

POPULAR COMMUNICATIONS

MARCH 2009

Shortwave Listening • Scanning • AM & FM • Radio History

The Sounds Of Speed Monitoring Fast-Action Events Of Sea, Air, And Land

**Tech Showcase:
ICOM's IC-RX7
Wide-band Receiver, p. 19**

**At Your Service:
The United States
Air Force, p. 22**



*****SCH 3-DIGIT 600
PC 277537 MAR 10 1



**PLUS: Portable Operating Cure For
Urban Ham Blues • Gordon West On
Tuning Marine And Aero Weather •
NIMS And EmComm Message Handling**

THE PROFESSIONAL STANDARD

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

- **CONTINUOUS FREQUENCY COVERAGE:** 100 kHz~2.6 GHz / LSB, USB, CW, AM-Narrow, AM, Wide AM, FM-Narrow, and Wide FM (cellular frequencies are blocked)
- **2000 MEMORY CHANNELS / 100 MEMORY GROUPS**
- **DUAL RECEIVE**
- **DIGITAL SIGNAL PROCESSING / BANDPASS FILTER, NOISE REDUCTION, NOTCH FILTER, NARROW CW PEAK FILTER** (Optional DSP-1 requires)
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- **WORLD CLOCK WITH UTC/LOCAL SETTINGS**
- **PRESET SHORTWAVE BROADCAST STATION MEMORY BANK**
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- **AND MUCH, MUCH MORE. . .**

- "RF Tune" Front-end Preselector (1.89-1000 MHz) ● 20 dB Attenuator for strong signal environments ● IF Noise Blanker ● DVS-4 Digital Voice Recorder (option) with two memories of up to 8 seconds each ● 10.7 MHz IF Output Jack ● Field Strength Meter ● Audio Tone Control ● All-Mode Squelch Control for silent monitoring ● Password-protected Panel and Dial "Lock" feature ● Display Dimmer/Contrast Control ● Clone Capability for copying memory information from one VR-5000 to another ● Personal Computer Interface Port ● Two Antenna Ports ● Audio Wave Meter provides display of incoming signal's wave characteristics

COMMUNICATIONS RECEIVER

VR-5000

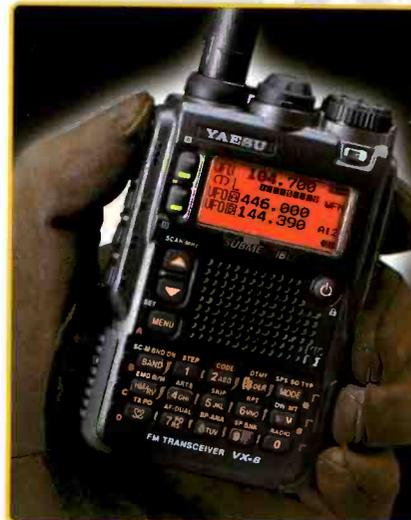
0.1~2599.99999MHz*
LSB/USB/CW*AM-N/AM/WAM/FM-N/WFM
*Cellular blocked

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



All-Mode Wideband Receiver VR-500

- Frequency coverage : 0.1-1299.99995 MHz**
- Modes : NFM,WFM,AM,USB, LSB, CW
- Multiple Power Source Capability
- Polycarbonate Case
- Real-Time 60-ch* Band Scope
*Range 6 MHz / Step 100 kHz
- Full Illumination For Display And Keypad
- Convenient "Preset" Operating Mode
- Front-end 20 dB Attenuator



A TECHNOLOGY BREAKTHROUGH

50/144/(222)*430 MHz
FM 5 W/AM 1 W(50 MHz) Triple Band Handheld

VX-8R

*222 MHz: 1.5 W (USA version)

- All-in-one High-performance Tri-Band Transceiver with GPS/APRS® Operation *1
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- Barometric Pressure and Temperature Sensors
- Waterproof/Submersible IPX7 rated - 3 feet for 30 minutes
- Dual Ham band Operation (V+V/U+U/V+U) while listening to AM/FM Broadcasts
- Wideband Receive for 500 kHz-999.99 MHz *2
- Completely independent AM/FM receiver included!
- Internal Bar Antenna for better AM Broadcast Band reception.
- Enjoy FM broadcasts in stereo, with your stereo headset/earphone!
- Optional 1 watt operation, using three AA batteries *1
- A large LCD backlight display in a compact case!
- Up to 9 hours *3 of Amateur Band operation with the optional FNB-102LI, high capacity Lithium-ion Battery.

*1 With optional accessories

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

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

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

For the latest Yaesu news, visit us on the Internet:
<http://www.vertexstandard.com>

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

YAESU
Choice of the World's Top DX'ers™

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Cypress, CA 90630 (714)827-7600

Universal Radio — Quality equipment since 1942.

YAESU VR-5000



The Yaesu VR-5000 provides sophisticated wideband reception. Coverage is from 100 kHz to 2600 MHz (2.6 GHz) less cellular, in AM, FM-N, FM-W, LSB, USB and CW. This radio features a real-time bandscope and you get 2000 alphanumeric memories grouped into 100 banks. Optional aids such as a DSP unit, voice synthesizer and digital voice recorder are available. Jacks on the back panel include: Mute, 13.8 VDC input, External Speaker, 10.7 MHz IF Output, Antenna Input A (SO-239 50 ohm) & B (Hi Z 450 ohm), CAT Interface Jack (4800/9600/57600 bps). The VR-5000 comes with the PA28B 117 VAC adapter and a DC power cord. This radio is only 7.1 x 2.75 x 8 inches 4.2 Lbs. Please visit our website for full specifications, color photos and current price.

ACCESSORIES

- #3545 DSP-1 DSP Notch/NR/Bandp. \$119.95
- #0560 DVS-1 Digital Voice Recorder 49.95

YAESU

VR-120D PKG



The VR-120D is a compact wideband receiver covering 100 kHz to 1299.995 MHz (less cellular and image gaps), in AM, FM-N and FM-W with 640 alphanumeric memories. Scan features include: Full Mem. Scan, Mem. Bank Scan, Selected Mem. Channel Scan, Band-Limit Mem. Scan, Smart Search, Priority Channel Watch and Dual Watch. Manual tuning is via the tuning knob. A built-in AM ferrite loop insures good AM performance. A Channel Counter feature measures the frequency of a strong nearby signal. With BNC antenna, wrist strap and belt clip. This new VR-120D "PKG" configuration now **includes** the FNB79 NiCad battery, CA34 sleeve, NC82 stand and PA30B 120 VAC adapter. Size: 2.3 x 3.8 x 1 inches 8 oz.

Order #4120 \$139.98

ACCESSORIES

- #0384 CA34 Charging sleeve \$3.95
- #4332 CSC76 Carry Case 19.95
- #3646 EDC15 Cigarette lighter cord 36.95
- #0353 FNB79 Ni-Cad 2.4V 700 mA 9.95

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VR-500 PKG



The Yaesu VR-500 is the first to provide wideband coverage plus single sideband capability in such a small and capable package. Coverage is solid from 100 kHz to 1300 MHz (1.3 GHz) less cellular, in AM, FM-N, FM-W, LSB, USB and CW. You get 1000 regular memories (10x100) plus tuning steps from 50 Hz to 100 kHz. Other features include: backlit keypad, priority, power-off timers, adjustable battery saver, 60 channel bandscope, attenuator, dual watch, alphanumeric recall, bank scanning Smart Search™. The VR-500 operates from two AA cells. Includes BNC antenna, hand strap and belt clip. This new Yaesu VR-500 "PKG" configuration also **includes** the NiCd battery and wall charger. Only 2.3 x 3.7 x 1" 8 oz. Please call or visit our website for more information and current price.

ACCESSORIES

- #4037 ADMS3 Win Software & PC cable \$37.95
- #4035 CSC72 Carry Case 19.95
- #1693 EDC5B DC Cable +Cigar Plug 23.95
- #3116 EDC6 DC Cable 6.95
- #0353 FNB79 NiCad Batt 2.4V 9.95
- #0594 NC60B AC Adapter 13.95

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FT-857D



FREE Yaesu orange mug with FT-857D/897D.



The Yaesu FT-857D is the world's smallest HF/VHF/UHF multimode amateur transceiver covering 160 m to 70 cm with 100 watts on HF. Now with 60 meters and DSP2 built-in.

FT-897D



The Yaesu FT-897D is a multi-mode high-power base/mobile transceiver covering 160 m to 70 cm including 60 meters. Now with TCXO.

FT-817ND



FREE Yaesu orange urban case with FT-817ND.

The Yaesu FT-817ND is an improved, deluxe version of the hugely popular FT-817. It includes 60 meter coverage plus the new high capacity FN3-85 battery. This radio has an excellent shortwave receiver built-in and is a fully self-contained, battery-powered, low power amateur MF/HF/VHF/UHF QRP transceiver.



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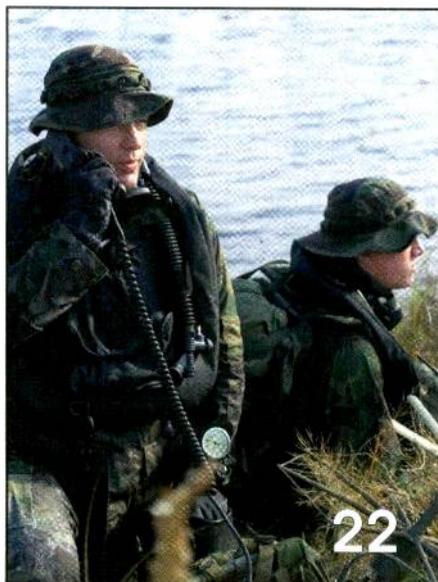
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- Special offers are subject to change.
- Returns subject to a 15% restocking fee.
- Prices shown do not include shipping.

