	868.98750*				
250	Leavittsburg (Trumbull)	867.41250	867.77500	868.36250*	868.96250*			
251	East Trumbull (Trumbull)	867.25000*	867.65000*	867.88750*				
252	Chesterland (Geauga)	866.62500	867.03750*	867.23750	867.35000*	868.43750		
253	Chardon (Geauga)	855.01250	867.18750*	867.48750*	867.88750*			
254	Wickliffe (Lake)	866.92500	867.26250	867.57500*	868.03750*	868.76250*		
255	Cherry Valley (Ashtabula)	866.75000*	867.07500*	867.61250*				
257	Ashtabula (Ashtabula)	866.61250	866.88750	867.16250*	867.42500*			
258	Lima (Allen)	866.20000	866.36250	866.70000*	866.96250*	867.41250*	867.68750*	
259	Deshler (Putnam)	867.05000	867.78750*	868.17500*	868.46250*	868.86250*		
260	Paulding (Paulding)	867.28750*	867.66250*	868.50000*				
261	Neapolis (Henry)	866.72500	866.98750*	867.27500*	867.70000*			
262	Kunkle (Williams)	851.21250	867.21250*	867.55000*	868.33750*			
263	Conneaut-LaECl (Ashtabula)	867.56250	867.95000*	868.95000*				
264	Fremont (Sandusky)	866.81250	867.11250*	868.85000*				
298	Van Wert (Van Wert)	866.07500	867.36250	868.21250	868.61250			
299	Edgerton (Williams)	866.53750	867.25000	868.06250	868.71250			
317	Latham (Pike)	866.40000*	866.95000	867.15000*	867.80000	867.86250*	868.17500	868.48750
318	Peebles (Adams)	854.98750	855.46250*	868.21250*				
319	Rarden (Scioto)	856.21250	857.21250*	857.73750*				
320	Rosemont/SOCF (Scioto)	855.73750*	866.43750*	868.96250*				
321	Lucasville (Scioto)	866.25000	868.35000*	868.93750*				
322	West Portsmouth (Scioto)	856.43750	857.46250	857.76250	866.27500	866.71250*	866.97500*	868.32500*
323	Stout (Scioto)	857.46250*	857.76250*					
325	Greenup (Greenup, KY)	855.98750	856.46250*	856.73750	867.45000*	867.76250*	868.25000*	868.30000
326	Blue Creek (Adams)	867.80000*	868.17500*					
327	Huntington (Cabell, WV)	866.26250	866.65000*	866.98750*				
328	Ironton (Lawrence)	867.58750	867.83750*	868.18750*	868.98750			
329	Wheelersburg (Lawrence)	866.21250*	866.68750*	867.22500*				

Site No.	Name	Freqs				
330	Crown City (Lawrence)	866.16250	867.17500*	867.56250*	867.95000*	
331	Gallipolis (Gallia)	856.48750	856.93750*	857.23750*	868.08750*	
333	Lecta (Gallia)	856.26250	856.76250*	857.43750*	857.93750*	
334	Carmel Church (Jackson)	858.21250*	867.27500*			
335	Oak Hill (Jackson)	866.62500*	866.93750*			
336	Jackson (Jackson)	866.07500	866.80000*	867.20000*	867.63750*	
337	Pomeroy (Meigs)	867.18750	867.82500*	868.55000*	868.95000*	
338	Racine (Meigs)	866.73750*	867.05000*			
339	Wilkesville (Meigs)	855.71250	866.18750	867.43750*	868.95000*	
341	Portland (Meigs)	867.18750	867.75000*	868.33750*		
342	McArthur (Vinton)	866.26250	867.35000*	867.72500*	868.16250*	
343	Union Furnace (Vinton)	867.11250*	867.38750*			
344	West Union (Adams)	867.82500	868.23750*	868.70000*		
345	Aberdeen (Brown)	866.63750	867.77500*	868.08750*		
346	Georgetown (Brown)	866.86250*	867.21250*	867.56250*	867.90000*	
347	Higginsport (Brown)	855.71250	868.46250*	868.98750*		
349	Moscow (Clermont)	855.98750	856.46250	867.58750*		
350	Batavia (Clermont)	868.07500*				
351	Loveland (Clermont)	851.26250	856.83750	867.06250*	868.22500*	
352	Cherry Grove (Hamilton)	856.83750*	867.17500*	868.17500		
353	Cincinnati (Hamilton)	858.43750*	859.43750*	860.43750*	867.71250*	
354	North Bend (Hamilton)	856.43750*	867.05000*	868.31250		
355	Greenhills (Hamilton)	866.92500*	867.37500*	867.87500*		
357	College Corner (Butler)	851.76250	866.37500	866.87500*	868.08750*	868.20000
358	Lebanon (Warren)	866.90000	867.28750*	868.38750*	868.67500	868.90000*
359	Wilmington (Clinton)	867.48750	867.88750	868.28750*		
360	Wilberforce (Greene)	867.78750	868.35000*	868.96250*		
361	Clarksville (Warren)	866.48750	866.90000	867.12500*	867.48750	
417	Sugar Grove (Hocking)	858.96250	859.96250*	866.26250*	867.32500*	
418	Nelsonville (Hocking)	867.78750*	868.10000*			
419	Athens (Athens)	866.63750	866.91250*	868.88750*		
420	Cutler (Athens)	866.67500	866.95000*	867.21250*	867.93750*	868.95000
421	Little Hocking (Washington)	866.71250	866.97500*	867.36250*		
422	Newport (Washington)	855.48750*	868.06250*			
423	Dresden (Muskingum)	866.75000	867.22500	867.86250	868.38750*	
425	Lower Salem (Washington)	854.98750	856.48750*	867.41250*	867.80000*	
426	Glass (Washington)	866.17500	866.72500*	867.56250*		
427	Marietta (Washington)	867.07500	868.67500*	868.93750*		
428	Beebe (Washington)	866.60000	866.86250*	867.33750*	867.60000*	
429	Caldwell (Noble)	866.83750*	867.16250*	867.45000*		
430	Lewisville (Monroe)	855.73750	856.26250*	867.71250*	868.72500*	
431	Duncan Falls (Muskingum)	866.77500	867.27500	868.12500	868.60000*	
433	Sardis (Monroe)	855.98750	856.73750*	857.23750*		
434	Clarington (Monroe)	866.23750	866.61250*	866.93750*		
435	Beallsville (Monroe)	866.80000	867.30000*	868.21250*		
436	Powhatan Point (Belmont)	866.57500	867.05000*	867.47500*		
437	St Clairsville (Belmont)	866.26250	866.91250	867.55000	867.97500*	868.41250*
438	Kirkwood (Belmont)	866.71250	867.58750*	868.05000*		
441	Byesville (Guernsey)	867.13750*	868.36250*	868.77500*		
442	Fairview (Guernsey)	867.67500*	868.08750*	868.51250*		
443	Bloomfield (Muskingum)	866.47500	866.92500*	867.20000*		
444	Conesville (Coshocton)	866.13750	866.38750	866.55000	867.40000*	867.70000 867.81250*
445	Gilmore (Tuscarawas)	866.70000	867.06250*	867.42500*		
446	New Philadelphia (Tuscarawas)	866.63750	867.63750*	868.03750*		
449	Deersville (Harrison)	859.23750	860.43750	867.78750*	868.17500*	
450	Germano (Harrison)	867.10000	867.37500*	867.82500*	867.95000*	
451	New Alexandria (Jefferson)	856.46250	867.18750*	867.82500*		
452	Mingo Junction (Jefferson)	868.07500*	868.95000*			
453	Piney Fork (Jefferson)	867.87500*	868.32500*	868.88750*		
454	New Castle (Coshoscton)	867.30000	868.30000*	868.95000*		
457	Zanesville (Muskingum)	866.28750	867.73750*	868.20000*	868.43750	868.53750
458	Wolf Creek (Morgan)	855.96250	857.73750*	858.71250*	868.31250*	868.96250*
459	Stratton (Jefferson)	867.12500*	868.97500*			
460	East Springfield (Jefferson)	866.58750*	867.70000*			
461	Dellroy (Carroll)	866.27500	867.57500*	867.80000*	867.92500*	868.33750* 868.46250
901	Mobile site	858.43750	859.43750	860.43750	867.71250	868.98750*



3936 OSP Shipley Bldg (General HQ) Post  
 3952 OSP Executive Security detachment  
 3968 OSP Executive Security  
 3984 OSP Executive Security  
 4000 OSP Executive Security  
 4016 OSP Executive Security

**OSP District 7 Talkgroups**

Talkgroup	Description
48000	OSP Post 7 (St. Clairsville)
48016	OSP Post 7 (St. Clairsville)
48032	OSP Post 41 (Steubenville)
48048	OSP Post 41 (Steubenville)
48064	OSP Post 60 (Zanesville)
48080	OSP Post 60 (Zanesville)
48096	OSP Post 79 (New Philadelphia)
48112	OSP Post 79 (New Philadelphia)
48128	OSP Post 84 (Marietta)
48144	OSP Post 84 (Marietta)
48160	OSP District 7 HQ / Cambridge Post patrol
48176	OSP District 7 HQ / Cambridge Post patrol
48192	OSP District 7 staff?
48208	OSP District 7 events?
48224	OSP District 7 events
48240	OSP District 7 communications maintenance
48256	OSP District 7 admin?
48272	OSP District 7 announcement call

**OSP District 8 Talkgroups**

Talkgroup	Description
32000	OSP Post 8 (Georgetown)
32016	OSP Post 8 (Georgetown)
32032	OSP Post 9 (Hamilton)
32048	OSP Post 9 (Hamilton)
32064	OSP Post 13 (Batavia)
32080	OSP Post 13 (Batavia)
32096	OSP Post 29 (Xenia)
32112	OSP Post 29 (Xenia)
32128	OSP Hamilton County patrol (future use?)
32144	OSP Hamilton County patrol (future use?)
32160	OSP Post 83 (Lebanon)
32176	OSP Post 83 (Lebanon)
32192	OSP District 8 HQ/Patrol (Wilmington)
32208	OSP District 8 HQ/Patrol (Wilmington)
32224	OSP District 8 staff?
32240	OSP District 8 events
32256	OSP District 8 events
32272	OSP District 8 communications maintenance
32288	OSP District 8 admin?
32304	OSP District 8 announcement call

**OSP District 9 Talkgroups**

Talkgroup	Description
32320	OSP Post 5 (Athens)
32336	OSP Post 5 (Athens)
32352	OSP Post 27 (Gallipolis)
32368	OSP Post 27 (Gallipolis)
32384	OSP Post 44 (Ironton)
32400	OSP Post 44 (Ironton)
32416	OSP Post 71 (Chillicothe)
32432	OSP Post 71 (Chillicothe)
32448	OSP Post 73 (Portsmouth)
32464	OSP Post 73 (Portsmouth)
32480	OSP District 9 HQ / Jackson patrol post
32496	OSP District 9 HQ / Jackson patrol post
32512	OSP District 9 staff?
32528	OSP District 9 events
32544	OSP District 9 events

32560 OSP District 9 communications maintenance  
 32576 OSP District 9 admin?  
 32592 OSP District 9 announcement call

**OSP District 10 Talkgroups**

Talkgroup	Description
17152	Ohio Turnpike East Ops
17168	Ohio Turnpike West Ops
17184	Ohio Turnpike East TAC 1
17200	Ohio Turnpike East TAC 2
17248	OSP District 10 ATG?
17264	OSP District 10 Event 1
17280	OSP District 10 Event 2
28432	Ohio Turnpike West TAC 1
28448	Ohio Turnpike West TAC 2

**OSP Law Enforcement Emergency Radio Net Talkgroups**

Talkgroup	Description
3008	Ohio LEERN - Post 23
3024	Ohio LEERN - Post 25 (Patch to 154.935)
3040	Ohio LEERN - Post 68?
3056	Ohio LEERN - Post 80?
3072	Ohio LEERN - spare
3088	Ohio LEERN - spare
3104	Ohio LEERN - spare
26704	Ohio LEERN - Post 04
26720	Ohio LEERN - Post 15
26736	Ohio LEERN - Post 20
26752	Ohio LEERN - Post 32
26768	Ohio LEERN - Post 52
26784	Ohio LEERN - Post 76
26800	Ohio LEERN - Post 76
26816	Ohio LEERN - Post 78
32608	Ohio LEERN - Post 8
32624	Ohio LEERN - Post 8
32640	Ohio LEERN - Post 09
32656	Ohio LEERN - Post 14
32672	Ohio LEERN - Post 27
32688	Ohio LEERN - Post 40
32704	Ohio LEERN - Post 44
48288	Ohio LEERN - OSP Post 5
48304	Ohio LEERN - OSP Post 7
48320	Ohio LEERN - OSP Post 7
48336	Ohio LEERN - Post 60
48352	Ohio LEERN - Post 60
48368	Ohio LEERN - Post 79
48384	Ohio LEERN - Post 84

**OSP Special/TAC Talkgroups**

Talkgroup	Description
1920	OSP Aviation Division, Columbus
3632	OSP Special Events (Expositions Center and OSU events)
3648	OSP Special Events (Expositions Center and OSU events)
3664	OSP Academy maintenance
3680	Expositions Center admin
3696	Expositions Center (state fairgrounds) gate ops
3712	Expositions Center (state fairgrounds) garage/parking ops
3728	Expositions Center (state fairgrounds) patrol units
3744	Expositions Center (state fairgrounds) first aid
3760	OSP Special Response Teams
3776	OSP Special Response Teams
3792	OSP Special Response Teams
3808	OSP Special Response Teams

3824 OSP Special Response Teams  
 3840 OSP Special Response Teams  
 4032 OSP Office of Investigative Services  
 4048 OSP Office of Investigative Services

**OSP Comms Talkgroups**

Talkgroup	Description
3600	OSP Communication Services (712d)
3616	OSP Communication Services (712d)
17440	OSP Communication Services (6f0f)
17456	OSP Communication Services (6f0f)
49120	OSP Communication Services (6f16)
49136	OSP Communication Services (6f16)

**Ohio Investigative Unit Talkgroups**

Talkgroup	Description
9488	Columbus Enforcement 1
9504	Columbus Enforcement 2
9520	Columbus Event 1
9536	Columbus Event 2
9552	Columbus Event 3
9568	Columbus Event 4
9584	Columbus Event 5
17600	Akron Enforcement 1
17616	Akron Enforcement 2
17632	Akron Event 1
17648	Akron Event 2
17664	Akron Event 3
17680	Akron Event 4
17696	Akron Event 5
17712	Cleveland Enforcement 1
17728	Cleveland Enforcement 2
17744	Cleveland Event 1
17760	Cleveland Event 2
17776	Cleveland Event 3
17792	Cleveland Event 4
17808	Cleveland Event 5
17824	Toledo Enforcement 1
17840	Toledo Enforcement 2
17856	Toledo Event 1
17872	Toledo Event 2
17888	Toledo Event 3
17904	Toledo Event 4
17920	Toledo Event 5
34656	Cincinnati Enforcement 1
34672	Cincinnati Enforcement 2
34688	Cincinnati Event 1
34704	Cincinnati Event 2
34720	Cincinnati Event 3
34736	Cincinnati Event 4
34752	Cincinnati Event 5
34768	Dayton Enforcement 1
34784	Dayton Enforcement 2
34800	Dayton Event 1
34816	Dayton Event 2
34832	Dayton Event 3
34848	Dayton Event 4
34864	Dayton Event 5

**Ohio EMA Talkgroups**

Talkgroup	Description
64	State EMA-County EMAs regional operations, Central Ohio
80	State EMA-County EMAs regional operations, Northeast Ohio
96	State EMA-County EMAs regional operations, Southeast Ohio

112	State EMA-County EMAs regional operations, Southwest Ohio
128	Possibly EMA all-call
144	Beaver Valley Nuclear Power Plant
160	First Energy Davis-Besse Nuclear Power Plant
176	First Energy Perry Nuclear Power Plant
192	EMA spare
208	EMA spare
320	Emergency Alerting System, Central Ohio
336	Emergency Alerting System, Northeast Ohio
352	Emergency Alerting System, Southeast Ohio
368	Emergency Alerting System, Southwest Ohio
384	EMA Central Liason?
400	EMA West North Central Liason?
416	EMA Northwest Liason?
432	EMA Northeast Liason?
448	EMA North Central Liason?
464	EMA Southeast Liason?
480	EMA South Central Liason?
496	EMA Southwest Liason?
512	EMA West Central Liason?
528	Local agencies to NWS Pittsburgh
544	Local agencies to NWS Wilmington
560	Local agencies to NWS Cleveland
576	Local agencies to NWS Charleston
592	Local agencies to NWS Ft Wayne
608	National Weather Service common
624	Ohio EMA statewide operations/calling
640	EMA unknown
3520	Emergency Alerting System, Northwest Ohio
3536	State EMA-County EMAs regional operations, Northwest Ohio
11296	Homeland Security Region 4 calling
11312	Homeland Security Region 4 operations
11328	Homeland Security Region 4 operations
11344	Homeland Security Region 4 operations
11360	Homeland Security Region 4 operations
11376	Homeland Security Region 4 operations
64736	State EOC (Columbus)

**Emergency Response Talkgroups**

Talkgroup	Description
1936	Ohio Fire Chief's Association
4608	Ohio Fire Chief's Association
4720	Ohio State Firefighter's Association
10016	Ohio EPA - Operations
10080	Ohio EPA - Operations
52496	Red Cross operations
52512	Red Cross operations
52528	Red Cross operations
52544	Red Cross operations
52560	Red Cross operations
52576	Red Cross operations
52592	Red Cross operations
52608	Red Cross operations
52624	Red Cross operations
52640	Red Cross operations
52656	Red Cross operations
52672	Red Cross operations
52688	Red Cross operations
52704	Red Cross operations
52720	Red Cross operations
52736	Red Cross operations

# Personal Preparedness In Uncertain Times

I'd like to start out with an apology to my readers for having to sit out the last two issues because of unavoidable circumstances. I'm sorry for keeping everyone waiting on our Mobile EmComm project, and appreciate your patience. But even this month, I have one more apology regarding the Scamp retrofit. With all the rotten weather we've had over the last three months here in Northeast Pennsylvania, I've been at a virtual standstill on the radio project.

Luckily the last couple of days here in mid-March have been a lot warmer and (dare I say it?) there's been NO RAIN! Yeah! In the July issue, we'll get back to that along with the herculean effort that a good friend of mine, Ralph Fellows, K5FTV, has undertaken to convert a small trailer into a mobile comm facility/camper. You gotta see this!

## When Things Go Bump On Wall Street...

I'm writing this column on the day that the Federal Reserve just bailed out Bear Stearns, the fifth largest investment bank in the United States, when it could not meet its financial obligations. The Dow dumped almost 200 points, the S&P 500 was down almost 30 points, the Nasdaq slipped over 50 points, and

Wall Street is in a tizzy about what to do should other major banks have to be bailed out by the Fed!

If you've been watching the overall economy over the last couple of years (or are just alive) you've undoubtedly noticed the huge debacle in the housing market. People are unable to make their mortgage payments, and are walking (or being escorted) out of their houses, and mailing the keys to the bank. It's my uneducated opinion—I don't have a degree in economics, but I do have half a brain and can identify an iceberg off the starboard bow when I see one—that we're on the edge of a major shake up in the economy of the United States. And that can have some serious consequences.

## ...Other Things May Start To Bump

Are you ready? Can you cope? Do you have what it takes to gut it out if we're suddenly thrust into a full-scale recession and eventually a depression that would make the 1930s look like a picnic?

*Survivalist (as defined in the Webster's Dictionary): a person who advocates or practices survivalism; especially one who*

**HunkerDown06** · SURVIVING WHEN IT ALL FALLS APART
Search for other groups...

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**Group Information**

Members: 518  
 Category: Survivalists  
 Founded: Dec 27, 2005  
 Language: English

**Home**

**Activity within 7 days:**  
 11 New Members · 2 New Links · 240 New Messages · 7 New Photos · 5 New Files

**Description**

Preparing for both natural disasters or man made emergencies is something that we can and should do. A little preparation now will assist tremendously if either type of emergency should occur. HUNKERDOWN06 is a survivor mentality discussion group focused on "hunkering down" and surviving where you are, building from the basics of FOOD, WATER, SHELTER and reaching higher in understanding what we need when it all breaks down-

**HunkerDown06**

**Homeland Security Live Alert** FOOD STORAGE, WATER STORAGE, VEGETABLE GARDENING, CANNING, DEHYDRATING, MRE'S, HUNTING, FISHING, RIFLE, SHOTGUN, PISTOL, ARCHERY, ECONOMY, STOCK MARKET, OIL PRICES, PEAK OIL, GAS PRICES, DECLINING DOLLAR, BUG OUT BAG, BUG OUT VEHICLE, FLOOD, BICYCLING, BICYCLE, CAMPFIRE, CANDLES, FIRST AID, NORTH AMERICAN UNION, ARYAN, RADIATION, NUCLEAR, BIOLOGICAL, CHEMICAL, PANDEMICS, SUPER BUGS, FLU, H5N1, INFLUENZA, BIRD FLU, AVIAN FLU, JERICHO, ARMEGEDDON, APOCALYPSE, END TIMES, GLOBAL THERMONUCLEAR WAR, EURO, KKK, INFLATION, SKINHEAD, STAGFLATION, RECESSION, DEPRESSION, UNEMPLOYMENT, CORPORATE DOWNSIZING, LAYOFFS, STARVATION, WHEAT PRICES, RICE, GRAIN, ETHANOL, BIO DIESEL.



**Message History**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008	2629	1942	1144									
2007	395	260	383	503	956	1500	1753	2193	2456	3272	2096	1847
2006	30	22	139	72	118	77	71	81	73	168	241	254
2005												5

**Group Email Addresses**

Post message: HunkerDown06@yahoogleroups.com  
 Subscribe: HunkerDown06-subscribe@yahoogleroups.com  
 Unsubscribe: HunkerDown06-unsubscribe@yahoogleroups.com  
 List owner: HunkerDown06-owner@yahoogleroups.com

Not all people who take survivalism seriously are "nuts." The folks behind the HunkerDown06 website offer a wealth of important information.

*has prepared to survive in the anarchy of an anticipated breakdown of society—survivalist adjective.*

Okay, now before you condemn me for living in an armored yurt in the wilds of Colorado, let me assure you that I don't even have a yurt. As for living in Colorado, I can only wish!

We have skirted this topic upon several occasions in this column, but the main point of this column has been how to identify and analyze threats to yourself, your family, and your way of life, become prepared to meet these threats, understand how to cope in an emergency, large or small, and to utilize your special talents (namely your involvement with the radio hobby) to help mitigate said emergency.

### Your Role

The identification and analysis of a threat is called Threat Assessment (TA) in the professional Technical Services and Counter Measures (TSCM) arena. For a number of years, while working with the PA Dept of Corrections, I was directly involved with Threat Assessment and TSCM activities. My colleagues and I were trained by the very best: the folks from Sandia National Laboratories. While I'm not "tooting my own horn," I do want to assure our readers that I have a certain level of expertise in this area and, if all else fails, I still have contacts within the TSCM community who will provide me assistance should that be needed.

The assessment and analysis process or phase is basically the same whether you're dealing with video surveillance, keeping people out of specific areas (like atomic weapons storage facilities), keeping people inside specific areas (like prisons), or critically looking at our overall preparedness for local area or national emergencies. In a nutshell, to threat assess a large number of disaster scenarios is grossly counter-productive and will most likely drive you nuts! It's better to concentrate on your personal preparedness situation, which will vary from reader to reader.

Homeland Security starts at the lowest level: the individual citizen. Each of us should maintain a vigil, watching and interoperating with what is happening on the world stage, translating those events and how they will affect us and our families, and taking precautions to offset any negative impact. So basically, by becoming aware of the various threats in your area (floods, tornados, hurricanes, earthquakes, terrorist attacks, home invasions, high

crime rate, economic hiccups, etc.) you're doing a basic threat assessment.

Seriously, it's not a thing for rocket scientists. ONLY YOU have the information on your particular portion of the country/locale and what type of natural and man-made disasters could possibly effect you. Put them down on paper and start a list. Soon you'll find that there are many things you might face, but the preparations for meeting the majority of these threats will be pretty much the same for each scenario.

Food/water storage, mobile/portable comm equipment, evacuation protocol,

etc., all fall under the mitigation portion of the emergency. About the only threat that will have to have some serious planning will be the high crime/home invasion/drug dealing, and national economic crisis types of threats. But, again, in all instances the key to success is *your* participation and preparation. There's a big difference between storing jars of peanut butter, jelly, bread, non-fat dry milk, and water, and buying and, say, learning how to use firearms effectively to protect your family. Nonetheless, both are methods of threat analysis and proactive response.

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## Where Our Special Skills Fit In

In this column we've investigated various aspects of electronics and radio and how they can be used and applied to making our individual worlds a little safer. We also have taken a cursory look at how our government, especially our military, is dealing with the terrorist threat and how we can, in a small way, help them on the War on Terror. As radio hobbyists, we can offer the local, county, state, and federal government extra sets of eyes and ears along with a wealth of technical know-how to help thwart terrorism. We also stand ready to fill the gaps in communications that occur when natural disasters happen. With 100-percent assurance I can say that our stuff works when the normal channels don't. Are you ready to take part in helping mitigate disasters?

I'm often reminded that I'm an "amateur" radio operator, "amateur" being the key word. In this context "amateur" means not amateurish, as in unable to function at a professional level, but amateur in the sense of doing what we do for the love of it rather than a monetary remuneration.

Quite frankly I wear the "amateur" radio operator designation with much

pride, for I know I am equal or superior to the majority of "professional" communicators out there in the real world. If you're a ham radio operator you, too, should take pride in the fact that you're doing a job (emergency communications) for the love of doing it and not for money. If you couple your radio expertise with the ability to logically assess the local threat situations, you are a couple of rungs up the ladder from your "professional" communicator counterpart.

Radio communications will be an essential element in any small or large-scale disaster or crisis because, while we live in an extremely technically oriented society (the Internet, cell phones, computers, wi-fi, satellite phones, etc.), this critical technology is extremely fragile.

What was the first thing to roll over and die during the terrorist bombings of the World Trade Center? Cell phones, of course. But it doesn't take a terrorist act to bog the cell systems down: a couple of years ago my wife, Patricia, and I went out for a New Year's Eve party and tried calling our kids to wish them a Happy New Year. We, along with about 30 other people, couldn't even get access to the cell site, let alone complete a call! And *that* was just New Year's Eve!

## Preparations Are The Key

But back to our "Dictionary Word for the Day." Over the last few months I've wandered the Internet looking for what I consider valuable survival-oriented websites. Yahoo has more than a few, but if you take a serious look at the message traffic, you can quickly reduce the number of useful sites to less than half a dozen.

There seems to be a lot of racial, secular, religious, and just plain weird folks out there on the Web who have "survival sites." What I wanted to find were sites that offered good, solid, information on emergency preparations without the usual "the-sky-is-falling!" junk that seems to proliferate on many survivalist sites. I was pleased to discover several very interesting sites with good, well-meaning folk who took the tasks of becoming independent seriously, without all the hoopla that some other sites put forth. My favorite site is <http://groups.yahoo.com/group/HunkerDown06/>. This is a great site with lots of sound information. Do a search and pick your own site, but as I said before, there are some really weird folks out there on the Internet. Just a word of warning...

Well that's it for this month, gang. Until next time, remember, preparedness is NOT optional! ■

## INFOCENTRAL (from page 6)

The new programming was proposed in the State Department budget that begins in October 2008. It must first be approved by Congress. If approved, Radio Free Europe/Radio Liberty would begin broadcasting two hours a day of Azerbaijani-language programming on shortwave into Iran, said Jeff Trimble, director of programming for RFE/RL.