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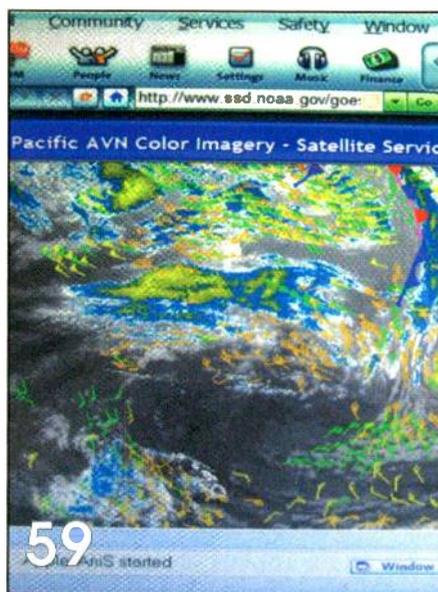


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ON THE COVER

How do you satisfy your need for speed? By monitoring the SeALs, of course. In this case, we mean high-velocity, big-thrill events on sea, air, and land. Join Tom Swisher, WA8PYR, for a look at what to monitor and where for boat racing, air shows, and NASCAR in his cover story, starting on page 12. (Cover photo: The U.S. Air Force Thunderbirds fly in formation over California. U.S. Air Force photo/Senior Airman Matthew Smith; left inset: Ford Championship Weekend 2007, Homestead Miami Speedway, by Larry Mulvehill, WB2ZPI; right inset: drag boat in action, 2007 SLDBA Creve Coeur Classic, by Anthony W. Jenning)

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Tap into secret Shortwave Signals

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

MFJ-462B
\$199⁹⁵

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

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

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

Eavesdrop on the World

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

Copy RTTY weather stations from 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 MFJ-1024 \$159⁹⁵ 54" whip, 50 feet coax, 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, \$15.95.

Indoor Active Antenna

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

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

Compact Active Antenna

Plug this MFJ-1022 compact MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world, 300 KHz to 200 MHz including low, medium, shortwave and VHF bands. Detachable 20" telescoping antenna. 9V battery or 110 VAC MFJ-1312B, \$15.95. 3 1/2"x4 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.

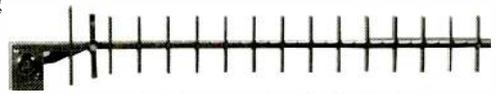
It's easy to read -- front-mounted 2 line 16 character LCD display has contrast adjustment.

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 1/4"Wx2 1/4"Hx5 1/4"D 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 1/4"Hx1 1/4"D 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!



MFJ-1026
\$199⁹⁵

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

MFJ Antenna Matcher

Matches your antenna to your receiver so you get maximum signal and minimum loss. MFJ-959C \$119⁹⁵

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

High-Gain Preselector

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

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

Dual Tunable Audio Filter

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

MFJ Shortwave Headphones



MFJ-392B
\$24⁹⁵

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

High-Q Passive Preselector

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

Super Passive Preselector

Improves any receiver! Suppresses strong out-of-band signals that cause intermod, blocking, cross modulation and phantom signals. Unique HI-Q series tuned circuit adds super sharp front-end selectivity with excellent stopband attenuation and very low passband 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 \$79⁹⁵ MFJ-1702C \$39⁹⁵

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

Morse Code Reader

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

MFJ 24/12 Hour Station Clock

MFJ-108B, \$21.95. Dual 24/12 hour clock. Read UTC/local time at-a-glance. High-contrast 5/8" LCD, brushed aluminum frame. Batteries included. 4 1/2"Wx1Dx2H inches.

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EDITORIAL

Tuning In

Spring Cleaning

by Edith Lennon, N2ZRW

editor@popular-communications.com

It's been a tough winter for the FCC, caught in the icy grip of what's been described as a "climate of fear." But the heat was turned way up on the Commission's top dog, Chairman Kevin Martin, who is under fire for abusing "FCC procedures by manipulating or suppressing reports, data and information." On December 9, 2008, the House Committee on Energy and Commerce, the congressional body that oversees the FCC, released its majority staff report, concluding a nearly year-long investigation. The report was ominously titled "Deception and Distrust: The Federal Communications Commission under Chairman Kevin J. Martin."

Among Martin's key transgressions—for our readers at least—was his handling of the broadband over power line (BPL) issue. Martin vigorously promoted BPL during his tenor as FCC Commissioner, apparently to the point of "egregious abuses of power," though not necessarily criminality. Congress has been looking into allegations that the agency ignored complaints from broadcasters concerning interference caused by BPL, delayed an enforcement investigation for two years, and withheld engineering data regarding BPL from the public. BPL systems use frequencies between 1.7 MHz and 80 MHz, and the interference they cause can affect the spectrum used by amateur radio, low-band VHF public service, and shortwave communications—the only frequencies in the entire radio spectrum on which worldwide communications are possible without satellites or other relays. Obviously, cherry-picking data concerning a technology that can seriously hamper such a broad swath of communications is not in the public good.

In addition to its findings concerning BPL, the report also concluded that:

- The results of an FCC study of possible consumer benefits in requiring cable companies to sell channels on an "a la carte" basis were manipulated by Martin. The House investigation found Martin "undermined the integrity of the FCC staff and may have improperly influenced the congressional debate on the matter by ordering agency employees to rewrite a report to conclude that a la carte mandates would benefit consumers."

- Martin attempted to manipulate findings of an annual FCC report on the state of competition in the market for cable and other video services "to show that the industry had a big enough market share to permit additional government regulation. When the full commission voted to reject that conclusion, Martin suppressed the report by withholding its release."

- The FCC's oversight of the Telecommunications Relay Service Fund, which pays for special services for people with hearing or speech disabilities, was slack under Martin's leadership, resulting in overcompensation of the companies that provide these services by as much as \$100 million a year—costs that were ultimately passed along to phone company customers.

In a more general condemnation of Martin's reign, which was expected to end under the new administration, the report also found that the commission had become politicized, had failed to carry out some important responsibilities, and suffered an undermining of open and transparent regulatory process.

Luckily, winter is nearly over, and with the coming of spring we look forward to a new chairman who will throw open the FCC's windows, put the house back in proper order, and get down to the business of faithfully serving the public good.

AR5000A+3 Wide Coverage Desktop Communications Receiver

Discover the Choice of Professionals



**Available in a professional and consumer version,
the AR5000A+3 is a proven performer!**

From aircraft and public safety, to broadcast and shortwave, no wonder so many Federal and State law enforcement, military units, surveillance agencies, government users, hospitals, RF labs, news media and monitoring professionals rely on the AR5000A+3 for accuracy, sensitivity and speed!

*The AR5000A+3 advances the frontiers of performance with coverage from 10 KHz to 3 GHz!**
This professional grade receiver with tuning accuracy to 1 Hz delivers automatic electronic front end preselection and precision stability from its built-in TCXO. Other features include:

- All analog mode reception AM, FM, USB, LSB & CW (APCO 25 accessory optional)
- Excellent strong signal handling
- Synchronous AM detector, Automatic Frequency Control & Noise Blanker
- NCO (Numeric Controlled Oscillator) with tuning stops down to 1 Hz
- Multiple I.F. bandwidths 3 KHz, 6 KHz, 15 KHz, 30 KHz, 110 KHz, & 220 KHz
- Rear panel 10.7 MHz IF output
- Auto mode bandplan selection
- Multi-function LCD with 7 character alpha-text comments
- Extensive search & scan facilities
- CyberScan® fast search & scan facilities
- Analog S-meter
- 2,000 memory channels
- 40 search banks with EEPROM storage
- Computer controllable
- Multiple antenna ports
- Auto memory store
- Extensive RS-232C command list
- Sleep timer/alarm
- Fully compatible with AOR SDU5600 Spectrum Display Unit

Add to the capabilities of the AR5000A+3 with options:

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The Weirder Side Of Wireless

by Staff

DX For The Birds (Well, Bats)

Thought it was cool DXing across the country? How about across species? That's what the Xtal Set Society is offering with its new receiver kit, the ULTRA-RX1. The receiver covers the ultrasound band of 35 to 45 kHz, allowing you to "hear" insects, rodents, bats, and more. Signals emitted across species vary from single sine waves to chatter with a rich mix of harmonics and pulses, according to the Midnight Science website (www.midnightscience.com), which is offering the kit—though you'll generally hear a pattern of "clicks." The emitted sound power levels range from roughly 70 to 110 dB, sufficient to be heard from 25 to 100 feet with a high-gain receiver. Now you can thrill to the sounds of our high-pitched friends "clicking" out their feeding, communication, and navigational signals.

Estimated assembly time for experienced kit builders: two hours; kit price: \$69.95; practical uses: unknown, but unnecessary. We're also looking forward to the waterproof version for communing with dolphins.

You Can Take It With You

In an increasingly digital and acquisitive age, anecdotal evidence indicates that people are beginning to take their prized gadgets, such as cell phones, iPods, and BlackBerries, along with them on their final journey—to the great beyond. According to Frank Perman, owner and funeral director of Frank R. Perman Funeral Home, Inc. of Pittsburgh, Pennsylvania, as quoted in a recent msnbc.com report, "It really started happening within the last five or six years, but I expect it to grow exponentially, especially with the price of technology getting so low. It's not that big of a deal to bury somebody's cell phone."

The human compulsion to bury grave goods along with the deceased may date as far back as the awareness of death itself, but the modern twist of leaving a working communications device may seem a tad unnerving for some. "We had a young man die this past summer and they put his cell phone in the casket for the viewing and it rang constantly," says Perman. "It was turned to silent, but you could see the phone light up so you knew people were calling. And they were leaving messages. They knew he was dead, but they were still calling."

"Wherever There Is Danger..."

Described by its Brazilian designer, Lucia Lorio, as targeted to the "modern, techno-savvy

woman," it would seem to appeal more to the trust-challenged man in her life, but Lorio's new line of lingerie comes equipped with a GPS-tracking system. Feminists worldwide have reacted with horror, calling it nothing more than a high-tech chastity belt for the paranoid. Slipping into something more comfortable in this case means donning a combination set consisting of lace bodice, bikini bottom, and faux pearl collar, with a GPS device tucked discreetly in the bodice by the waist. While some may see a possible danger to the women wearing it—at the very least a creepy stalking element—according to an article in the Daily Mail Online, Lorio defends it, explaining, "This collection...is a wink to women and a challenge to men because, even if she gives him the password to her GPS, she can always turn it off." She added, "Some women are now interested in buying it for protection, programming it for partners themselves so they are safe on a night out alone."

"In London, New York, Rio de Janeiro—wherever there is danger, the underwear may prove to be a lifesaver," said Lorio.

Electronic Device, Heal Thyself!