The United States already has 24 hours a day of programming, via Radio Farda, in Farsi. Persians are a plurality in Iran and Farsi is the state language. But "research indicates that people prefer to get news and information in their native language," Trimble said. "Iran is an obvious case because the Azerbaijani population is so large, about a quarter of the population." Much of Iran's Azeri population lives in northern areas of the country.

## Vietnam To Launch First Satellite In April

Vietnam will launch its first satellite in April. The satellite will be launched from Kourou in French Guiana, the Vietnam Post and Telecommunications Group (VNPT) said.

"At around 5.30 am on the 12th of April, the first Vietnamese satellite VINASAT-1 will be launched into its orbit," VNPT vice president Nguyen Ba Thuoc told reporters. "This is a notable milestone in the process of integrating Vietnam with the rest of the world," he said.

The project, which will cost about \$300 million, has been in the pipeline for more than 10 years. Vietnam signed a contract with U.S. firm Lockheed Martin in May 2006 to build the satellite after delays largely due to problems in coordinating its frequencies with those of satellites already in orbit in the region.

The satellite, which weighs around 2.5 tons and has an estimated lifespan of 15 to 20 years, carries 20 transponders for transmission and reception of television channels, telecommunications, and the Internet. Vietnam also intends to use it to help open up its most remote regions, which have often been left behind by the national economic boom, and to better manage natural disasters, such as typhoons, which hit every year.

If the launch is successful, Vietnam will become the sixth Southeast Asian country to have a satellite in orbit. ■

# Radio Fun And Going Back In Time

**Q.** Most veterans remember Military Amateur Radio Service (MARS) operating from Vietnam. When did MARS open up their service between "the Nam" and "the World"?

**A.** The first message from Saigon to McClelland Air Force Base in Sacramento, California, came on December 15, 1965. Back then, traffic was sent both ways in RTTY, CW (Morse), and voice. In 1997, MARS and the military both dropped CW.

Many newspapers interviewed MARS operators, military personnel, and their families and gave a lot of ink to the effects on morale of MARS messages going both east and west. Some newspapers printed MARS message forms to let their readers send messages to troops overseas. MARS operators kept up their volunteer message handling until just before the Americans left Vietnam. Today MARS is still on the job—proud, professional, and ready.

**Q.** Has amateur radio ever helped with an election?

**A.** In North Carolina's Primary Election in the spring of 1968 six TV stations wanted to beat everyone to the punch and get the election results out to the entire state. They enrolled the aid of four amateur radio emergency nets and their 500 members. Only nine of North Carolina's 100 counties were *not* set up as part of the May 4 net. Five million Tar Heels got the election results from the six TV stations, which gave all the credit to the amateur radio operators who had passed the results along on their 75 meter nets on election night.

**Q.** Was the Army or the Navy the first to develop ground-to-air radio communications?

**A.** Actually it was a joint operation. The Army developed the first practical mobile radio set in 1906. In 1908, they used it to communicate with Navy fixed-base stations at Arlington, Virginia, and Annapolis, Maryland. The Army signalmen were working the Navy stations with CW from an Army balloon's basket. In 1911 the Army started sending wireless messages from airplanes to ground stations. In 1912 the Navy started sending radio traffic from aircraft to Navy vessels and ground sites. In those early days receivers were so heavy that airplanes could send but did not carry the equipment necessary to receive. Interestingly, it was 1912 when the Navy dropped the term "wireless" in favor of

"radio." The Army followed suit shortly thereafter.

**Q.** Hitler rose to power in Germany on January 30, 1933. How long after the Nazi's took over did they started controlling the media?

**A.** Dietrich Bonhoeffer, a young German theologian, made a speech on the radio two days after Hitler came to power. Bonhoeffer's theme was "The Young German's view of the Fuhrer." His view was critical of Hitler's desire for a "God-like" status as the leader of Germany. Part way through his talk Bonhoeffer's mic went dead. Undaunted, Bonhoeffer actively continued to resist Hitler and, in time, was arrested. He was executed at the Flossenberg concentration camp in early April 1945.

**Q.** You mentioned earlier that the Truman Administration spent a lot of time, money, and energy developing a Cold War offensive against the Communists to be delivered by radio. Can you tell us more?

**A.** "The Ring Plan" was a plan to surround the Eastern Bloc with powerful transmitters with the ability to get through Soviet jamming. Jokes at the time were that when the thing was turned on it would turn on lights in Moscow, people with metal fillings would get *Voice of America* via their teeth, and that people would be kept up all night listening to the radio coming over their bed springs.

The Ring Plan was part of a United State's effort, called NSC 68, which was

designed to contain Communism. The plan was drawn up in 1949–50 and not declassified until 1999. The radio part of this effort was to concentrate on Ukraine foremost, Poland next, then Hungary. Less emphasis was given to more stable Communist countries, but all Communist countries would be targeted. This radio-borne psychological warfare was central to America's Cold War planning, and the system was still working hard to tell America's story when Soviet Communism collapsed.

**Q.** I've heard of CRW, or Community Radio Watch, from back in the 1960s. What was it? Is it still around?

**A.** Community Radio Watch was an organization started by many large city Chambers of Commerce. The idea was that companies that dispatched trucks and vans for various commercial reasons would have their drivers keep their eyes open for accidents, crimes, fires, traffic accidents, and the like. If the drivers saw anything reportable they were to pass it on to their dispatchers, who would call CRW headquarters so the proper authorities could respond.

In Cincinnati in 1967 the Queen City Emergency Net was the first amateur radio organization to join the CRW. Most of the traffic was on 6 meters and/or CB depending on what was most prevalent. I lived in Cincinnati in the very early '70s and remember the CRW. Living in rural Washington now, I wonder if it's still in use or if it's been taken over by 911 et al. Maybe someone out there knows and can drop us a line. ■



# The Serendipitous Summer Of The Old Hallicrafters, And A Last Hazy Hurrah



**L**ike an oldies station DJ who loves playing his audience's favorite hits, my father finds great joy in giving gifts that bring back happy memories. This past Christmas, Dad surprised me with a little billboard that he found at a model train show. Dating from the early 1950s, the miniature sign pictured a fellow smiling in his living room easy chair. One of those big old televisions in a tall wooden cabinet stood a few feet in front of him.

Truth be told, my father didn't get the initial reaction he'd hoped for, as I had no idea why he'd bought me the toy billboard and then taken the time to wrap it in a sheet of newspaper that advertised high-definition TVs.

"The ad in the paper represents the latest consumer video technology," Dad said, "and the tiny billboard shows something quite the opposite. Take a look at the caption," he urged, figuring it would help me recall. I squinted to decipher the miniscule lettering. It identified the guy in the living room as a professional TV cameraman and credited him with bragging. "*In my home, we have a Hallicrafters—the set the experts own.*" "Hallicrafters...Hallicrafters," I whispered to myself, hoping for the name to ring a bell and connect with some experience my father obviously remembered much better than I.

"Think about the summer you were seven," he prompted, "when we took you out of school so we could enjoy that Connecticut Shore vacation."

"Were we doing some shortwave listening on a Hallicrafters receiver or something?" was my initial guess. But, when Dad pointed at the tiny TV on the billboard and slowly announced, "Oh Dear! Shall I call the volunteer fire department?" his clue instantly opened a memory window that brought me back to the early summer of 1977. In her Katherine Hepburn-like voice, my mother had uttered the fireman query after seeing me engulfed in a blackish-yellow billow of electrical smoke—a smelly haze resulting from short, sharp flames bursting through the seams and venting of an ancient television set. After a few gags, sneezes, and theatrical coughing, the three of us in that little living room survived with a story to tell my 13-year-old brother, Shawn, who—under the laissez faire eyes of our grandparents—was finishing out his first year of junior high back home in New Jersey.

"Never had a TV die happier!" Dad began the saga for Shawn and my Grammie on one

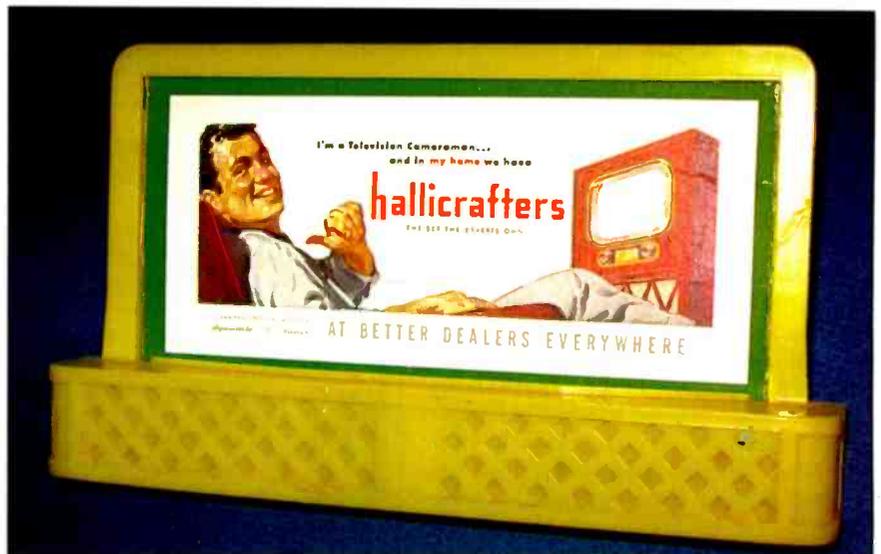
of the twice-weekly check-in phone calls. It's a tale that I'll recount now, in the hopes of providing a fitting memorial to vintage video and the soon-to-be-lost possibility of analog TV DXing.

## The Setting And The Cellar

In mid-May 1977, one of Dad's co-workers came into some money rather mysteriously, suddenly quit his job, and became quite generous towards my father. At diner one night, Dad had barely finished recounting the sketchy details of his acquaintance's fast fortune and exit when the telephone rang. My mom raised her eyebrows as if to be heralding, "Kids, this sounds like one of your father's situations that is likely to lead to some sort of strange adventure." And, in fact, that's exactly what it turned out to be.

This guy had owned a 1920s-era bungalow on the beach in Waterford, Connecticut. He had mentioned it to Dad on a few occasions, but that evening, he called my father of the blue and offered us the use of it through July 3, the day before he'd rented it for the remainder of the summer to some "swinger from Manhattan who used the place to impress women." All he asked in exchange was for us to "kind of tidy it up a bit for the tenant when you leave in early July. I haven't been out there since last fall and might have forgotten to dust in a few places."

The next weekend, we followed directions Dad had hurriedly copied down and eventually pulled onto the sandy driveway leading to a row of small, weathered cedar-shingled cottages. "Look Sid, doesn't it remind you of *The Summer of '42*." Mom purred while edging close to Dad on our Ford station wagon's



An early 1950s Hallicrafters billboard miniature for use on a Truman-era 027-gauge train layout.

bench seat. A minute later, we stood on the cottage's lopsided porch waiting for my father to find the key. He said instead of making him feel like he was on a movie location for *The Summer of '42*, the goofy '60s sitcom *Green Acres* came to mind. Reportedly, somewhere under the broken porch light fixture, there was a galvanized milk bottle box that contained a rusty can serving as a secret key holder. We never found any of that stuff. Fortunately, Mom noticed one of the side windows was sloppily propped open with a water-stained paperback. All these years later, Mom remembers the book's title, *The Red Car* by Don Stanford, not for its literary content, but as providing us passageway to our intended destination.

Mom and Dad got their fingers under the sill and managed to force the swollen window frame open just enough for me to shimmy through. Safely on the inside, I waved to them as they cheered and then excitedly directed me to go unlock the front door.

"So much for the owner having *missed a couple of spots* with the dust cloth!" my mother observed on her way into the cottage. The decor could be accurately labeled, *mid-20th Century dump*. Where there wasn't a crushed beer can, a stinky TV diner tray lay. Co-mingled fuzz balls, dust, and dunes of tracked-in sand rounded out the scene. And it was hot as heck in there! At my father's command, we all went quiet for 10 seconds or so. He hypothesized that the humming noise detected from under the kitchen was a wild furnace going full blast. Mom converted this into scientific fact after standing akimbo on a heat register fitted into the sticky linoleum flooring. Instantly, her light blue cotton skirt began billowing like Marilyn Monroe's dress in another movie.

Mom began playfully opening and closing cupboards and drawers when Dad suggested we should all methodically search for the cellar key so he could go down there and check the furnace. Out of the sole window in that kitchen, Dad spied a rusty red primed Bilco basement door, the padlocked hatchway that he figured led to the over-zealous culprit responsible the apparent mid-90s setting on an already steamy Memorial Day weekend.

Though the cottage dated to the Prohibition era, sometime during the 1960s, its owner commissioned a small addition (of approximately 12 feet square) containing a kitchen, bathroom, and all of the house's plumbing and heat-

ing—other than the radiance the fireplace promised. The cellar underneath transformed the one-bedroom salty shack into a year-round waterfront home. When not a single key was found within this quaint real estate, I was sent to fetch the hacksaw from a toolbox in our car. "This *free* vacation has now costs us \$5.98 for a new lock," Dad announced while making the final cut through the gnawed metal.

He slowly opened the now freed hatch door, making sure, for effect, that it produced maximum squeaking. We were greeted by a short, steep stairway cluttered with soggy cardboard boxes, a half dozen outboard motor oil containers, various coffee cans filled with old nails, and ample evidence that some of Mickey Mouse's compatriots had been there. Spiders called the subterranean venue home, too. We cleared away a net of their thick, moist cobwebs from the whirring furnace so its control box came into better view.

Dad asked me to go back into the house and ask Mom to find the thermostat. "It's most likely either in the kitchen or living room. Tell your mother to turn it down as far as it will go," he instructed with increasing volume as I raced up the stairs. "We found it and Mom pushed the lever to off," I reported, about 60 seconds later and nearly out of breath. No matter, the feisty furnace kept working.

Next, and to no avail. Dad adjusted a tiny red wheel on the control panel. I'd sensed his frustration, so gathered a handful of rusty tools off a sagging card table saved from the curb by reassignment to workbench duty. He considered my remedies and selected a toy-sized hammer, *sans* one of its cheap, sand cast claws. With a calculated tap, my father landed a blow about an inch from the top edge of the control box. The blower fan quit and the furnace shuddered before yielding an eerie silence.

"Whaddaya know?" Dad declared, hands outstretched, half expecting the thing to restart in some high-pitched mechanical laugh. But the contraption stayed quiet. When he looked around for a place to put the hammer, "Whaddaya know?" escaped from him again. This time, though, his delight was directed not at success for having knocked a little corrosion from some switch contacts, but squarely upon a rectangular device that looked to me to be an extremely primitive TV.

"That's precisely what it is, Princess." Dad noted, clearing away the other junk on top and around it. "This old gal has

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Seven inches worth of the latest video technology circa 1948, the Hallicrafters model T-54 featured all 13 of the original VHF channels. Not counting several

rear-mounted, technician-oriented controls, this pioneer set had front dials for power, picture contrast, brightness, volume, vertical hold, horizontal hold, and fine-tuning. Thirteen push buttons handled channel-changing duties.

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seen better days, but she shouldn't be rusting away in a dank cellar." He carefully lifted the television. "Hall-i-craf," I read from a tilting emblem. "Hallicrafters," Dad added, "the t-e-r-s end of the logo must have broken off a long time ago. Hallicrafters is a famous radio company...Almost forgot that they made TV sets back in the 1940s and 50s. This one is a real pioneer! See the row of pushbuttons? If you can count 13 of them," Dad noted, "then this electronic lady is one of the few surviving sets with a Very High Frequency Channel 1."

Father held the heavy set while I rattled off the digits for a baker's dozen worth of channel selector knobs. Then he delivered a brief lesson in VHF Channel history, ending with, "...so that's why all television tuners built since about 1948 begin with Channel 2." Such an expose would be lost on today's youth, brought up on cable-ready sets that do dial a symbolic Channel 1, as well as some video player and game channels. But in my 1977 world and imagination, the thought of a TV receiver featuring an abandoned Channel 1 offered the spooky prospect of being able to pick-up some weird show—maybe from another planet.

Intergalactic reception seemed even more plausible after we yanked on a length of stubborn stray twin-lead antenna wire hooked to the Hallicrafters and fished something called a Super Sonic TV Booster from behind the card table. As a bonus to this tube-type catch, that amp was wired to a Walsco Imperial UHF converter, also hiding among the pile of castoffs littering the dank basement. While Dad carefully carried the television set to the house, I followed with the accessories. A glint of late afternoon sun hit the Hallicrafters' round picture tube, giving me the impression that it blinked, having been imprisoned in darkness for so long.

"Hey you two," Mom pretended to scold, "I just finished making this cabin passably presentable and you're loading it with more junk?" Dad scanned the place approvingly, complimented Mom, and suggested we put the antique TV with related accoutrements on the end of a maple drop-leaf table taking up a good portion of the living room. "I don't think we came to the ocean to watch television," my mother protested. "Remember, we're here to absorb seaside culture." Little did any of us know then that the old TV would be such a big part of our family's serendipitous summer adventure.

## A Helping Of Hallicrafters' History

Admittedly, when talking Hallicrafters to *Pop'Comm* readers, I'm probably preaching to the choir. That's because the Chicago-based electronics company's put out the type of quality shortwave and amateur radio gear that the SWL and ham

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Just like the UHF converter Dad and I found in the cottage basement, this 1953 Walsco hailed from a Los Angeles manufacturer, which claimed a 10 dB reception power gain while tuning 500 MHz—roughly UHF-TV Channel 19.

communities have long appreciated. The firm's broadcast band AM, FM, and TV receivers were also of high quality, though they didn't command the market share of the likes of General Electric, RCA, and Zenith.

The Hallicrafters name is a combination of *Halli*, for founder William Halligan, and the word *crafters*, for the craftsmanship exercised in the construction of Halligan's products. Born in 1899, Bill Halligan caught the "wireless" bug while a schoolboy. By 1915, he was pulling shipboard commercial wireless duty off the coast of Boston. This maritime continuous wave connection continued with Naval service during World War I, and after a brief foray into news reporting, Halligan's love for radio prompted him to enter electronic parts sales.

In the late 1920s, he relocated to Chicago and began planning Hallicrafters, which finally materialized in 1933. Amateur radio operator and overall radiophile Charlie Hugg's fine website (<http://hug-a-bug.com/>) succinctly explains why Halligan's outfit enjoyed quick success: "Hallicrafters built handcrafted receivers with state-of-the-art features at an affordable price...His greatest salesmen," Hugg states, "were those who used his equipment and [then] praised it to others..."

Hallicrafters got on the television bandwagon in 1947 and offered TV sets through much of the 1950s. In the late 1960s, Hallicrafters was purchased by the Northrop Corporation and its expertise shifted towards military electronics production. After Northrop moved Hallicrafters in this direction, around 1974, corporate officials pulled the plug on ham gear output.

Halligan (amateur callsign W9AC) enjoyed a long life, post Hallicrafters, passing on in 1992 the ripe age of 93.

## The Rain, The Hallicrafters TV, And Other Things

That the early summer of '77 on our piece of borrowed Connecticut seacoast was horribly hot *and* remarkably rainy, and on several occasions the cottage got so clammy that we drove to the New London Mall just for the air conditioning. Those trips also enabled Dad to pick up a can of electronic cleaner spray, plus some capacitors and a transformer for replacing parts he believed were problematic in our newly discovered old TV. He didn't need to buy a soldering iron, solder, wire, multimeter, or any electronic tools because these were on hand in our car's toolbox.

Often with a counterintuitive blaze in the fireplace to burn off a bit of that hot sticky dampness, with Mom in an easy chair (just in case its tattered upholstery had "cooties") deep into her novel, Dad and I wiled away the evening hours revitalizing the Hallicrafters model T-54 television receiver. Of course, he did the dirty work, and all without a schematic except the drawings he sketched along the way.

According to several model/year guides and tube cross-referencing charts, the T-54 was among Hallicrafters' first television sets, dating from 1947-48. Cover the circular (though the transmitted image comes through as relatively rectangular) seven-inch picture tube with your hands, and the resulting view of this TV is strongly reminiscent of a Hallicrafters communications receiver, namely the SX-42. For the sake of cost effectiveness, the T-54 chassis was designed to fit in the metal case of that popular radio. Most subsequent Hallicrafters TV sets were offered in wooden cabinetry, more in keeping with the typical furniture of the day. What makes the T-54 a real collector's item isn't its enclosure, however, but the television receiver's 13 VHF channel capacity.

As soon as my father coaxed the T-54's guts off its shell, he had doubts that any value remained in this particular TV. The "innards" displayed corrosion, thick black greasy dust, loose friction tape, questionable parts substituted for components unknown, and at least two major rat's nests of wiring patches done either by a sloppy electrical genius or by somebody who simply loved to solder.

The first night, we took out all the tubes (I think there were 22, including the picture tube), drew basic wiring diagrams, and used nearly a roll of paper towels in, around, and on the chassis. Dad showed me how to very carefully wipe the tubes with a damp rag and then lay them on newspaper in an orderly fashion. Mom contributed by cleaning the picture tube with a few squirts of Windex. When we went back to our dining table-based project on evening two, we liberally applied the electronic contact cleaner on all tube pins and plug bases. By the third after supper-session, Dad had fitted the set with a new AC line cord, re-fit the tubes, reinstalled the chassis into the cabinet, and asked his little audience if we should plug it in and give it the old college try.

"Yeah!" I enthusiastically voted, figuring the T-54 would pave an instant pathway to *Little House on the Prairie* or *Eight Is Enough*, two of my favorite shows during the 1976-77 season.

"Oh dear," my mother registered her concern while looking up from her book. "It won't blow a fuse or anything, will it?"

"Hope not," Dad offered while simultaneously plugging in the antique television. He seemed pleased when the tubes lit and a buzzy scratchiness shot through the speaker as he twirled the volume control. Tubes in the Super Sonic TV amp and Walsco UHF converter lighted, too, when we plugged in those similarly cleaned-up units. Without a working host television, though, it was anybody's guess whether or not they functioned properly.

Rain the next day kept us indoors and provided ample time to clean out the TV's bank of channel selection switches and various rotary potentiometers. For good measure we twisted a pipe cleaner into the picture tube sockets and managed to extricate some serious gook missed earlier. All back together again, the vintage Hallicrafters was slated for an 8 p.m. relaunch. And, to our amazement, it worked...sort of. That is to say that—using homebrew rabbit ears Dad fashioned from some coat hangers—we heard some decent audio from New Haven, Connecticut's WTNH-TV Channel 8.

The video was another story. Not until well past 9 p.m., when things were really dark and we turned out the cottage lights, did we realize that the Hallicrafters was generating a picture. For some reason, it appeared to look clearer after about an hour's use. Dad speculated that one of the Hallicrafters' transformers wasn't producing enough high voltage to prop-

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From Sonic Industries, Inc., came the 1950 Model IT4 television and FM radio amplifier. The maker advertised that this \$32.50 unit had "inductances wound with **PURE SILVER** wire." It was designed to "improve TV reception in weak signal areas and reduce electrical, diathermy interferences and minimize ghosts and snow effects." The one we hooked to our Hallicrafters sure worked!

erly illuminate the picture tube. Tweaking something on one of the adjustable capacitors helped, but my father remained resolute in his safety pledge to Mom *not* to monkey around with the set's high-voltage components.

## Sporadic-E Skip And The Great TV QSL Gold Rush

Just before supper on May 30, 1977, I did a pretty dumb thing. A bit bored and unable to ignore the rainy heat, I made it even hotter by turning on the Hallicrafters and related components lined up on the maple table, put a dark blanket over my head and around the TV, and waited for the set's feeble picture to entertain me. Channel 8 eventually materialized,

though its picture seemed double exposed. For no particular reason, I pushed the Channel 2 button. The same rationale possessed me to briefly emerge from the blanket and likewise dial the Super Sonic Booster to the 2 position.

What happened next still comes back to me in slow motion, because it felt like hours between seeing an unfamiliar station ID image and fetching my father to take a look at my fleeting find. Clearly visible (if you don't count the picture's fuzzy edges)



The University of South Dakota  
Vermillion

**KUSD**

TRANSMITTER RCA TT25EL

ANTENNA @ Boy Ch. 2

POWER 100W Visual 380W Aural

ENGINEER Bill Jameson

AM 690 Khz

FM 89.9 Mhz

Channel 2

This confirms your reception of the above on date 6-30-71 at (time) 4:58 EST

Remarks Thanks for the DX report, hope we can hear from you again.

*Paper treasure from our Hallicrafters' final voyages around the Very and Ultra High Frequencies, these QSL cards represent remarkable summer skip Southeastern Connecticut reception from Minnesota, Pennsylvania, and South Dakota.*

**wphl 7 tv**

PHILADELPHIA, PA. 19118

VIS. 489.24 MHZ AUR. 493.74 MHZ

ANTENNA RCA TFU-46K PYLON

1300 FT. ABOVE SEA LEVEL

LOCATION 40 DEGREES 02 MINUTES

30 SECONDS NORTH LATITUDE

75 DEGREES 14 MINUTES

24 SEC. WEST LONGITUDE

TRANSMITTER RCA TTU 110A

ERP 4,300,000 WATTS VISUAL

645,000 WATTS AURAL

under that quilt were the call letters KUSD-TV atop text noting the visiting station's city-of-license: Vermillion, South Dakota. It was unbelievable, but KUSD-TV stayed on message long enough for me to write down what I saw and for both Dad and Mom to confirm the remarkable sighting. Via mail, a KUSD-TV engineer verified the catch.

"It's all a result of your basic sporadic-E skip," Dad educated me and Mom. "The old Hallicrafters can hardly contain all the stray signals being hurled at her by this summer's unusual atmospheric conditions that cause distant TV and FM transmissions to bounce hundreds of miles outside their normal ranges. There's no telling where the signals will come from or how long they'll come our way."

Happily, the VHF windfall kept on giving. Even Mom got caught up in the excitement and bought me a road atlas so we could map the Hallicrafters' conquests. They soon ranged from

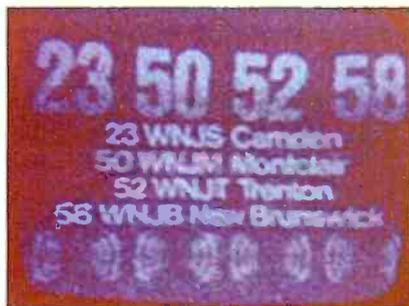
### The KLEE-TV DX Hoax

It sure would have been good for my seven-year-old nerves to have known the rest of the KLEE-TV story. But only recently did I learn that the spooky signal snag had been a hoax, an attempt on the part of the supposed lucky TV-DX buff to promote some sort of high-performance television with built-in signal enhancer he and a business partner were trying to market throughout the United Kingdom. Apparently, the guy had come to the United States and shot clear, locally received pictures of station IDs and test patterns from various American television stations. His conspiracy also included bringing the snapshots back to Britain and mailing them to gullibly amazed engineers at the particular TV stations. His form letters announcing the DX catch went something like this:

Enclosed herewith is a photograph taken by an ordinary box camera of what I believe is your signal received 3:50 p.m., 14 September 1953. It would be of great interest and help if you could be so kind as to confirm or deny by return mail that this is so and at the same time it would be of great help if you would endorse the back of the photograph and return.