Recent scientific findings indicate that high-tech devices will be able to power themselves in the future by converting pressure waves into energy—no recharge needed—according to a report in LiveScience. The research, which was published in the journal *Physical Review B*, could revolutionize the development and use of low-powered electronic devices such as laptops, personal communicators, and a host of other computer-related devices used by everyone from the average consumer to law enforcement officers, and soldiers in the battlefield, the report continued.

At the heart of the effort to develop self-powering electronics is something that goes by the rather Italian-sounding name of "piezoelectrics." Piezoelectrics refer to materials like crystals or ceramics that generate a significant amount of voltage when mechanical stress is applied, such as a push—the concept behind a car cigarette lighter.

Tahir Cagin, a chemical engineer at Texas A&M University, who is working with partners from the University of Houston, on the piezoelectric concept, said, "We also wish to mix together these different materials and their processing approaches to generate structures for improved energy-harvesting performance," according to the LiveScience report.

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Frequency Coverage:

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 or call 1-800-USA-SCAN.



Bearcat® BC246T Trunk Tracker III

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



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News, Trends, And Short Takes

by D. Prabakaran

ITU Agrees New Global Standard For Fully Networked Home

The first global standard offering an in-home, high-speed network capable of delivering room-to-room HDTV has been agreed by the International Telecommunication Union (ITU). The standard, published under the G.hn banner, promises high-quality multimedia over power, coaxial, phone, and other home network wiring. It will give up to 20 times the throughput of existing wireless technologies and three times that of existing wired technologies.

The specifications will be used by chip manufacturers to build transceivers that can be incorporated into set-top boxes, residential gateways, home computers, home audio systems, DVD players, TVs, or any other device that might be connected to a network now or in the future. Experts say that silicon companies will immediately start incorporating the specifications into transceivers, implying that G.hn-compliant products could be on the market as early as 2010. (Source: ITU)

After HDTV, 3D Television Is The Next Major Step Forward

British satellite broadcaster BSkyB has tested 3D broadcasting over the past year. Test transmissions have included top-flight boxing, English rugby, Liverpool soccer, and its popular Gladiators show. BSkyB says it has used 3D cameras at these events and successfully transmitted the signals to standard Sky+ set-top boxes.

Sky said in a statement that the trials would "help establish the potential for commercial 3D TV services." It used a TV set from Hyundai, which requires the viewer to wear dedicated polarizing spectacles.

In addition to Sky, the BBC in the UK and Fox in the United States have also been doing work on 3D, while Japanese broadcasters are perhaps further advanced than any in the work being done. A sports conference in London, reported by Rapid TV News on Dec 10, had one expert saying they anticipated some 3D transmissions taking place in time for the 2012 Olympic Games.

(Source: Rapid TV News)

China Bans Broadcasters' Websites

China appears to have banned a number of foreign websites, including the BBC's Chinese language news site and Voice of America in Chinese, BBC News reports. The sites had been unblocked after journalists attending the Beijing Olympics complained that the government was censoring sites deemed sensitive. The BBC expressed disappointment at the apparent reinstatement of the ban. But a Chinese government spokesman told journalists that some sites contained content that violated Chinese

law. Among the other sites blocked are Asiaweek, Reporters Without Borders, and some Hong Kong and Taiwan sites.

China imposes strict controls on the dissemination of information through the Web, employing teams of people to remove sensitive content, police bloggers, and remove access to certain sites.

(Source: Asia-Pacific Broadcasting Union)

Sri Lanka Destroys Rebel Station, Leader Speaks On Internet

The leader of the Tamil Tigers, V. Prabhakaran has said Sri Lanka is "living in a dreamland of military victory," moments after Sri Lankan government jets for a second year running destroyed a rebel radio station broadcasting his annual address. Even with a Sri Lankan military offensive besieging the separatist Liberation Tigers of Tamil Eelam's (LTTE) self-declared capital, leader Vellupillai Prabhakaran remained defiant in his yearly rallying cry. Prabhakaran's speech, usually recorded beforehand at one of his jungle hideouts, went out worldwide on the Internet despite the air raid. Air force spokesman Wing Commander Janaka Nanayakkara said the strike completely destroyed a radio station close to Kilinochchi, the northern town the LTTE has declared as capital of the separate state it wants to create and calls Tamil Eelam.

(Source: Reuters)

Radio Dabanga Website Now Live

The website of the recently launched station broadcasting to Darfur, Radio Dabanga, is now live. Radio Dabanga started test transmissions on November 15, 2008, and since December 1 was broadcasting a full program of independent news and relevant information for all Darfuri. The broadcast is daily at 0430-0530 UTC on 13800 and 7315 kHz. The 13800 frequency is via the RNW relay station in Madagascar. It's also available on Nilesat, Arabsat and Eutelsat under the name Sawt El Alam.

(Source: Radio Dabanga)

Mauritius Broadcasting Corporation Accused Of Disrupting Air Traffic

The use of unauthorized frequency bands by the Mauritius Broadcasting Corporation (MBC) is putting air traffic in danger in the Indian Ocean region. The accusation was made by aircraft pilots who say they are having difficulty contacting airport communication towers in Mauritius, Reunion, the Mauritian dependency of Rodrigues and Seychelles and that the situation is putting the planes, crew, and passengers in danger.

(Source: African Press Agency)

Capitol Hill And FCC Actions Affecting Communications

by Richard Fisher, KI6SN

Congressional Report Slams FCC Chairman Martin

Congressional investigators with the U.S. House Energy and Commerce Committee have released a 110-page majority staff report alleging, among other things, mismanagement, suppression of information, and abuse of power at the Federal Communications Commission under Kevin Martin, the commission's Republican chairman.

In "Deception and Distrust: The Federal Communications Commission under Chairman Kevin J. Martin," Martin is accused of manipulating data and suppressing information to influence telecommunications policy debates at the FCC and on Capitol Hill, according to widely published reports.

Additionally, the findings allege Martin micro-managed commission affairs and demoted staffers who disagreed with him. They also charge that Martin withheld information from other FCC commissioners. The report came as the result of a yearlong, bipartisan investigation.

"Chairman Martin's heavy-handed, opaque, and non-collegial management style has created distrust, suspicion and turmoil among the five current commissioners," the report said.

Martin spokesman Robert Kenny said the committee "did not find or conclude that there were any violations of rules, laws or procedures," according to a story by the Associated Press.

Guards Took Incoming Fire, Blackwater Radio Logs Suggest

Radio logs from a fatal shooting in Baghdad in 2007 cast doubt on claims by the U.S. government that Blackwater Worldwide security guards were unprovoked when they killed 14 Iraqi civilians. Manslaughter and weapons charges have been filed against five guards for their alleged roles in the shootings. A sixth has pleaded guilty.

The Blackwater radio reports, obtained by the Associated Press, document eight minutes when guards repeatedly reported incoming fire from insurgents and Iraqi police.

The men carried out a "gruesome attack on unarmed Iraqis, including women, children and people trying to escape," prosecutors allege, as reported in the AP story. "But the radio logs from the Sept. 16, 2007 shooting suggest otherwise.

Copies of the logs were turned over to prosecutors by Blackwater. Because Blackwater guards were authorized to fire in self-defense, any evidence their convoy was attacked will make it harder for the Justice Department to prove they acted unlawfully."

The logs indicate the Blackwater convoy, named Raven 23, reported taking small arms fire within one minute of shutting down traffic in Baghdad's Nisoor Square. The radio traffic was monitored by the Blackwater dispatch center inside the Green Zone.

APCO Releases Video Education Series On 9-1-1 System

The Association of Public-Safety Communications Officials (APCO) has released a series of public service announcements as "part of our campaign to improve awareness of the 9-1-1 system." According to APCO, "using humor, they address two very serious issues—the misuse of 9-1-1 for non-emergencies and the lack of accurate location information from mobile phones."

The organization encourages visitors to its website to "spread the word by [using the links] to share these videos with a friend or place a link on your website." APCO's website can be accessed at www.apcointl.org/.

Radio Amateurs Play Role In DTV Conversion At FCC's Request

The American Radio Relay League received a request from the FCC in late 2008 to ask the League's members to provide technical assistance to consumers in their communities during last month's conversion to digital television.

According to ARRL Media and Public Relations Manager Allen Pitts, W1AGP, amateur radio clubs across the country were asked to "develop and implement plans to provide information throughout January and February about the DTV conversion in their areas." The FCC left it to amateur radio clubs' discretion to determine their involvement, "as local groups understand the communities in ways that the FCC does not. Each community is a little different," Pitts said, so plans carried out by the clubs varied from community to community. ■

Software-Defined Radios On The Road?

by Rob de Santos
commhorizons@gmail.com

“Americans love their cars, even in these tough economic times, and the day may come when your car is part of a ‘local network,’ which would allow it, at least in part, to drive itself.”

One trend where the radio hobby and the digital revolution have merged is in the area of the SDR, or software-defined radio. An SDR is a radio that is controlled by software, as opposed to the hardware components of the past. For example, filters, modulation circuits, amplifiers, detection devices, etc. are “created” using software loaded on a chip on a circuit board, in a personal computer, or embedded in another computing device.

Except for the physical connections to an external device (say, antennas), if it can be simulated in software, it can be done via an SDR. The big virtue of an SDR is that it can quickly be enhanced or upgraded without the need to purchase a new radio. Perhaps the SDR most readers of *Pop’Comm* are most familiar with would be the WinRadio models sold by WinRadio Communications.

Today’s SDRs include devices that are descendants of early research in this area by the military. The U.S. military wanted to create radios that were interoperable with other services and could be rapidly upgraded when the frequencies or technology changed. Early projects, including the “SpeakEasy,” were hampered by the speed of the central processors at the time and lack of re-configurability. The successors of those efforts are seen today in the Joint Tactical Radio System (JTRS) in wide use by the military. The backbone of the JTRS is a technology known as the open Software Communications Architecture (SCA). The SCA is now finding its way into commercial products.

In the amateur arena, hams have also been early explorers of this technology, aiding in the development of products such as the FLEX-5000, a homebrew design first described in the *ARRL Handbook* in 1999. Later efforts include the GNU Radio and the High-Performance Software Defined Radio (HPSDR). Like most ARRL projects, it’s all about tools and materials hams can easily access. Another feature of these projects is the use of open source software that is readily modified and free for non-commercial use.

Recent efforts in the SDR area have included implementations of Digital Radio Mondiale (DRM) and Digital Audio Broadcasting (DAB) receivers in software, which can then be used with products like the WinRadio and others. SDR technology is also showing up in other areas, such as computer-based FM and digital TV receivers.