What wonderful publicity they'd generate as word of the amazing signal voyages hit major American newspapers! The KLEE-TV controversy unraveled when the English fellow inadvertently sent his "transatlantic reception proof" to the Houston station long after it had been sold and its call letters changed to KPRC-TV. He'd used a circa 1950 photo and an old station listing (both showing KLEE-TV), but dated the image as having been seen in 1953. After the call change, the Houston Post Office delivered KLEE-TV mail to successor KPRC-TV.

In those days long before satellite transmission or instantaneous around-the-globe Internet communication, broadcast officials loved bragging about their station's coverage footprint—the wider the better—even if the signal only touched down in some faraway spot for a minute or two on a fluke. KLEE-TV's supposed continental and ocean hop was naively embraced by everyone from RF engineers and DX enthusiasts to station owners and flying saucer believers. Few had investigated how some bloke in the UK, using a British-built TV, could manage to cop a vivid image of a U.S.-based station transmitting on different frequencies and video lineage than the English sets could receive. From that perspective alone, the scam should have quickly fizzled out.



Fuzzy proof  
positive that TV  
DX seeing is  
believing!



the midwest to various southern locales. Each of us picked a "wish state" from which we hoped to see a TV identification on wings of E-layer skip. Mine was Mississippi. I can't say why, other than that the name had a nice bounce to it and I'd once won a school spelling bee after accurately negotiating its double lettering.

## Ye Old English "I Can See KLEE-TV"

Our strange stint of viewing faraway video prompted my "books are better than television" mother to muse about distant telecasting. She related the Hallicrafters' uncanny reception ability to an article about TV DX that appeared in the December 1958 issue of *Reader's Digest*. The piece described how a chap in Britain happened to grab a clear picture from Houston's KLEE-TV. The story said he even managed to photograph, and subsequently mail to the Texas station, a KLEE-TV test pattern as seen almost 5,000 miles away on his garden-variety English television set with basic indoor antenna.

This feat was especially amazing because he claimed to have gotten the Lone Star State's Channel 2 signal some three years after the facility had ceased operating! Was it sporadic-E activity or perhaps Martians that bounced back the signal after those radio waves had already traveled a year to get to the distant planet (see "The KLEE-TV DX Hoax")? Later that night, the story proved sufficiently scary for me to imagine that the Hallicrafters—supposedly "sleeping" just a few feet from my sofa bed—might turn itself on and start showing beamed-back Soviet science fiction movies...from circa 1957, via Venus!

## A Smoky Grand Finale

Our time in the cottage slipped by and, somehow, it was already July 1. After drying the dinner dishes that evening, I fired up the Hallicrafters and kept my fingers crossed for Mississippi. It was very quiet until a heavy downpour erupted. Soon thereafter, my punching up and down the T-54's selector buttons netted me an unfamiliar image on Channel 4. I adjusted the Super Sonic amp for good measure and soon got treated to a top-of-the-hour station identification that made me yell, "MISSISSIPPI! WCBI-TV in Columbus, Mississippi!" My proclamation was rapidly followed by a bright flash, loud thun-

WCBI   
TELEVISION  
P. O. Box 271  
COLUMBUS, MISSISSIPPI 39701

TELEPHONE (601) 328-5631  
TWX NO. (610) 982-0485

July 1, 1977

Shannon Huniwell

Dear Miss Huniwell;

Thank you for your letter regarding WCBI-TV. Yes, the schedule you mentioned in your letter was the exact schedule that we were broadcasting on Sunday night. We appreciate hearing from you, and are especially pleased that our signal made it all the way up north and to the ancient television set and booster you described. I'm sorry this equipment "blew-up", as you described its demise, but am glad its last days were spent "DX'ing". We are also glad you enjoy watching our station.

Sincerely,

J. D. Reed  
Station Manager

JDR/sim

*In my verification request, I must have mentioned the "Hallicrafters Incident," as the WCBI-TV manager makes reference to an old TV that "blew-up" while this Mississippi-to-Connecticut DX took place.*

derclap, and resounding echo. The TV and lights dimmed a few times, brightened dramatically, and then went dark. A funny smell issued from the Hallicrafters.

Mom and Dad raced into the living room and pulled me away from the TV. An even closer lightning bolt and thunderclap shook our whole cottage. Not only did the electricity surge back on with this direct hit to a nearby power pole, but the furnace momentarily roared to life, adding to the vibrations that arguably included death throes from the geriatric TV. Yet another electrical burst followed. When we came to our senses it was apparent that the Hallicrafters was on fire. Dad grabbed the towel from the easy chair and batted away flames and smoke. Over my father's objection, after checking to see that I hadn't been zapped, Mom instinctively pulled the TV's AC plug.

## Happy Last Days

Suddenly, blue sky reemerged as if there'd been no thunder and lightning at all. The sun beaming through the same living room window we'd jimmied open to start our vacation bathed the blackened Hallicrafters in a soft light, revealing a scorched swatch of picture tube where some of its inner coating had disintegrated. Even my mom agreed that the damaged tube surface made the old TV look like it had passed away with a smile on its face, as my father would later relate.

After all, during its last days, the T-54 gave us a memorable adventure long after most of its video contemporaries had been scrapped. In doing so, our Hallicrafters fetched us signals from faraway places that its tuner probably never dreamed of while on the assembly line in 1947. ■

# Multi-Use, Multi-Approved HF Radio

I recently discovered a 100 watt, fully synthesized, 100-channel, high-frequency transceiver offering multi-type approval by the FCC, including strict adherence to many international telecommunications bureaus. This relatively inexpensive, 100 watt HF transceiver carries all marine ITU channels. It's a fully programmable or single-channel HF land radio and can also play high-frequency ham radio as well. This equipment has been in the Vertex (Yaesu USA) product line for years, with apparently little thought about promoting it to long-range sailors or for rural use on land, and doesn't even show up in ham radio catalogs. Priced at around \$999, it's a sleeper!

My work on Christmas Island (T32GW) with the Ministry of Health only allows single-channel HF transceivers set to 7312 kHz USB, with absolutely no capability to be user programmed for any additional frequencies (see "Radio Resources" in the December 2007 *Pop'Comm*). The Vertex System 600 meets the spec through a proprietary configuration, programming-enable jumper module that's factory obtained and made available by the dealer selling the equipment.

Here's what it offers:

- Configuration 1 Land Mobile International
- Configuration 2 Marine Single Sideband
- Configuration 3 Amateur Radio, VFO and/or Channelized

This workhorse 100 watt HF transceiver tunes from 50 kHz to 30 MHz on receive and 1800 kHz to 30 MHz on transmit. It has some "sleeper" plug-in accessories.

- Cat system computer interface
- Voice inversion/rolling code encryption unit



The System 600 from Vertex (Yaesu USA) is a multi-use HF sideband transceiver priced at around \$999.

## Hams Head North To Alaska

The Anchorage Amateur Radio Club is ready for you to hit town in August! So if you're looking for a great summer vacation destination that can combine your radio hobby with jaw-dropping natural beauty, maybe this is the year to make your own trip north.

I've attended the Alaska Ham Fest five times, and it gets bigger and better every year! *Pop'Comm* contributor Chip Margelli, K7JA, and his wife Janet, KL7MF had been going for years and introduced me and my wife Suzy, N6GLF, to a fun ham radio event with plenty of Alaska highlights like panning for gold, fishing, whale watching, and hiking. Plus for radio enthusiasts there's HAARP aurora research tours and, of course, those fabulous nighttime auroras.

The 2008 Alaska Convention is the official ARRL convention. It's being held at the Anchorage Sheraton hotel, with views of the inlet waters and towering mountains, and it's just a short shuttle ride to the Anchorage International Airport connection. Commercial exhibitors are coming in early to meet with fellow hams, and to take part in activities both before and after the hamfest.

Better still, for hobbyists who can take a seven-night northbound Alaska cruise, sailing from Vancouver and ending up near Anchorage, the week of the Alaska Hamfest, there's sure to be plenty of maritime mobile, as well as RV mobile, on the airwaves that week. And don't forget your handheld—my Alaska logbook shows more than 25 active repeaters just in Anchorage, along with 24/7 IRLP back to the "lower 48," courtesy of the WIN System.

Come early, stay over, and hold the weekend of August 1 through August 3, 2008, for the Alaska 2008 ARRL Convention. For general info, visit [www.AKHamfest.com](http://www.AKHamfest.com).



The RadioWavz 40 meter dipole was a real performer tuned to the 7312 kHz medical frequency on Christmas Island.



These small solar panels need charge regulation down at the Equator.

- High-stability reference oscillator
- Pre-programmed full marine ITU channels
- IF crystal filter options
- Weather fax low-level output
- Selective calling (SELCAL)
- Cloning and computer loading
- 100 watts, 100 memory channels

The Vertex System 600 has been in continuous use, working off solar cells and the RadioWavz dipole antenna at Christmas Island for over a year. It's been through sand, wind, and rain without failure, and completely meets the single-channel radio requirement set forth by the Tarawa Minister of Communications.

The Line Islands, of which Christmas Island is a part, are situated just 2 degrees north of the Equator, with the individual islands of Kiritimati (better known to us as Christmas), Tabuaeran, and Teraina separated well beyond VHF range. Each Island has its own medical clinic, with Christmas Island the "base camp" for the one and only doctor, a small clinic, and the communications system of single sideband high frequency radio, 7312 kHz, upper sideband.

"I can talk regularly to each island's nurse and medical staff, with exceptional radio clarity," said Dr. John, at Christmas. Other radios in the Line Islands circuit are Australian Kodan solid-state, fixed-channel transceivers, not having near the sensitivity or power output as the newly donated Yaesu Vertex gear.

"I turned Gordo on to this missionary radio effort, and the equipment we donate works solid 5 X 9 into halfwave Bazooka RadioWavz antenna systems,"

*The Vertex System 600 has been in continuous use, working off solar cells and the RadioWavz dipole antenna at Christmas Island for over a year.*

said Carlton Smith, KE5EUL, a Texas philanthropist.

The RadioWavz ([www.radiowavz.com](http://www.radiowavz.com)) 40 meter dipole was the antenna of choice because of its rugged submersible construction (lots of rain!), sharp resonance, and minimum SWR at 7312 kHz by following the pruning chart shipped with the ham radio 40 meter antenna. Both the Kodan and Yaesu Vertex equipment need minimal SWR for full power output, and in heavy rain, the RadioWavz antenna stayed perfectly tuned.

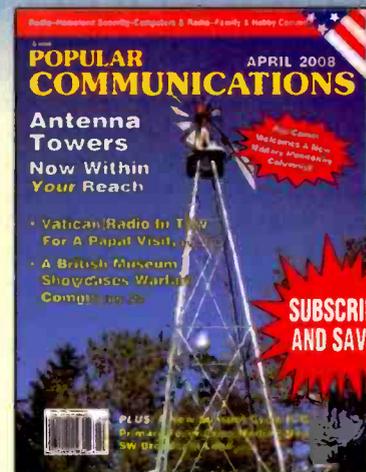
Each of the radio systems in the islands is powered by solar panels, deep-cycle batteries, and inexpensive marine solar panel charge controllers. Without a charger controller, even small solar panels could likely over-drive the batteries because of the direct intense sun.

### You Might Want To Check It Out

So, if you're into remote portable operation, look into milspec rugged gear, available from most Yaesu Vertex Standard dealers who might be familiar with this unique and cost-effective high frequency transceiver. And the more rugged the environment you're in, the better this equipment looks!

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## Portable Power: Big Tech In A Small Package

**D**espite the June cover date of this issue, you still have time to take advantage of an amazing improvement in portable power before Field Day activities get started on the weekend of June 28. And even if Field Day isn't your cup of tea, more and more hams are operating away from their traditional shacks for a host of reasons. Whether you're camping by the lake, setting up shack at a mountaintop wayside rest area, working VHF contest stations as a rover, or passing traffic during a communications emergency, the ability to hold a kilowatt of clean, quiet AC power in the palm of your hand is something to behold (or be held, as it were!).

Up here in the North Country, portable generators are especially handy for watching satellite TV while ice fishing, watching the big game while tailgating in the stadium parking lot, and keeping the diet pop cold when the weather is hot. From power outages to natural disasters to powering AC tools and devices at construction sites, the uses for compact, yet powerful, clean AC power are almost limitless.

Until recently, the big fly in the ointment for portable generators has been the wild and woolly AC power that comes out of them! As I covered in much greater detail in this column in early 2007, most affordable generators are designed for powering lights, electric motors, and heating elements—all of which can operate on sloppy, quasi-regulated AC power (or even DC). Plug your sensitive and expensive ham radios and computers into an inexpensive "construction site" portable generator, how-

ever, and you never know what might happen. It might work, or it might go boom.

As we'll see in this month's column, which focuses on the smallest available inverter generators, the use of new technology has eliminated virtually all of the negatives associated with small portable generators. Their development has sort of paralleled that of modern ham transceivers, which went from big and expensive to tiny and powerful, becoming more affordable all the while.

Before we get too far, though, you must remember that, despite their new-found glory, portable generators are still potentially lethal. You must treat them with respect, observing all necessary safety precautions. A good place to learn more about portable generator safety is [www.dom.com/about/safety/generator.jsp](http://www.dom.com/about/safety/generator.jsp).

### Out With The Old, In With The New

Standard, non-inverter generators rely on engine speed alone to maintain an output that's as close to 117-V, 60-Hz AC. If the engine is running too fast or too slow, the unit's voltage and frequency will be high or low, accordingly. For most consumer models, the only correct engine speed is a noisy 3600 RPM. You get potentially questionable power—and enough noise to drown out a shouting match (about 70 to 85 dBA at a distance of 21 feet).