So what can we expect for this technology in the future? It’s pretty clear that it will let you fix those annoying issues you may have with your ham rig or shortwave receiver, or add that new modulation technique you heard about in *CQ* magazine. The real advance, however, is not just what it could mean to the radio hobby, but to *all* areas of life where radio has become integral.

Let’s think about that car radio you have today. Unless you have a late model vehicle with a high-end radio or have added a comparable after-market one, it’s probably pretty pedestrian. You don’t have HD radio or satellite radio, and it would be a considerable expense to add it. But what if all you had to do was download a new software package on your PC and transfer it with a USB thumb drive? *Voilà* you’d have improved your radio just like that. Even if the radio manufacturer charged a modest fee for this, it would likely be much cheaper than replacing the radio!

Another example might be your cellular telephone. Many of us have telephones that are tied to one or two carriers and can’t be used on other carriers due to incompatible frequency or modulation technology, or can’t be used outside the United States and Canada. Wouldn’t it be much better if you could sign up with a new carrier, have new software loaded, and immediately use the device on the new carrier than replacing the mobile phone?

The possibilities extend to any device which is, or could be, connected to a network. Americans love their cars, even in these tough economic times, and the day may come when your car is part of a “local network,” which would allow it, at least in part, to drive itself. The car will need to know where nearby vehicles are and where you are in relation to your destination. Clearly any software such a system depends on would need to be secure and easily upgradeable. You’d probably also want the “radio” transmitter and receiver to be upgradeable.

Basing this on an SDR would be a clear benefit (imagine not being able to drive a car like this because it can’t process the new modulation and frequencies used on a new highway!). While there are lots of possible commercial hurdles ahead for full use of SDR it may well be a key technology in our increasingly radio-dependent world.

As always, I welcome your thoughts and story ideas. See you next month.

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- Large, illuminated display
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- Mode: A3E (AM) / F3E (FM,WFM)
- Easy to program memory banks
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- Five scan modes
Five scan modes are available including preset frequencies, VFO, memory scan, programmed scan or tone scan to search for unknown CTCSS tones. The Time/Busy modes are selectable on all modes except the tone scan mode.
- Power options keep you in control
The DJ-X7 comes with a standard adapter that charges the Lithium ion battery AT THE SAME TIME it powers the radio with AC power. So, you can listen while the unit is charging. The long-lasting, lithium ion battery delivers approximately 19 hours of operating time.



Wide Band Communication Receiver DJ-X30T

Standard Features

- Compact design fits easily into pocket or purse
- Receives 100 KHz to 1.3 GHz*
- AM/FM/WFM modes selectable
- 1,000 memory channels in 10 banks; banks can be expanded up to 50 using a free downloadable, easy-to-program editor software
- Five scan modes: Preset, programmed, memory, VFO and tone scan operating modes
- Priority receive
- Three different antenna modes - earphone, internal bar, and external SMA.
- Auto or 16 different channel-steps to choose from
- 2-Way Key-lock
- Key-touch beep (on/off selectable), 39-tone Tone squelch, Attenuator (approx 20dB), Battery-save, Auto-Power-Off, Cable-clone, Monitor/Mute functions are just some examples of extremely loaded functions a DJ-X30 offers at no extra charge!
- Pager (bell) function alerts you with a beep and an icon when a signal is received
- Large, illuminated LCD screen capable of up to 6-digit alphanumeric display

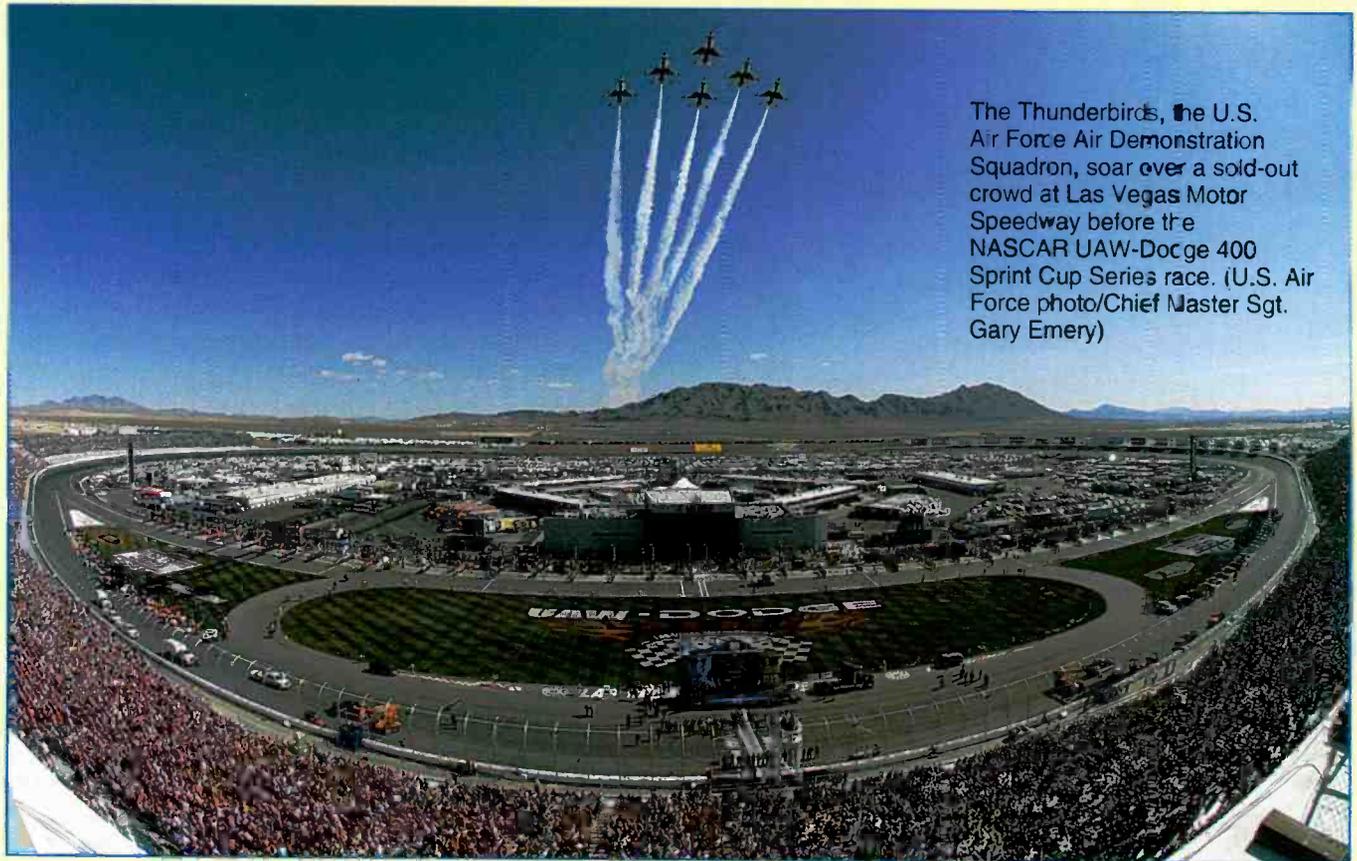


*cellular frequencies blocked on T model sold in USA

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The Thunderbirds, the U.S. Air Force Air Demonstration Squadron, soar over a sold-out crowd at Las Vegas Motor Speedway before the NASCAR UAW-Dodge 400 Sprint Cup Series race. (U.S. Air Force photo/Chief Master Sgt. Gary Emery)

High-Speed And Precision—Monitoring SeALs (Sea, Air, Land) Events

The Adrenaline's Pumping And The Scanning Doesn't Get Any Better Than This

by Tom Swisher, WA8PYR

WYou, too, can monitor the SeALs. No, I'm not talking about the cute little aquatic critters. Nor am I talking about the U.S. Navy's elite special operations unit. I'm talking about Sea (watercraft events), Air (air shows), and Land (auto racing). Each of these types of events has its own pack of aficionados, and monitor-

ing each with your scanner can add a whole new dimension to your experience of the excitement.

Whether your tastes run to things that fly, float, or zoom along on wheels, there's something out there for everyone.

Waterborne Adventure

Do you like speed? Of course, we all do. How about boats? Sure, those are fun, too. Well, then, how about watching boats

Tom Swisher, WA8PYR, is *Pop'Comm's* "Civil Aviation Monitoring" columnist.



Drag boats, the aquatic versions of their land-bound cousins, are just as exciting to watch in the heat of the race. (Photo courtesy of Ed "Smitty" Smith, OPA Racing)

Other Frequencies To Monitor

FRS Frequencies

Channel 1	462.5625
Channel 2	462.5875
Channel 3	462.6125
Channel 4	462.6375
Channel 5	462.6625
Channel 6	462.6875
Channel 7	462.7125
Channel 8	467.5625
Channel 9	467.5875
Channel 10	467.6125
Channel 11	467.6375
Channel 12	467.6625
Channel 13	467.6875
Channel 14	467.7125

MURS Frequencies

Channel 1	151.820
Channel 2	151.880
Channel 3	151.940
Channel 4	154.570
Channel 5	154.600

Dot/Star Frequencies

151.6250	Red Dot
151.9550	Purple Dot
154.5700	Blue Dot (MURS 4)
154.6000	Green Dot (MURS 5)
462.5750	White Dot (GMRS 2)
462.6250	Black Dot (GMRS 4)
462.6750	Orange Dot (GMRS 6)
464.5000	Brown Dot
464.5500	Yellow Dot
467.7625	J Dot
467.8125	K Dot
467.8500	Silver Star
467.8750	Gold Star
467.9000	Red Star
467.9250	Blue Star

"Communications at drag boat events are used so the driver can communicate information about the performance of the boat to the crew chief, who can then recommend changes."

skimming across the water at over 200 mph? If that sounds cool to you, check out drag boat racing.

Drag boat racing is a match up between two boats on a measured course; whoever crosses the finish line first is the winner. Unlike land-based racing, drag boats use a slight running start, moving slowly toward the line and opening up when the light turns green. This is for safety reasons; it's hard to judge whether the boat will move off on a straight course when starting from a dead stop due to water movement, so the slight running start is used.