*These compact inverter generators—Yamaha's EF1000iS and Honda's EU1000iA2—represent today's up-to-date, 1 kW, mini-inverter gens. They're compact, quiet, get great "gas mileage," and put out rock-solid, well-regulated AC power suitable for sensitive radio and computer gear (or your flat-panel TV). Check out the full lines at [www.yamaha-motor.com/outdoor](http://www.yamaha-motor.com/outdoor) and [www.hondapowerequipment.com/gen.asp](http://www.hondapowerequipment.com/gen.asp). If you need more juice, both manufacturers feature inverter generators up to 6 kW or so. (Photos courtesy of American Honda Power Equipment and Yamaha Motors USA)*

Many "gens" use mechanical "governors" to keep the shaft turning at about the right speed. If the shaft slows down (because of increasing generator demand), the governor "hits the gas" to bring the shaft speed up to par (and vice versa). Sophisticated units also have electronic regulators to help keep things steady near 120 V/60 Hz.

For power saws and light bulbs, the fluctuations in voltage and frequency that occur when generator loads change and the governors engage isn't a problem. But it can be catastrophic for sensitive equipment.

The newest inverter designs change all of that. In fact, as I mentioned, they pretty much fix every problem associated with standard, old-school gens. They're ultra quiet (as low as 53 dBA at 21 feet), smaller than some bowling bags, lightweight (some weigh less than 30 pounds), run for hours and hours at moderate loads, and put out 120 V, 60 Hz power, complete with beautiful, undistorted sine waves, from no load to full load. Whew! And this isn't science fiction!

## Invert Your Disbelief

The magic that makes the new generators possible is inverter technology, essentially the same technology that's used in switching power supplies, which can be found in every computer built in the last 25 years and in many modern ham rigs. Inverter technology eliminates the need for heavy, bulky, iron-core transformers and their associated inefficiencies. (Don't get me wrong: I like a nice analog DC supply as much as the next guy. But the analog DC supply for my ham rig weighs more than Honda's smallest inverter generator—and my DC supply doesn't have a built-in engine and generator!)

To give you a better idea of how the magic happens, I've broken the inverter generator process into several sections.

**Engine:** Both of these tiny kilowatt gens have compact, 50-cc, four-stroke, overhead-valve engines that are much more sophisticated than your average lawnmower or go-cart engine. They're designed for quiet, long-life operation. They also sport large, irregularly shaped mufflers (completely internal) to keep noise to a minimum.

**Housing:** Although they look like any portable generator on the outside, if you could cut one open and see a cross section, you'd see that a ton of design work has gone into the exterior and interior design,

***"The magic that makes the new generators possible is inverter technology, essentially the same technology that's used in switching power supplies, which can be found in every computer built in the last 25 years and in many modern ham rigs."***

all in an effort to make quiet what used to be loud. Unlike most standard "frame and tube" generators that let everything "hang out," inverter gens completely enclose the engine and generator, separating the internal structures into several distinct spaces and isolating the generator from the engine and using internal fans to move air through the unit efficiently and quietly, and to similarly process and isolate exhaust gases before discharging them on the opposite side via an oversize muffler.

Instead of using a single-layer panel for the units' exteriors, designers use two thin layers separated by a gap that's filled with sound-dampening foam. This makes the exterior rigid and sturdy, but prevents it from resonating and transmitting noise and vibration to the "outside" world. These kilowatt inverter gens produce sound levels of between 53 and 59 dBA at 21 feet when running, depending on load. A casual conversation will drown out the generator, and not the other way around.

**Generator Core:** Standard gens have a two-winding core that outputs a 60 Hz sine wave when rotating at 3600 RPM. Inverter cores, however, have multiple windings (24, maybe more) that are paired with multiple rare-earth magnets to produce multiple "high-frequency" sine waves (up to 20 kHz). Because 20 kHz AC essentially produces multiple sine waves per revolution, an inverter gen doesn't have to run at a fixed speed to produce stable output—a huge advantage. With small loads the gen can loaf along, running almost silently.

**Inverter:** Because your favorite gear doesn't run well on 20 kHz AC, a transformation has to take place. That's the job of the inverter. It takes the 20 kHz AC from the generator core, converts it to DC, and then converts the DC to stable 120 V, 60 Hz AC. Even these tiny inverter gens typically have 2-percent to 3-percent voltage regulation and 1-percent frequency regulation from no load to full load. Even some power companies can't do that 100 percent of the time!

I tested the Honda EU2000i, the "big" brother of the EU1000i pictured here, at 0 W, 500 W and 1,000 W. As the loads increased the voltage went from 126 to 124 to 122 V, while the frequency remained stable at 60 Hz. Nice! I wouldn't hesitate to plug in my own radio and computer gear with regulation like that.

## Get In The Game

For hams, there's no doubt that the new crop of inverter generators is the way to go for Field Day, emergency comms, power outages, or whatever. They take up minimal space, put out a kilowatt of clean, hassle-free power, and you won't have to worry about trashing your expensive gear when using them. If you shop around, the units pictured here can be purchased for \$600 to \$800. For more information on inverter generators, point your browser to [www.robinaamerica.com/generators/inverter-works.html](http://www.robinaamerica.com/generators/inverter-works.html).

If maintained and used correctly, these little powerhouses should provide reliable "in the field" power for years to come. See you during Field Day. I'll be the guy with the teeny red generator! ■

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## For Newcomers To Utility Monitoring, A Warm Welcome

As I sit down to write this column for the June issue of *Pop'Comm*, I am somewhat surprised at how much I wish it were June. Right now, it's only mid-March (there being a three-month lead time on production of the magazine). March is nearly spring for much of the United States, but not here in the Buffalo, New York area, where spring may officially begin in March, but snow often continues to fall well into May. In fact, I have personally stood on the ramp at the Buffalo-Niagara International Airport on the day before Memorial Day and watched aircraft being deiced prior to departure.

Earlier today, the last of the snow from the most recent snowstorm here finally finished melting off the roof of my truck. I can actually see the antennas again. Unfortunately, I can also see the next snowstorm approaching on Doppler radar. Yes, right now, I wish it were June. But, alas, as Jean-Luc Picard once observed, wishing for a thing does not make it so.

However, by the time this column reaches you my wish will have finally come true. It will indeed be June at long last (or very nearly), and not a minute too soon, for in Buffalo, June means that I probably won't have any more snow on the roof of my truck (not for a few more months, anyway). June means that in another month it will be July, and I won't have to put a parka on to go outdoors at night. June means sunshine and birds, antenna work, flea markets, and hamfests, and...well, it means summer is right around the corner.

But back to spring and hamfests. Spring, of course, also means the Dayton Hamvention, the "mother of all hamfests," with an approximate attendance of 20,000 radiophiles—and the June *Pop'Comm* will be hot off the presses there. Thinking about this, it occurred to me that for many in attendance there, this issue of *Pop'Comm* may well be their first exposure to the magazine—and, by extension, to this column. If you're one of the newcomers, whether you discovered it at Dayton, on the newsstands, or elsewhere, here's hoping this first issue won't be your last.

So, for the new folks, here's a little introduction to the "Utility Communications Digest." It deals with a facet of the radio hobby known as utility communications, one of the many interesting things in radio that happens outside the ham bands. Utility encompasses a variety of communications for government, military, and commercial purposes. The focus of this column is on the HF bands; basically, if it's on HF, is not a broadcaster or a ham, and is not a personal communications service, such as CB, it's utility.

This takes in quite a bit of territory. On one frequency, you may hear a commercial aircraft on a regularly scheduled overseas flight checking in with a ground station. On the next frequency, you may hear an oil company checking in with a drilling platform somewhere in the Gulf of Mexico. Twist the dial again, and you may hear an aircraft under the command of the Joint Chiefs of Staff relaying direct orders from National Command Authority to a nuclear submarine deployed in some remote part of the world. Of course, utility stations not only use voice com-



*Photo. Here at "Utility Communications Digest," we love shack photos, like this somewhat outdated one of the author's "ops center." Now send us a shot of yours! (Photo by Rebecca Brady, KC2IRK)*

munications, but also employ various digital modes. RTTY, SITOR, CW, and even "sound card" modes, such as the PSK-31 mode popular with hams, can all be heard in use by UTE (as we in the business often refer to them) stations as well.

This column's purpose, then, is to provide information on all this and more, and it's a lot more information than any one person could possibly keep track of. Fortunately, I don't have to go it alone, because among our readers are some folks who are some of the most knowledgeable on the subject you'll find anywhere. Now that you've discovered *Pop'Comm*, perhaps while you sit in an RV parked at the KOA in Brookville where the shuttle from the Hamvention has just recently deposited you, you're hereby invited to join us in UTE monitoring. There are a few things you'll need to do that, so let's see what it takes to get into this aspect of the hobby—you can hopefully take care of it all in the flea markets next time the shuttle comes around to take you back to the Hamvention!

### Elementary Station Requirements For UTE Listening

The first thing you'll need, naturally, is a receiver (it's tough to do radio without a radio)! If you're a ham and already have a reasonably modern HF transceiver with general coverage receive, you're covered. If not, you can go buy one...but per-

haps you can't see much sense in buying a device that transmits where you're not licensed to transmit.

In the latter case, you'll want to equip yourself with a general coverage receiver. These come in many shapes, sizes, colors, and price ranges, and it's beyond the scope of this article to sort them all out. Regardless of whether you spend a few hundred bucks or a few thousand on your station, though, there are two features you'll want to make sure your receiver has. You'll want a receiver that has a digital readout, and you'll want a receiver that is capable of SSB reception.

That means that while the old 1960s analog receiver you saw at the flea market may have looked and sounded great, its slide-rule tuning scale is going to make for some really tough sledding as far as UTE monitoring goes. If it also receives only in the AM mode, it's going to be practically useless for utility, unless you only want to listen to the very, very few stations out there that haven't switched to SSB and/or digital modes. If you already have an old '60s AM receiver, I suppose all is not lost. You'll at least be able to listen to WWV and WWVH—but little else, unfortunately, so get a receiver that can also handle SSB signals!

Another thing you'll need is an antenna (a radio is useless without one), and this is a subject about which several books have been written. For receiving utility stations, 30 or 40 feet of wire strung across your backyard is a time-honored quick-and-dirty solution. Anything you do beyond that to improve your antenna quality is to your advantage, and the antenna is the most important part of your station. Since a word to the wise is supposed to be sufficient, I'll just leave it at that.

Those are the basics: a suitable radio and a good antenna. There are countless accessories you may find helpful. Among these are a good set of headphones, a computer and interface so you can connect the radio to the computer and decode digital modes, and a spare clock that you can set to UTC time! When it comes to time, UTC is the "coin of the realm" in the radio world. You'll want to be able to determine the current UTC time quickly and accurately.

Finally, you may want to go back to the booth (or magazine rack) where you got this issue of *Pop'Comm* and subscribe to the magazine. Now, please understand that I get paid the same whether we sell 40,000 copies or 100,000 copies, so I'm not telling you this for personal gain. It's

just that you might not be able to find *Pop'Comm* so easily again—retailers only have so much rack space, and you might find yourself empty-handed, without this column to guide you, as you dive into utility monitoring. Don't let this happen to you...subscribe!

Then, welcome to this fascinating part of HF communications—and once you get your station set up, ensure the 15 minutes of fame Andy Warhol insisted everyone's entitled to by taking a picture of it and emailing it to me at the address that appears at the beginning of this column. That way I can make your "shack" famous by publishing the picture in this space (see the **Photo** for one "famous shack"), and with a subscription, you'll be sure to actually have a copy of the issue it appears in!

## Current Events On The Air

I have a few comments on current and upcoming listening targets to get to next, but before I do that I'd like to say a few words about something *in* (as opposed to *on*) the air. As I said, summer is coming, bringing with it lots of warmth and sunshine. However, it also brings the occasional thunderstorm...and those, by definition, bring the deadliest weather-related phenomenon known to man: lightning.

I recently completed my SKYWARN spotter's refresher training and was reminded that lightning kills more people every year than hurricanes and tornadoes combined. If you're close enough to hear thunder, you're close enough to be struck by lightning. If you and/or your family members are outside and you start hearing thunder, get everybody inside. I don't want to read about you or your loved ones in an obituary column. Again, a word to the wise is sufficient (I hope), so now on to some "targeting data" for short-wave utility listeners.

First of all, as a reminder for fans of NASA and other space program comms, the launch of the Jason-2 satellite from Vandenberg AFB (California), containing an ocean surface topography mission that's a follow-on to the original Jason mission, is tentatively scheduled for June 15 at 1:47 a.m. Pacific time. Also coming up is the IBEX mission to investigate the relationship between solar winds and the interstellar medium by photographing neutral atom images in space, scheduled to lift off from the Reagan Test Site at Kwajalein Atoll in the Marshall Islands on July 15. A day later, NASA is slated to launch the STSS (Space

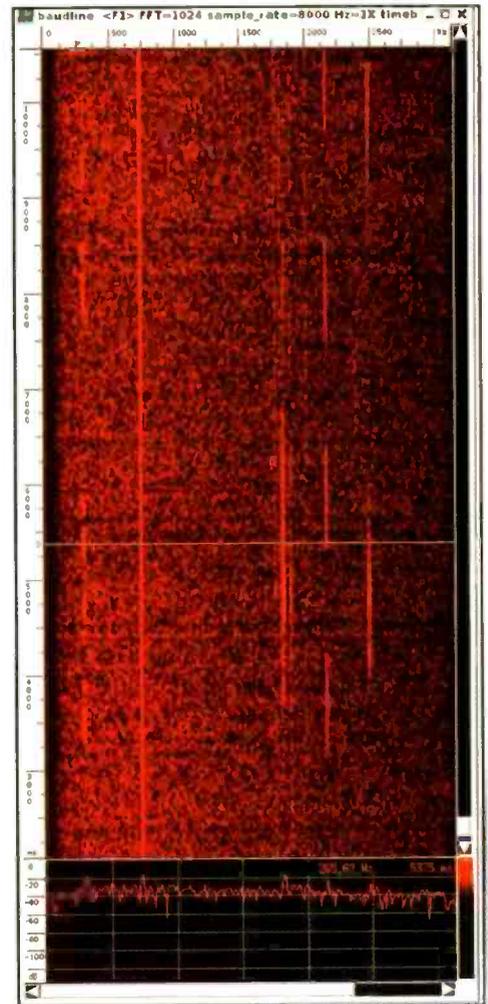


Figure. Glenn Valenta, KØBO, captured this waterfall showing four low-power beacon stations during an evening session in mid-March, 2008.