Most of the races are two- or three-day events, with qualifications taking place on the first one or two days. Elimination races are held the last day of the event, with the winners of the various classes being determined that day. The classes include Top Alcohol Flatbottom (alcohol-powered boats with flat bottoms); the top boats are the Top Fuel Hydroplane class, which are hydroplanes powered by a 90/10 mixture of nitromethane and methanol. These top out at around 250 mph over a quarter-mile course.

Other racing events include regattas. These are long-distance races over a highly defined course, usually involving a group of sailboats, although there are powerboat regattas as well. The most well known regatta is the America's Cup, although there are local regattas all over the country. Ocean-going regattas are often quite a bit more challenging than those held on inland lakes, as the course covers a much wider area.

Communications at drag boat events are used so the driver can communicate information about the performance of the boat to the crew chief, who can then recommend changes. Since the race itself is so short, most of these communications will take place before or after the race. In some classes, the crew chief even monitors such atmospheric conditions as air density, temperature, wind speed and direction, and probably even the salinity content of the water. (Remember your school science class-



High-speed boat racing is not for the faint of heart. The crew of Miss Geico, a race boat with two 1800 HP turbines that gives it a top speed of around 190 mph, wear face masks with integrated breathing and communications devices. (Photo courtesy of Ron Polli)

es? A higher salt content causes objects to be more buoyant.)

Regatta communications, on the other hand, generally involve boats calling for assistance as needed, although on long-distance regattas it's not unusual for a boat to call back to the home base with status information.

Communications at most water racing events can be found on the VHF marine channels. The following channels are often used:

- Channel 06 (156.300) Safety calls to escort vessels
- Channel 16 (156.800) Distress calls
- Channel 22A (157.100) Coast Guard liaison
- Channel 83A (157.175) Coast Guard Auxiliary liaison
- Channel 68 (156.425) Primary race communications
- Channel 70 (156.525) Digital Selective Calling (non-voice)
- Channel 72 (156.625) Escort vessels
- Channel 79A (156.975) Commercial users (tow boats, marinas)

Oceangoing regattas use marine single sideband (upper sideband) frequencies:

- 4146 kHz USB Channel 4 Alpha
- 8294 kHz USB Channel 8 Alpha
- 8122 kHz USB Morning weather
- 8291 kHz USB Coast Guard long-range emergency calling

Don't forget to also check the MURS and FRS frequencies (listed in the sidebar), which could be used both by racing teams and event vendors. In addition, search between 460.900 and

463.9875 MHz for more event communications.

For more information on schedules and events, check the following websites:

- Columbia Drag Boat Association: <http://cdbaracing.com>
- Drag Boat Racing Community: <http://DragBoatRacing.com>
- International Hot Boat Association: www.ihbaracing.com
- National Drag Boat Association: <http://NDBAOnline.com>
- OPA Racing Organization: www.oparacing.org
- Offshore Super Series: www.offshoresuperseries.com
- Sailboat Community: www.sailboating.com

Between those sites you'll be able to get up-to-date race schedules and information, as well as information on events in your area.

Speed In The Air

Remember the line? Maverick and Goose high-five each other on the flight line at *Top Gun* and say "I feel the need...the need for speed."

And it's true. Military aircraft are the very embodiment of high performance, and if you want to see the best flying at high speed, an air show is the place to do it.

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By Dave Coomber, G8UYZ & Martin Croft, G8NZU

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Edited by Roger Balister, G3KMA
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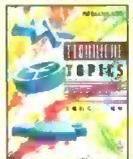
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The U.S. Navy's premiere Flight Demonstration Team, the Blue Angels, are stationed at Naval Air Station Pensacola, Florida, and fly the McDonnell-Douglas F/A-18 "Hornet" strike fighter. Scheduled in over 36 locations with hundreds of shows per annual season, the proud tradition of courage and excellence has lasted since they were established in 1946. (U.S. Navy photo/released)

as well as witness precision flying at its best, especially by military demonstration teams. Teams like the U.S. Navy Blue Angels and the U.S. Air Force Thunderbirds continue to thrill crowds across the country with their high-speed, tight-formation maneuvers.

Civilian teams, too, put on quite a show, but often with what is commonly called "stunt flying." Some pilots even perform incredible stunts in which the aircraft appears to almost hover vertically, held aloft by nothing more than the propeller. An air show is an exciting way to spend a day or two, and when you go, take your scanner!

One of the highlights at any speed-related event, but especially an air show, is monitoring the action. Watching a demonstration team perform while listening to them at the same time adds a whole new dimension to the show. Hearing the Thunderbirds flight commander tell his flight "a little more puuulllll!" and watching them tighten their turn, and then the exclamation "break!" at which the flight breaks into individual elements makes the show even more exciting to watch.

Something else worth monitoring is the Air Boss; housed in a miniature control tower on a trailer, the Air Boss runs the

show and is in control of the airfield during it. Once given control of the airfield by the regular control tower, it's all his until he gives it back or there's an emergency coming in that's not related to the air show, in which case the tower will reclaim control. There are also public safety and show operation frequencies to monitor, on which you can hear what's happening on the ground.

Here are some common frequencies to monitor:

Aeroshell	123.150
Patty Wagstaff	122.750, 123.475
Red Baron Stearman Squadron	122.725, 122.775, 123.150
USAF Thunderbirds	141.850, 143.850, 235.200
USN Blue Angels	237.800, 275.350, 305.500, 346.500
USAF F-15 Eagle Team	123.150, 376.025
USAF F-16 Fighting Falcon Team	283.700, 365.700
USAF F-22 Raptor Team	238.900, 290.225
Common Air Boss frequencies	123.150, 123.450

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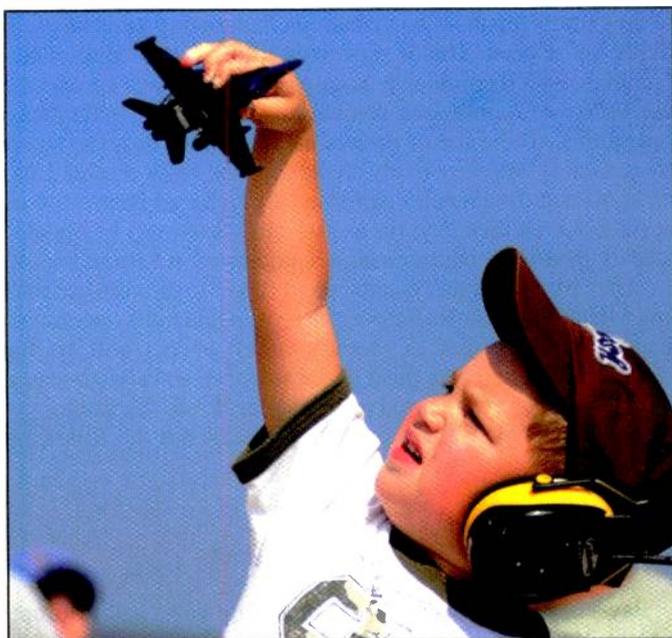
RX-320D



RX-340



1254



A boy plays with a model of a Blue Angels plane during the Great State of Maine Air Show at Naval Air Station Brunswick. The air show brought performances by the Blue Angels, the U.S. Army Golden Knights parachute team, and a wide variety of static displays and interactive exhibits and drew more than 150,000 people over three days. (U.S. Navy photo by Mass Communication Specialist 1st Class Roger S. Duncan/ released)

Speed On Four Wheels

NASCAR, top fuel, funny cars, drag racing...you name it, it's out there.

The king of the hill is NASCAR. With major national and international popularity, NASCAR boasts 75 million fans in over 150 countries around the world. Major NASCAR events typically draw crowds nearing 100,000 or more, and NASCAR itself nets an annual profit nearing \$3 billion.

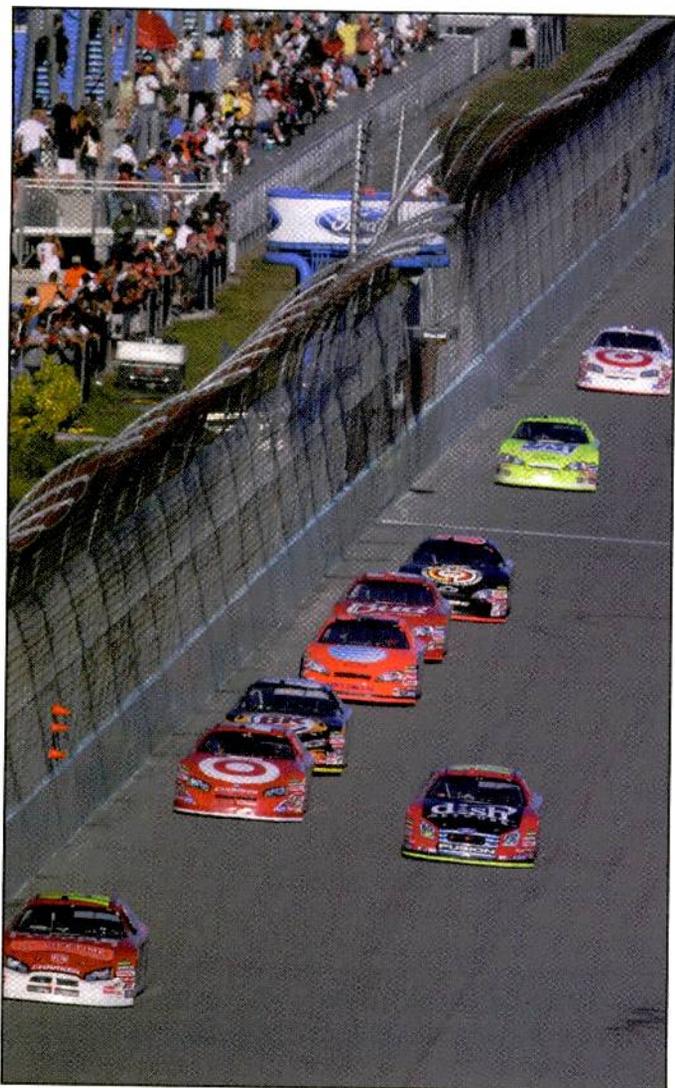
NASCAR got its start in the Prohibition-era Appalachian bootlegging "industry." Runners transported the moonshine using small, fast cars modified for greater speed; this eventually led to organized races for fun and profit, as well as to gain driving experience for running moonshine.