Tracking and Surveillance System) Demonstrators Program for the Missile Defense Agency from Cape Canaveral. Finally, the launch of the NOAA GOES-Osatellite is scheduled for August 8, also from Cape Canaveral.

Back on terra firma, meanwhile, the HF Beacon Society advises that its "W" beacon on 8188.7 kHz (see this column in the March 2008 issue) has been upgraded to battery power and round-the-clock operation – so you can now try listening for this particular beacon at night. Previously, W was solar-powered and operated only during the hours of local daylight at its Colorado location. One of my fellow UTE listeners on IRC (Internet Relay Chat) logged it early on its first evening of battery-powered operation with a fair signal into his south Florida location.

A night earlier, participants on IRC were logging several HF beacons, including the HF Beacon Society's PA beacon,

located in Arkansas, the MO beacon in Oklahoma, and several "dasher" beacons. Listeners were hearing these beacons from Florida, Kansas, Colorado, and Vancouver, BC. For example, the accompanying **Figure** shows a waterfall display produced on the March evening in question by regular "Utility Communications Digest" contributor Glenn Valenta, KØBO, of Lakewood, Colorado (one of the #monitor IRC channel regulars). Glenn captured this display using his computer and interface, the Linux program Baudline, and his Yaesu FT-1000MP-Mk5 transceiver fed by a T2FD antenna. You can see no fewer than four low-power beacon signals on the waterfall display, one of which is 4094.0 kHz "MO" beacon.

Glenn's waterfall capture illustrates—literally—a point I have often made about the nature of HF, and which has been known to ham radio QRP enthusiasts since long before I became involved in the radio hobby. That is, quite simply, when a band is open, it's open. Just 100 mW is often plenty for the signal to be heard. You don't need top-of-the-line equipment like Glenn's to hear it, either...although having it undoubtedly made Glenn's job a little easier!

### Logs...We Get Logs...

I mentioned above that some of our readers are among the world's leading experts in utility listening. One nice thing about this is that some of them even share

their logs with us every month in this space. If you're already among them, many thanks; if you're not, you're hereby invited to do so by sending your loggings to me (again at the address that appears at the beginning of the column).

Speaking of which, I feel compelled to point out that the email address used for submitting logs and other neat stuff for this column changed at the beginning of March, mainly because Yours Truly joined the 21st Century by getting DSL access to the Internet, which necessitated a change in ISPs, so the new e-mail address is:

[kc2hmz@verizon.net](mailto:kc2hmz@verizon.net)

The URL for the "Utility Communications Digest" website remains

## Glossary Of Utility Terms And Acronyms

**AFB**—Air Force Base

**ALE**—Automatic Link Establishment, a link control system that includes automatic scanning, selective calling, sounding, and channel selection, without human intervention using processor control.

**AM**—Amplitude Modulation

**ANDVT**—Advanced Narrowband Digital Voice Terminal, a secure voice mode used by the military.

**ATC**—Air Traffic Control

**CAMSLANT**—Communications Area Master Station Atlantic, the U.S. Coast Guard's primary HF radio station for the Atlantic region, located at Portsmouth, Virginia.

**CAMSPAC**—Communications Area Master Station Pacific, the U.S. Coast Guard's primary HF radio station for the Pacific region, located at Pt. Reyes, California.

**COMMSTA**—Communications Station, for example: COMMSTA Kodiak, a communications station of the U.S. Coast Guard, located at Kodiak, Alaska.

**CGAS**—Coast Guard Air Station

**Cut Numbers**—The use of letters in place of numbers when sending a long string of numbers, for brevity's sake. This is often done by "numbers" stations, such as sending one long dash instead of five normal dashes to indicate a zero, or the letter N instead of the number nine, etc.

**CW**—Continuous Wave (Morse code)

**DE**—The Morse code operating prosign DE, meaning "from," as in DE NMN, meaning from station NMN

**D-Layer Absorption**—A phenomenon where the sun's rays ionize the D layer of the atmosphere causing it to absorb, rather than propagate (reflect/bounce), radio signals at certain frequencies.

**Duplex**—A means of radio communication where a station can both transmit and receive at the same time.

**EAM**—Emergency Action Message, coded instructions commonly sent by U.S. military stations. Despite the name, they usually aren't emergency traffic at all.

**EHF**—Extremely High Frequency (30-300 GHz)

**FAX**—Facsimile, a transmission mode used to send maps, charts, and other non-textual material.

**FEMA**—Federal Emergency Management Agency, a part of the Department of Homeland Security.

**FM**—Frequency Modulation

**Ham Station**—A licensed station operating in the Amateur Radio Service under the control of an operator who is licensed to operate the station.

**HF**—High Frequency (3-30 MHz)

**LINK-11**—Also called TADIL-A for TActical Digital Link, a secure digital data mode used by the military. Utilizes a 16-tone data modem to allow assets to share digital information, such as radar data.

**M/V**—Merchant Vessel

**NAS**—Naval Air Station

**Propagation**—The means by which radio signals get from one place to another: some forms are quite simple (such as line of sight) while others are much more complex (such as EME, or earth-moon-earth).

**QRM**—Man-made interference to radio signals

**QRN**—Natural interference to radio signals, such as the static crashes often heard due to thunderstorms

**QSO**—A contact between two or more stations

**QSY**—Change frequency.

**QTH**—Location

**RTTY**—Radio TeleTYpe

**SELCAL**—SElective CALling, a method for activating a radio or data terminal at one station without disturbing other stations that are monitoring the same frequency.

**Simplex**—A means of radio communication where a station may transmit or receive at any given time, but not do both at the same time.

**SITOR**—SImplex Teletype Over Radio, a transmission mode used to transmit text messages over radio. There are two SITOR modes: SITOR-A (also called AMTOR) uses Automatic Repeat Request (ARQ); SITOR-B uses Forward Error Correction (FEC).

**SWL**—Shortwave Listener, a person who enjoys listening to shortwave radio stations.

**UHF**—Ultra-High Frequency (300-3000 MHz)

**USAF**—United States Air Force

**USB**—Upper Sideband

**USCG**—United State Coast Guard

**USMC**—United States Marine Corps

**USN**—United States Navy

**UTC**—Coordinated Universal Time, formerly known as Greenwich Mean Time, and also commonly referred to as ZULU time and abbreviated as in 1200Z.

**UTE**—Utility Station

**Utility Station**—Stations transmitting material that is not intended for reception by the general public and is not originating from an amateur (ham) station.

**VHF**—Very High Frequency (30-300 MHz)

**VOLMET**—Station that transmits aeronautical weather information. Comes from a French term that literally means, "flying weather."

unchanged; you'll still find the support site for this column at:

<http://utecomm-digest.kc2hmz.net>

We welcome submissions of logs, shack photos, story ideas, and other neat stuff pertinent to utility station monitoring. Just send them to that email address, and I'll put them to good use on these pages. Of course, with loggings it's best to use the standard logging format. Several good examples of that format follow.

And now, on with those logs, which this month come to us from Al Stern, Satellite Beach, FL (ALS); Steven Jones, Lexington, KY (SJ/KY); Glenn Valenta, Lakewood, CO (GV/CO); Mark Cleary, Charleston, SC (MC/SC); Randy True, Covington, KY (CG/KY); and a few from your columnist, John Kasupski, Tonawanda, NY (JK/NY).

**2054.0:** JNX, synth OM/EE with WX BC of Pacific coastal weather and notice to mariners, ended with what sounded like "Kushiro Sea Patrol Radio out" in USB at 0710Z. (GV/CO)

**2252.0:** NOVEMBER FOXTROT and OSCAR clg each other in USB at 0142Z. (MC/SC)

**2872.0:** Gander Radio wkg acft for position report in USB at 0409Z. (ALS)

**2899.0:** Shanwick Radio wkg acft for SEL-

CAL check in USB at 0344Z: Gander Radio wkg acft for SELCAL check in USB at 0412Z. (ALS)

**2962.0:** Santa Maria Radio wkg acft in USB at 0401Z. (ALS)

**2962.0:** Santa Maria OAC wkg Virgin 52 in USB at 0456Z. (GV/CO)

**3167.0:** 6HA and 7AI (USN vessels) in TADIL coordination comms in USB at 1221Z. (MC/SC)

**3455.0:** New York Radio wkg "Delta" flight in USB at 0352Z. (ALS)

**3476.0:** Shanwick Radio wkg acft in USB at 0342Z. (ALS)

**3485.0:** Gander VOLMET at hh+25 replaced by NY VOLMET, fair sigs on both, in USB at 0531Z. (JK/NY)

**4000.0:** Various stations with ALE soundings as follows: RPT (US National Guard, Portsmouth, VA) at 0812Z; 043MERCAP (US CAP Mideastern Region) at 1148Z; 101NERCAP (US CAP NE Region HQ) at 1249Z; 044NCRCAP (US CAP Washington, DC) at 1250Z; 0314MICAP (US CAP Michigan) at 1334Z; 0004WICAP (US CAP Wisconsin) at 1351Z; NGTROOPCMD (US National Guard, Columbus, OH) at 1459Z; VAB (Unknown) at 1833Z; HAM (Unknown) at 1838Z; ONK (Unknown) at 1932Z; in ALE at times shown. (RT/KY)

**4038.5:** NNN0QMK, NNN0VDG, NNN0EDK, NNN0YAX, NNN0FER, NNN0IBM in USN/USMC MARS Florida Net in USB at 0029Z. (MC/SC)

**4149.0:** WBN3016 (tug DEFENDER),

position report to WPE JACKSONVILLE, in USB at 0609Z. (MC/SC)

**4173.0:** One or more weak unid. stations here nightly w/traffic in Portuguese including ALGUMA PROGRAMAÇÃO, BOM DIA and PODERIA plus SELCAL VYXS (0719) for unlisted Brazil coast station, similar traffic heard previously on 4177.0kHz to offshore Brazilian oil rig PETROBRAS 07 on paired frequency 4215.0 kHz, nothing heard on paired frequency 4211.0 kHz for here, in SITOR-A at 2304-0832. (SJ/KY)

**4372.0:** U0E, 8LY, D0X, V0B (USN vessels) in comms in USB at 0004Z. (MC/SC)

**4396.0:** WLO, synth YL w/reg. sked maritime WX BC in USB at 0510Z. (JK/NY)

**4620.0:** Link-11 data transmission at 0035Z. (MC/SC)

**4721.0:** E31607 (E-3 AWACS) clg OFF (Offutt HF-GCS) in ALE USB at 2131Z. (MC/SC)

**4724.0:** Andrews HF-GCS with EAMS, TGOZGN, etc. (28 char) then TG2JQL, etc. (28 char), not hrd on // freqs, in USB at 0707Z. (JK/NY)

**4790.0:** R26609 (UH-60L) clg B1Z171 (1-171st AVN) in ALE USB at 1704Z. (MC/SC)

**4865.0:** Link-11 data transmission at 1901Z. (MC/SC)

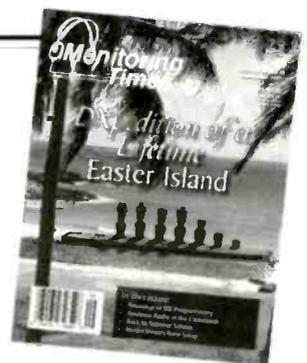
**4924.5:** HQ702N (National Guard Bureau HQ) clg ARC61NG (61st WMD CST, Arkansas NG) in ALE USB at 1532Z. (MC/SC)

**5171.0:** Link-11 data transmission at 1137Z. (MC/SC)



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**5388.5:** NF1 (FBI, Norfolk, VA) clg RH1 (FBI, Richmond, VA) in ALE USB at 1554Z. (MC/SC)

**5711.0:** BRD reporting lift off of space shuttle in USB at 1945Z. (MC/SC)

**5732.0:** 29C (Unid DHS asset), position report to PANTHER from benchmark P5, in USB at 2316Z; NAS (USCGC ESCANABA) sounding in ALE USB at 0021Z. (MC/SC)

**6215.0:** CAMSLANT with test counts in USB at 1904Z. (MC/SC)

**6224.0:** KILO radio check with GOLF WHISKEY in USB at 1644Z. (MC/SC)

**6235.0:** Link-11 data transmission at 1613Z. (MC/SC)

**6501.0:** NMN, USCG Portsmouth, VA, BC of storm warnings, weak/barely readable here but S-9+ on // 8764.0, in USB at 2146Z. (JK/NY)

**6586.0:** New York Radio wkg acft that thinks he is on 5550 kHz; SELCAL check in USB at 0317Z; New York wkg acft for SELCAL check in USB at 0422Z. (ALS)

**6604.0:** GANDER VOLMET broadcast in USB at 0021Z. (MC/SC)

**6628.0:** New York wkg acft in USB at 0332Z. (ALS)

**6637.0:** Miami Radio wkg "Big-A 158" over Santiago, Chile re: "TBPB," Barbados in USB at 0820Z; Miami wkg "Giant 48" over Bogota, Columbia, to pass msg to company; QSYs to freq 10033.0, in USB at 0823Z; Miami "Big-A 434" (Arrow Airways); reports departure from Eldorado IAP, Bogota,

Colombia (SKBO); ETA Miami IAP 0840Z; SELCAL check, in USB at 0610Z; Miami wkg "Big A 1434" (Arrow Airways, DC-10) over Bogota; en route Bogota, Colombia (SKBO) to Miami (KMIA), in USB at 0757Z. (ALS)