Today, there are over 30 Sprint Cup events around the country, from the Northeast to the Southwest. With more than 30 teams, over 70 cars and drivers, and all the other activities to be found at a NASCAR event, there is always plenty to listen to.

Like other forms of racing, NASCAR teams use radio so the driver can communicate with the pit crew. This is especially important during longer races, as the driver can advise of problems with the car or things he needs at the next pit stop, while the crew chief can advise on track conditions and the activities of other cars.

Listed below are the available primary and secondary frequencies for the 2008 Sprint Cup series drivers:

Car	Driver	Primary/Secondary
00	David Reutmann	457.5375/466.7375
01	Regan Smith	463.2875/461.3250



Race cars streak around the track during the Ford Championship Weekend at Homestead, Miami Speedway. (Photo by Larry Mulvehill, WB2ZPI)

“Like other forms of racing, NASCAR teams use radio so the driver can communicate with the pit crew.”

26	Jamie McMurray	465.9750/460.7250
27	Johnny Benson	460.1625/464.5125
28	Travis Kvapil	468.5250/466.3750
29	Kevin Harvick	469.0125/462.0250
31	Jeff Burton	468.5750/468.6000
34	John Andretti	463.2125/467.1125
38	David Gilliland	468.5250/466.3750
40	Dario Franchitti	461.3750/462.1000
41	Reed Sorenson	466.1500/458.0000
42	Juan Montoya	452.7000./466.1000
43	Bobby Labonte	456.5250/464.4500
44	Dale Jarrett	463.2125/469.1125
45	Kyle Petty	461.2250/464.4000
48	Jimmie Johnson	452.2375/451.9875
49	Kenny Schrader	461.4125/466.2875
55	Michael Waltrip	452.1125/452.8125
66	Scott Riggs	464.6375/467.2500
70	Jeremy Mayfield	466.5000/469.1375
77	Sam Hornish, Jr.	452.6750/469.1500
78	Joe Nemechek	452.2625/466.0250
83	Brian Vickers	451.6125/451.9750
84	Mike Skinner	452.0875/456.5625
88	Dale Earnhardt, Jr.	462.0625/466.7875
96	J.J. Yeley	461.1625/466.2625
99	Carl Edwards	466.2750/468.8625

While this list is up-to-date for the 2008 season, there will likely be many changes for the 2009 season. With the economic downturn, financial contributions from major sponsors will likely be reduced. This is especially likely for the auto manufacturers, which provide the basic tools of the driver's trade: the car. With these conditions, some teams may have to curtail their operations, so the list of drivers and cars (and thus the active frequencies) will very likely change for the 2009 season. Lists of up-to-date frequencies can also be purchased from vendors at the track on race day; these lists can sometimes be updated weekly based on communications monitored at various events.

Also, like with other events, don't forget to monitor the FRS and MURS frequencies for event activities and track operations. Especially important to monitor at all events will be the "Dot/Star" frequencies (also in the sidebar), so called because the frequencies are referred to by a color dot or star name.

For more NASCAR information, check out the following websites:

NASCAR: www.nascar.com
 Jayski's NASCAR News: www.jayski.com

Jayski's site is chock full of up-to-date news and information on NASCAR, the races, drivers, and teams.

It's Showtime!

With events all over the country, there's bound to be one near you, so get out there with your scanner. You have a need for speed, and you can now go and see that speed...and listen to it, too! ■

07	Clint Bowyer	469.2375/464.4625
1	Martin Truex, Jr.	466.6875/464.9250
2	Kurt Busch	451.8250/464.8250
5	Casey Mears	468.2125/467.0375
6	David Ragan	460.9500/466.7500
7	Robby Gordon	469.4500/463.6500
8	Mark Martin	464.9500/463.7250
9	Kasey Kahne	451.8500/452.6500
10	Patrick Carpentier	462.7625/462.5875
11	Denny Hamlin	467.4750/462.4250
12	Ryan Newman	457.7875/466.2125
15	Paul Menard	452.0500/464.8750
16	Greg Biffle	468.4500/462.0250
17	Matt Kenseth	458.4750/462.4500
18	Kyle Busch	467.4500/462.5000
19	Elliot Sadler	456.8500/452.4500
20	Tony Stewart	462.5250/462.4750
21	Bill Elliott	461.7250/452.2000
22	Dave Blaney	468.9375/460.1625
23	Jeff Gordon	467.0625/465.8625

ICOM IC-RX7 Wide-band Receiver

by Ed Muro, K2EPM

“[The ICOM IC-RX7] is truly a scanner for the radio aficionado who’s also a race fan or air show fan.”

An attractive design, innovative frequency management features, and rugged, weather-resistant construction set the new ICOM IC-RX7 apart from run-of-the-mill conventional scanners. This is truly a scanner for the radio aficionado who’s also a race fan or air show fan.

While certain events, like NASCAR, aren’t held in rain, the benefits of the IC-RX7’s water-resistant rating will be apparent for anything that might have you scanning in inclement weather, such as Formula 1 racing or road rallies, or near sea spray during power-boat races. It would also make a perfect companion for monitoring the support action at, say, the New York City or Boston Marathon, which are often run in awful weather. It’s in such soggy venues that the IC-RX7 really hits a home run and where you’ll fully appreciate all the benefits of this feature-rich monitor radio.

According to the promotional material, the ICOM IC-RX7 is a slim and smart wideband receiver that tunes from 150 kHz to 1300 MHz (less cellular and gaps) in AM, FM Narrow, and FM wide modes. Let’s take a look at the outside first, along with some of its most obvious features; we’ll look at the software aspect of the scanner separately in an upcoming review.

The ICOM IC-RX7 offers a large back-lit LCD display plus a nice keypad. It’s rain resistant to equivalent IPX4 standard. CTCSS and DTSC decode is built in. Other features include RF Gain, Attenuator, Auto Power save and voice squelch control. A built-in ferrite rod antenna provides good medium wave (AM) reception. A total of 1,650 scannable alphanumeric memories are available, and an independent Search button automatically searches pre-programmed frequency ranges. Many sophisticated forms of scanning are supported.

As I said, it’s an attractive radio that I’d describe as a cross between a late 1990s cell phone and a TV remote control. It’s also thin and would probably fit in a shirt pocket and most definitely in a jacket or back pocket of your trousers.

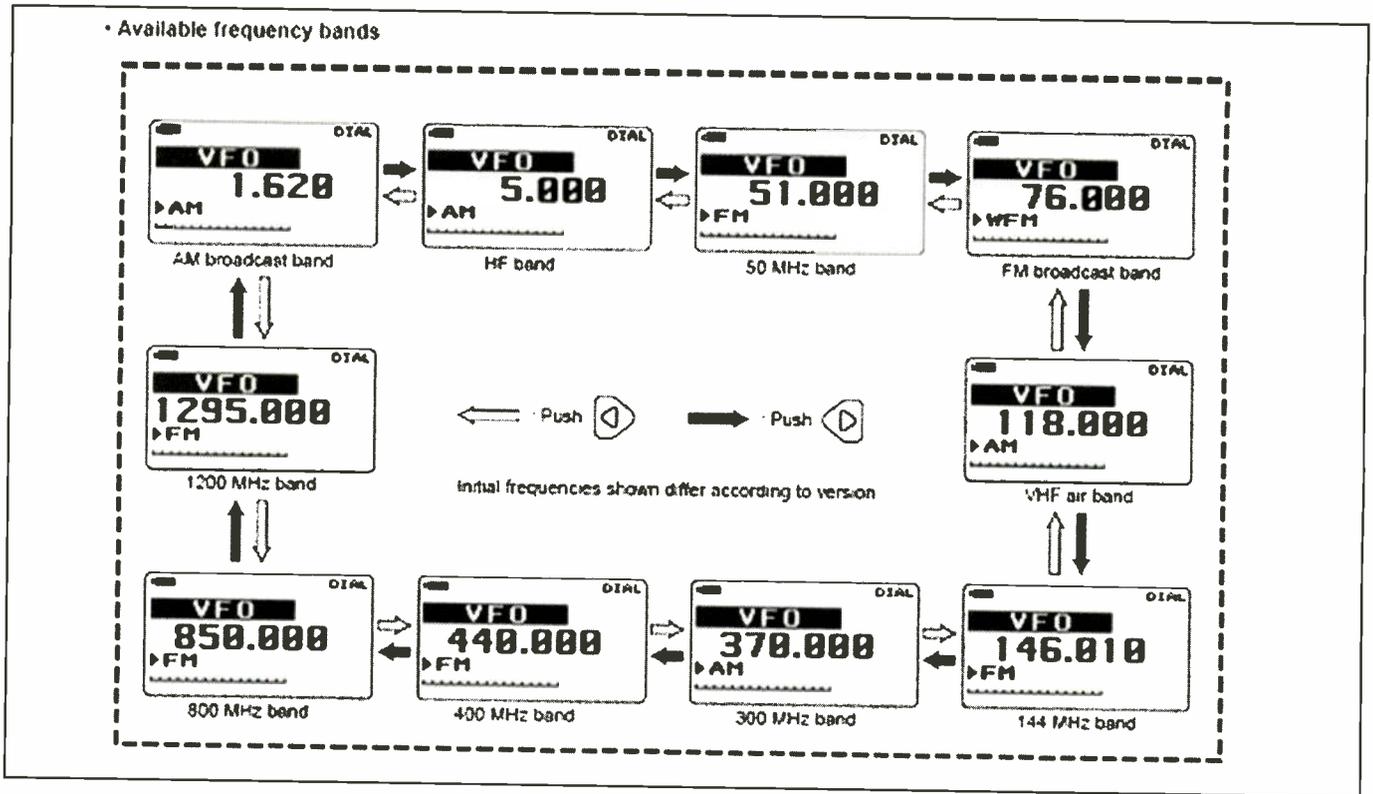
Ed Muro, K2EPM, has been a radio hobbyist since his early teens. He served three terms as vice-president of the Long Island Mobile Amateur Radio Club and is a public information officer and VE for the ARRL.



The ICOM IC-RX7 is a slim, water-resistant wide-band receiver designed with the racecar fan in mind.

The slim package is made possible by a small, but high-capacity, Li-ion battery pack (BP-244), which is rated at 3.7 volts and 1100 mAh. What benefit you gain by the reduced size of the battery pack could prove a disadvantage if your battery goes dead out in the field or at a NASCAR race, but an optional AA alkaline battery case (BP-262) is available. The optional battery case would add some size to the back of the radio, but would still be a good accessory to pick up.