**6640.0:** New York wkg American 134, SELCAL CHKM, requesting WX from company; in USB at 0349Z. (ALS)

**6673.0:** San Francisco OAC wkg FEDEX 86 with VHF handoff to Seattle, ALASKA 853 worked next, in USB at 0251Z. (GV/CO)

**6721.0:** Andrews HF-GCS wkg CG 2129 (HU-25, CGAS Cape Cod) in USB at 1530Z. (MC/SC)

**6721.0:** Various stations with ALE soundings as follows: ADW (Andrews AFB, MD) at 0156Z; JNR (USAF, Roosevelt Roads, PR) at 0216Z; PLA (Lajes AB, Azores) at 0223Z; 60011 (USAF C-5 Aircraft, Tail Number 86-0011) at 0228Z; RIC (USAF Richmond, VA) at 0242Z; MCC (McClellan AFB, CA) at 0306Z; in ALE at times shown. (RT/KY)

**6754.0:** TRENTON VOLMET broadcast in USB at 0018Z. (MC/SC)

**6766.0:** BSG (US National Guard) Sounding in ALE at 0048Z. (RT/KY)

**6806.0:** 100SWRCAP (US CAP SW Regional HQ) Sounding in ALE at 0033Z. (RT/KY)

**6897.0:** "BRD" (Booster Recovery Director) wkg "Freedom Star" (Space Shuttle Solid Rocket Booster Recovery Vessel); asks vessel to attempt contact with acft "Clearance 1" on Marine Channel 16; vessel establishes good comms with Clearance 1, in USB at 0425Z. (ALS)

**6911.5:** T1Z244 (1-244 AVN, LA ARNG, Hammond RAP, LA) sounding in ALE USB at 1345Z. (MC/SC)

**7527.0:** 29C (Unid. DHS asset), position report to PANTHER from benchmark FOX-TROT, in USB at 2213Z; JOR (USCGC GALLATIN) sounding in ALE USB at 0120Z. (MC/SC)

**7648.5:** R23558 (UH-60A) clg T1Z147 (1-147th AVN, WI ARNG) in ALE USB at 2349Z. (MC/SC)

**7650.0:** T1Z137 (1-137th AVN, Ohio ARNG) clg 34M in ALE USB at 2338Z. (MC/SC)

**8047.0:** RUBY RED and Offutt HF-GCS with data exchange and troubleshooting, in USB at 1756Z. (MC/SC)

**8171.5:** T12 (12th Aviation Bn, Davison AAF) clg R23742 (UH-60A) in ALE USB at 2320Z. (MC/SC)

**8177.0:** Link-11 data transmission at 1841Z. (MC/SC)

**8421.0:** WLO, idling SITOR with CW marker, at 0135Z. (JK/NY)

**8381.0:** A81C6. SANKO TITAN, 52,300-ton Liberia-registered bulk carrier w/TEST command, MMSI and abbreviated ID "SANT" in SITOR-A at 2145Z. (SJ/KY)

**8386.0:** KRGB, HORIZON ENTERPRISE, 31,423-ton U.S.-registered container ship w/callsign and TEST command in SITOR-A at 0102Z. (SJ/KY)

**8388.0:** ELXL6, SOPHIE RICKMERS, 35,466-ton Liberia-registered general cargo ship w/AMVER/PR, 100 miles north of Cancun, Mexico, and sailing NE at 15 knots, in SITOR-A at 1615Z. (SJ/KY)

**8776.0:** LIFEBOAT (US MIL) with EAM broadcast in USB at 1911Z. (MC/SC)

**8806.0:** WLO, Mobile with WX broadcast in USB at 1622Z. (MS/SC)

**8806.0:** WLO synth YL marine WX BC with east coast oceanic forecast, repeated on 8788.0, in USB at 0520Z. (GV/CO)

**8843.0:** San Francisco Radio working Hawaiian-18360 before QSY to 5574.0 kHz, in USB at 0358Z. (GV/CO)

**8855.0:** United 842 calling Bogota with no answer (even though I hear Bogota), in USB at 0512Z. (GV/CO)

**8912.0:** SERVICE CENTER wkg JULIET 18 (MH-60J) in USB at 1925Z. (MC/SC)

**8971.0:** CARDFILE 711 (P-3C) clg FIDDLE in USB at 2037Z. (MC/SC)

**8983.0:** CAMSLANT working CG2133 for flight following, in USB at 1742Z; CG-2127 securing guard with CAMSLANT, then CAMSLANT clg CG6001 for flight following here and on 5696.0, in USB at 1824Z. (JK/NY)

**8983.0:** CAMSLANT, CAMSPAC, and SECTOR MOBILE clg CG 1719 (HC-130, CGAS Clearwater) in USB at 1742Z; SECTOR LONG ISLAND SOUND and CAMSLANT clg U5P in USB at 2125Z. (MC/SC)

**8992.0:** ANDREWS with 28-char. EAM XRCKX etc. // 11175.0, 13200.0, 6739.0, in USB at 2322Z. (JK/NY)

**9255.2:** One or more unid. stations w/traffic in PACTOR-like digital mode plus CW IDs of DE NPFRTV and DE NPFRRM, in CW+PACTOR-3 or similar at 0017-0032Z. (SJ/KY)

**10033.0:** Miami wkg "Giant 48" over Bogota, Columbia to pass msg to company, in USB at 0826Z. (ALS)

**10051.0:** GANDER VOLMET broadcast in USB at 0022Z. (MC/SC)

**10608.1:** SHARK 47 (USCGC PEA ISLAND WPB1347) requests SHARK 21 (USCGC GALLATIN WHEC 721) come up in the green, in USB followed by ANDVT at 1931Z. (MC/SC)

**10895.0:** Link-11 data transmission at 1637Z. (MC/SC)

**10993.6:** SHARK 39 wkg SHARK 21 in USB and ANDVT at 2028Z. (MC/SC)

**11175.0:** CARDFILE 711 (P-3C) p/p via Puerto Rico HF-GCS to FIDDLE, in USB at 1633Z; RAIDER 49 (KC-130, VMGR-352) p/p via Andrews HF-GCS to NAS Pensacola Base Ops reporting emergency for engine shutdown. Requests crash/fire response, in USB at 1724Z. (MC/SC)

**11175.0:** HF-GCS Station PUERTO RICO wkg REACH 323 for phone patch; sigs fade; they QSY to 8992, then 13200, then back to 11175 to complete the patch, in USB at 1813Z; PUERTO RICO wkg NIGHTHAWK 11 (one of the Presidential helos) in USB at 1819Z. (ALS)

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**11175.0:** HF-GCS Station "Andrews" wkg REACH 9022 (C-5A, WV-ANG, 167AW Martinsburg WV) for phone patch to DSN 242-9250, WV-ANG Ops at Martinsburg, WV; IDs as tail 90022; is informed they have sent other pilot to Dover in the event that Reach 9022 does not make it back to Martinsburg tonight, in USB at 1819Z; Andrews recites EAM: XRNWHZ etc. (28 characters) in USB at 2157Z. (ALS)

**11175.0:** HF-GCS Station CROUGHTON wkg REACH 272 for radio check in USB at 1905Z; HF-GCS Station LAIES wkg CACTI 63 (Coronet Mission tanker); Cacti 63 thinks he is talking to Station "Offutt"; they QSY to 8992 with no joy, in USB at 1909Z. (ALS)

**11232.0:** KING 77 (HC-130) p/p via TRENTON MILITARY to KING OPS at Patrick AFB, in USB at 2050Z. (MC/SC)

**12479.0:** A8B14, CENTENNIAL JEWEL, 300,955-ton Liberia-registered ultra large crude carrier w/TEST command, MMSI and abbreviated ID "CTJL" in SITOR-A at 1950Z. (SJ/KY)

**12490.0:** AUBC, DESH PREM, 114,600-ton India-registered crude oil tanker w/AMVER/PR, 1,000 miles northeast of Paramaribo, Suriname, and sailing ESE at 13.2 knots, in SITOR-A at 1932Z. LARM4, HERAKLES, 31,485-ton Norway-registered LPG tanker w/OPR request and open text traffic to NMN, USCG CAMSLANT, Chesapeake, VA w/ID, callsign, position and WX conditions, off the east coast of the U.S. and headed toward the Gulf of Mexico, in SITOR-A at 1945Z. (SJ/KY)

**13206.0:** Link-11 data transmission at 1806Z. (MC/SC)

**12353.0:** Tug SENTINEL WBN 6510 wkg WPE JACKSONVILLE with fuel request in USB at 1812Z. (MC/SC)

**13257.0:** ATLAS 33 (CC-130) wkg TRENTON MILITARY for traffic check from RCC Trenton in USB at 1811Z. (MC/SC)

**13927.0:** USAF MARS Operator AFA1QW wkg ROCCO 71 (McGuire AFB 108ARW KC-135 tanker) for a phone patch to DSN number at Davis Monthan AFB, reports inbound, ETA 2030Z; requests 30,000 pounds fuel upload, in USB monitored at 1735Z. (ALS)

**13927.0:** SENTRY 05 (Tinker AFB E-3 AWACS) via USAF MARS operator for M&W phone patch to Oklahoma in USB at 1759Z. (ALS)

**13927.0:** USAF MARS Operator AFA2HS (Florida) wkg REACH 179 for phone patch, in USB at 1722Z; USAF MARS Operator AFA6PF (Los Angeles) wkg REACH 219 for phone patch to unid civilian airport tower; rqsts fueling on arrival; ETA 1950Z, in USB at 1854Z. (ALS)

**16696.5:** 9HKS7, HARMONY, 105,387-ton Malta-registered crude oil tanker w/MMSI, OPR request and abbreviated ID "HARM," in SITOR-A at 2000Z. (SJ/KY)

**16990.0:** Seoul Radio HLO marker in CW at 2338Z. (GV/CO)

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## Radio History You Can Hold In Your Hand (If You're Lucky), Or "We're Smarter Than They Are..."

I'm fortunate enough to have a CD-ROM of about 50 hours of "The Shep"—that is Jean Shepherd—from old air-checks from WOR-AM and FM in New York City. I'm not sure of all of the dates, but I think some date back to almost 1960. That year, for whatever significance it might hold, is the first year that I heard the New Year ushered in by listening to the WWV time-tick instead of some inaccurate clock and silly ball on television.

"The Shep," for those of you who do not yet know of him, is no longer with us, but if you think you've never heard of him or his works, you have only to remember that great yuletide movie, *A Christmas story*, in which Ralphie is cautioned that he'll shoot his eye out with that BB gun he so desperately wants. That movie is based on several short stories written by Jean Shepherd and read on his radio show for many Christmas Eve editions. You can even see Shep in his brief cameo appearance, dressed in a black hat and overcoat in the line to see Santa in the department store scene, where he tells Ralphie that the end of the line is "back there, kid."

I've noticed that old time radio—as I enjoy it on the now nationwide "Big Broadcast" on WAMU-FM on Sunday evenings, brings back early radio shows typically from the 40s and 50s—some of which I remember hearing for the first time while riding in my father's car. The difference with Shep's work—besides the obvious difference in the work itself—is that much of it took place in the 60s and perhaps on into the 70s (I'll have to check my references) when the "Golden Age of Radio," had long since given way to Top 40 and other music-based formats.

There are plenty of websites where a person can find recordings of Shep's works, and my point isn't to promote them, even though I think they're great. He also wrote a few books, which you can probably find in used book stores, as I have. A good one to look for is *In God We Trust; All Others Pay Cash*.

But Shep didn't just bring an interesting and entertaining format to radio. He turned a good part of the public completely upside down with an idea, which came to him one night.

During his first "shift" with WOR, as he spoke with his midnight-to-five-a.m. audience, he discussed some lists—lists such as the Top Ten best dressed, the best movies and TV shows (according to some expert), and some other equally important (or unimportant) lists, and it was then that he also realized that there were two distinct groups of people in the world. There were those who listened to him from midnight to 5:00 a.m., and those who slept during those hours and lived normal lives. He began to refer to the two groups as "us" and "them."

He also thought—correctly, it turned out—that his group could play an amazing trick on the others. So began the tale of the great novel, *I, Libertine*.

On pretty much the spur of the moment, Shep made up the title, an author, and a publisher, and told his late-night listeners to stop in to as many bookstores as they could the following day and ask for the book—and keep the fictitious nature of the project a secret—which they did.

The story developed over several months, during which *I, Libertine* was even banned in Boston by a certain religion and was discussed in literary circles—even in magazines and newspapers! One of my recordings features Shep and several other famous New York radio personalities discussing the entire story, which eventually culminated in a front page story in the *Wall Street Journal* about the greatest literary hoax ever perpetrated in modern times.

And as they say on the late night infomercials, "But wait—there's more!"

(Please note that I have so far used *two* exclamation points in this piece—a record for those of you keeping tabs).

Yes, because the print and broadcast media were not about to admit that they had been manipulated by a "mere disc jockey," only the *Journal* ran the "whole truth," while others grumbled that some late night talk show host had pulled a fast one to promote a non-existent book, and only readers of the *Journal* got the whole story (which was printed, word for word, in *Pravda!*) (*that's three!*) (*four*). It's also noteworthy that while only the *Journal* gave its readers the complete facts on this story, most European papers and magazines did also.

And how much more is there? I'm glad you asked.

Once again, if you delve into used book stores, you can perhaps find a bit of this great radio history, because the plot indeed thickened.

A friend of Shep's called him and told him that there was a paperback publisher who had told him that he'd give anything to get hold of this author and get paperback rights to *I, Libertine* (yes, even after it had been disclosed as non-existent) and the friend set up a lunch with himself, Shep, and the publisher.

And, yes, Shep and friend actually wrote *I, Libertine* (and no, I haven't found a copy yet) and sold it to the publisher with the stipulation that all profits go to charity, so as to avoid any ideas that they had done this for the money.

So, my friends, somewhere out there are copies of this bit of RADIO HISTORY, in which our favorite medium has perpetrated perhaps the greatest literary hoax of all time on the entire Western World. The story was even listed in a British newspaper a few years later as one of the 50 greatest hoaxes in modern time.

You'll probably also find lots of info about "The Shep" on quite a few websites maintained by devoted fans. If you haven't heard him yet, I think you might just become one of them—or should I say "us"?

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