What appears to be a rubber gasket lines the opening of the battery compartment, and I suspect has to do with the splash-resistant construction equivalent to IPX4. IPX4 was a new term for me (I’m used to the phrase “mil-spec”), so let’s look at what it refers to. Meeting the IPX4 Standard



Frequency coverage at a glance.

means that the product was tested against water splash and still functions well after being sprayed at all angles at 10 liters/min, at a pressure of 80-100kN/m² for five minutes (though I don't recommend trying this at home!).

In The Box

In addition to the radio, ICOM IC-RX7 package includes a wrist strap, Li-ion battery pack, battery charger (BC-149A/D), removable belt clip, SMA antenna, instruction manual, and Ham Radio Terminology booklet.

The instruction manual is well written and is a convenient size to keep in your car or "go bag." You'll definitely have to read through it with the radio in hand to learn how to program the IC-RX7. While I'm a little puzzled as to why they included the Ham Radio Terminology booklet with a scanner, it's a good list of definitions for ham radio jargon—and it's free.

Out Of The Box: Settings

Out of the box I couldn't figure out how to set the volume level. However, after reading the manual I saw that it's quite simple: you just depress the up arrow to increase the volume level and the down arrow to decrease it. In a low-noise environment I found that I had to set the vol-

ume at 2/3 full to be able to comfortably hear the weather forecast on the National Weather Service at 162.550 MHz.

As with many ham radio handhelds, just about everything you do with this scanner requires you to go through a series of menu selections. Unless you have a photographic memory, keep the user's manual nearby, for a while at least. But unlike most scanners you're probably familiar with, where you set the squelch level by rotating a knob until you hear a hiss and then slightly back off a bit until the hiss subsides, the IC-RX7 offers two methods.

The quickest way and easiest way is to press and hold the [CLR SQL] button, then turn the knob on the top of the radio. Then press the [CLR SQL] button to exit the squelch set mode. The other method has you go through a series of menu commands to set the squelch. While slightly more cumbersome than the "old-fashioned" way, the menu approach allows you to customize your settings.

The squelch circuit mutes the audio signal, depending upon the signal strength. The IC-RX7 has nine squelch level settings and a totally open setting. "Level 1" is "loose," meaning the circuit would be the easiest to open for weak signals, and "Level 9" is "tight" and would require a very strong signal to break the threshold. There's also an "auto" setting that you

don't see on older scanners, which will automatically set the squelch based upon the strength of the received signal.

Should you want to listen for a weak signal without changing your current settings, there's a "monitor" function, which will fully open the squelch. To activate this function you have to press and hold [CLR SQL] for one second. To go back to your regular setting just push [CLR SQL] to deactivate the setting.

Operating Modes

VFO Mode: The Variable Frequency Oscillator is used to set the frequency to be received. In this mode not only will you have to set the frequency, but you'll set whatever other parameters are needed to receive the intended signal, such as the band and receiving mode.

As mentioned above, the IC-RX7 has three receiving modes: FM, WFM (wide FM), and AM. The receive mode needs to be set independently for each channel you want to receive. In U.S. versions of the IC-RX7 there's also an auto setting where the radio will automatically select the setting. Probably a good 80 percent of your monitoring is going to be done in the "FM" mode, which is where you find business band and public safety communications. WFM is used for the FM

Broadcast band and AM for the Aviation Band and the AM Broadcast band.

Search Mode: The search mode will "search" for signals within specified frequency limits. This is a fun way to search out new things you've never listened to before and to identify users.

Scan Mode: This is the mode you use to search through pre-programmed memory channels. Setting up the frequencies in your memory channels will most probably be done in two ways: by direct frequency entry using the keypad or by using the optional programming software.

The IC-RX7 is a great radio, but if you think you're just going to program it by punching in a frequency and hitting enter on an empty channel (the old Uniden method) forget about it. Until you master this radio you're going to need to keep the manual handy. I also highly recommend spending the few extra bucks and purchasing the CS-RX7 programming software. Even with the software you'll still have a learning curve, but for people who like to travel with their scanners, it makes programming for different cities a snap, once you've created your frequency memory file.

There's also a host of tuning steps you can customize, including a 6.25 kHz step. To make your life simple, U.S. versions of the IC-RX7 also incorporate an "auto tuning step" feature where the radio will choose the step size based upon the frequency you're trying to program.

Searching, Scanning, And Linking

Merriam-Webster defines the word "terminology" as "the technical or special terms used in a business, art, science, or special subject," and therein lies the key to what confuses many people who've spent years using older Uniden, RadioShack, or other derivative scanners when they make the jump to a device manufactured by ICOM, Yaesu, or AOR. It isn't all that hard, but it does take some time with the user's manual to see the difference in how the terminology is used.

Again, most people are familiar with going to an empty memory channel, entering a frequency using a keypad, pressing enter, and then they're done. Afterward, to go to that channel directly, you simply use the manual key; to scan, you simply hit scan. Sometimes you have various banks and you can choose which banks you want to scan and which you don't. It's really the same thing here, but the terms are slightly different. Let's take a look.

One important term to understand is what the manual refers to as "linking." In general, you'll activate what "banks" you want to scan by "linking" them together. With that said, there are several options for using the "search" features.

Full Search: The radio repeatedly searches all the frequencies the radio will receive. It uses the auto mode function, which adjusts the modes while going through the various bands (see Frequency Coverage chart).

Basic Search: The radio searches all frequencies within a pre-programmed range specific to certain services. It uses the "pre-programmed ranges and modes to search for frequencies between the upper and lower limits; for instance, Air Search = US Commercial/General Aviation frequencies between 118-136 MHz.

Band Search: The radio searches all frequencies within a pre-programmed range within set "band edges" or limits within a particular band. Do not confuse this with the Program Search (see below).

Program Search: The radio searches all frequencies within a pre-programmed range within set "band edges" or limits within a particular band that the user sets as "User Programmable Band Edges" (25 band edge pairs are available). You also have the ability to link several Program Search ranges together and to automatically store any activity within a search. For instance, a user may select the upper and lower "Band Edges" for Military Aircraft, choose Prog 1, and the Search would indicate Prog 1 on the display.

Scanning is pretty straightforward, with one twist. First, you can scan all memories in the radio with the All Scan function; then you can search a particular bank or "Group" with the Group Scan function. But here's the neat part: There are two main scan functions, Group and Category. When you're storing frequencies to memory you can tag them with a "Category" such as "Ham" or "Weather," and "Category Scan" will repeatedly scan all memory channels within that category. And, depending on how the radio is programmed, these can vary. For example, if you're at a NASCAR event, Friday night is traditionally the Truck Series, Saturday the Nationwide series, and Sunday the Sprint Cup. You can have a Group called NASCAR, and then categories below the Group, such as Truck, Nationwide, and Cup. You can scan all memory channels within a particular category, say *all* NASCAR memory channels, listed in Groups, or you can have the IC-RX7 scan only the memory channels within a specified Group.

You can also program using "Memory Name" (up to 100), assigning an alphanumeric tag of up to 16 characters for each channel. Up to six channels can be stored per "Memory Name" heading.

The IC-RX7 also has the offers the ability to lock out certain channels, set priority channels, a scan delay or "pause" function, and has a specified Weather Channel operation.

It also offers radio-to radio and PC-to-radio cloning capabilities (with the correct cables and software in the case of the PC programming), which we'll examine next time.

Cutting To The Chase

Keeping in mind that this is a conventional receiver and doesn't scan trunked radio systems, the IC-RX7 has a lot to offer in a small package (3.1 x 2.25 x 0.8 inches HWD; 7.1 oz). With a manufacturer's suggested retail price of \$364.00 ("street price" is lower), once you get past the learning curve and have absorbed the information in the instruction manual, the ICOM IC-RX7 is an attractive radio and an attractive value. ■

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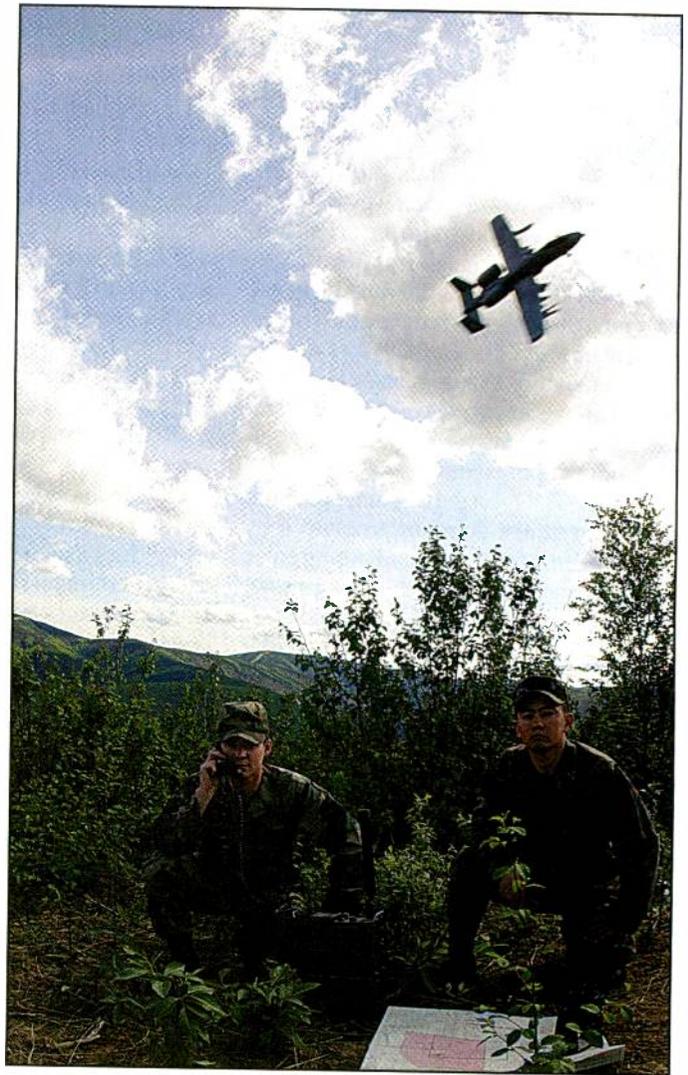
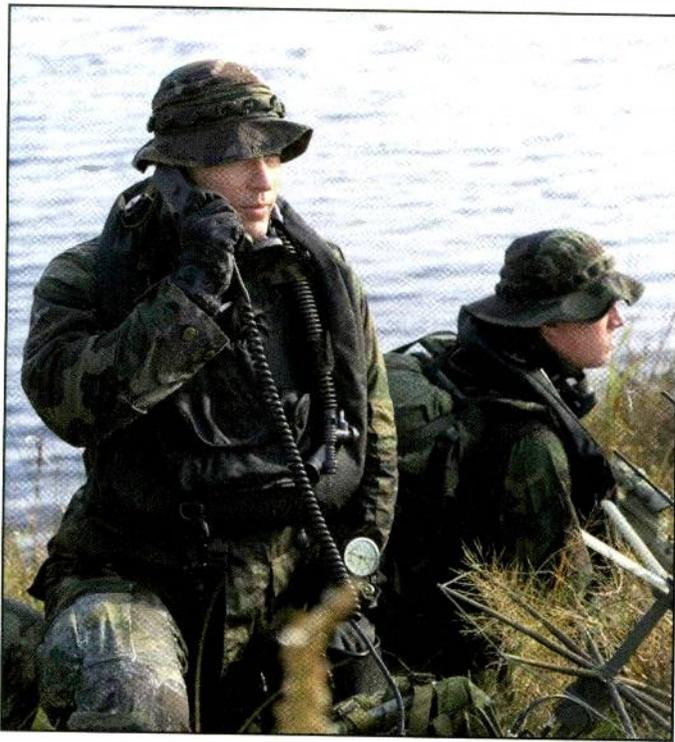
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Air Force Combat Controllers make a call to aircraft using radios after penetrating a Florida shoreline with tactical underwater breathing equipment during a training exercise Nov 8, 2005. (U.S. Air Force photo)

Senior Airman John Tranum and Airman 1st Class Steve Vonack use a PRC-117 multiband tactical radio to communicate with aircraft during an exercise May 29, 2007, on the Pacific Alaska Range Complex in Alaska. Airmen Tranum and Vonack are assigned to the 3rd Air Support Operations Squadron tactical air control party from Fort Wainwright, Alaska. (U.S. Air Force photo/Airman 1st Class Jonathan Snyder) →

At Your Service: The United States Air Force

Pop'Comm Continues Its Multi-Part Acknowledgement Of The Military Branches That Serve Our Citizens

by R.B. Sturtevant, AD7IL

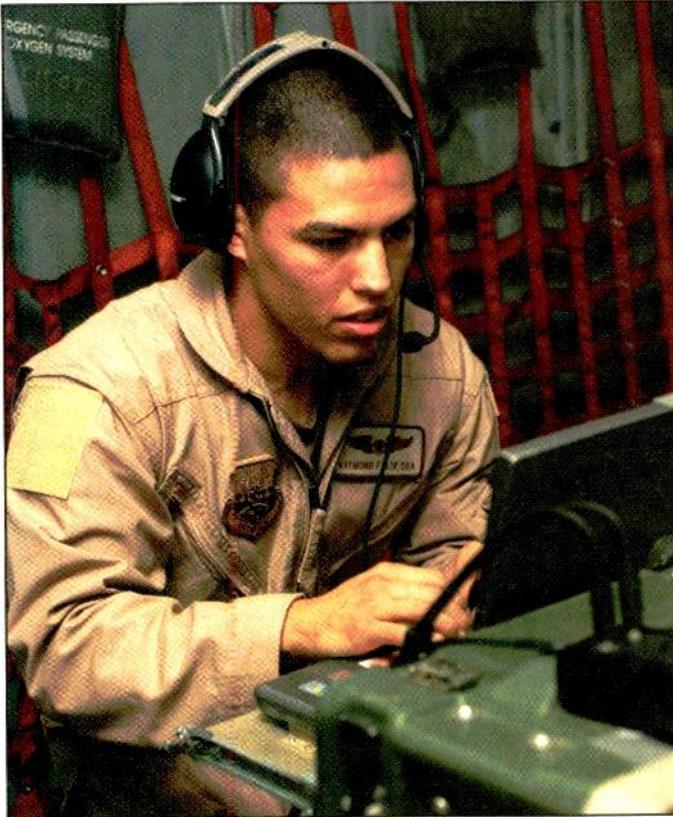
The Air Force, with personnel at about 329,000 strong, represents nearly a quarter of our Armed Forces, according to the Department of Defense. The men and women who serve in it have always been very technically oriented, and today the Air Force mission includes leading our defenses in air, space, and even cyberspace—the latest area vulnerable to a possible attack against the United States.

R.B. Sturtevant, AD7IL, is *Pop'Comm's* "Trivia" columnist and has written many radio history features for the magazine as well.

Not everything in the Air Force is about flying, and some people spend their whole careers on the ground. But that doesn't mean that the Air Force is full of "chair borne" warriors, either. For instance, Forward Ground Controllers, with their Satellite Uplink equipment, go "where the action is."

Ham Radio In The Air Force

Hobbyists will be interested to know that ham radio played a fascinating role in the development of one aspect of Air Force communications. That goes back to the days of General Curtis



Senior Airman Michael Lee pieces together a high-frequency radio used for line-of-sight tactical radio communications June 21, 2008, at Joint Base Balad, Iraq. Airman Lee is a 332nd Expeditionary Communications Squadron ground radio maintainer deployed from Lajes Field, Azores. (U.S. Air Force photo/Senior Airman Julianne Showalter)

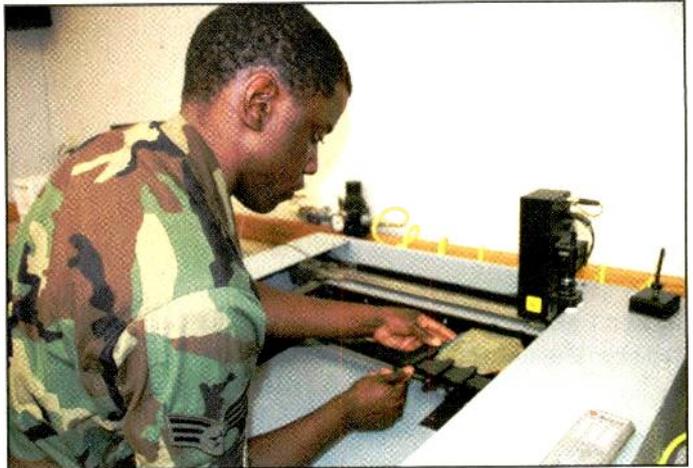
E. LeMay, KØGRL/K3JUY/K4RFA, one of the founding fathers of Air Force bombing doctrine. LeMay was behind the introduction of single sideband use in Air Force aircraft. He had noticed hams at base hobby stations doing things that flight crews couldn't and ordered research to begin on how to improve matters.

One of the tests conducted involved LeMay himself flying a bomber around the world making single sideband contacts with bases and amateurs all the way. He took other operators along, but LeMay put in his own time at the mic and key. That was back in the '50s and '60s, but the Air Force has never lost its interest in evolving technology—the newer stuff just can't be talked about yet.

I recently talked to Staff Sergeant Jeremy Spranger, KF9MG, about ham radio skills in today's Air Force. Spranger has been licensed since he was 11 years old, got his General class at 14, and his Advanced at 16. He went into the Air Force in 1996 as an ICBM Electronic Systems Specialist. He said that a lot of the Air Force's 150 career fields use radio to communicate in one way or another. His amateur radio experience helped him a great deal during his ASVAB (Armed Services Vocational Ability Battery) testing, which all branches of the military use to select military career fields.

Technical Skills In Service To The Country

Some of the technical areas in which today's Air Force personnel work include Communications-Electronics Systems for



Senior Airman Torry Murray aligns a malfunctioning circuit card assembly in a troubleshooting card reader. Airman Murray is an Air Force Repair Enhancement Program technician in the 355th Maintenance Group at Davis-Monthan Air Force Base, Arizona. (U.S. Air Force photo/Staff Sgt. Jake Richmond)

Ground Radar; Ground Radio; Computer, Network, Switching and Cryptographic Systems; and Cable and Antenna Systems. Many other technical staff put their expertise to work as Programmers, as specialists in Communications Computer Systems, in Operations, or Radio Communications Systems and Electronic Spectrum Management. Professionals with radio-related skills also staff Missile and Space Systems Maintenance, Intelligence, and Information Management.

Air Force Electronics Specialists work in around 40 "career fields" for which they received specific training in a tech school after completing basic training. To ensure top-notch skill levels, personnel are given six weeks to a year in one of the Air Force's Technical schools, followed by their assignments somewhere in the world.

Fortunately for those who serve, some of the really terrible jobs in the Air Force have been done away with by improved technological. For a few decades, starting around the 1960s, everyone was thinking about the Distant Early Warning Line, a collection of radar sites in northern Greenland, Canada, and Alaska that would spot the Soviet menace coming over the North Pole. For the Air Force personnel tasked with preventing that, it wasn't exactly resort accommodations. Since then the Air Force learned how to curve a radar beam over the horizon and those DEW Line bases and the ones on little nameless islands in Pacific are gone. Not that Ground Radar-related personnel don't get the occasional remote posting, but the worst is over. And, of course, the Air Force has bases all over the world.

Some people can't devote themselves to a full-time Air Force career, of course, but still wish to serve their country. The Air National Guard or Reserves are full of talented men and women who are trained in the same tech schools and work on mostly the same equipment as Air Force personnel. These folks are serving our country just as faithfully as the full time "Regulars."

I ask Sergeant Spranger why thought the Air Force attracted and held onto so many talented technical people. He told me, "In any branch of the service you are still serving the flag. If that is what you want to do with your life, then in the Air Force you find a better quality of life." ■

Looking For New Frequencies

by Ken Reiss
radioken@earthlink.net

“Some new tools have become available to us in recent years to help [in searching for frequencies], and even to make your scanner do things that you never thought of.”

Scanner enthusiasts are always on the hunt for new frequencies to feed their scanner. When you're just getting started, finding frequencies can be a daunting task, and you have all those channels to fill in that shiny new scanner. After a while, you'll find what's local and get comfortable with what you listen to on a regular basis, but there's still a quest for other “lesser known” frequencies. That hunt for information is a part of the radio hobby, and probably always will be.

When you're just getting started with scanning, you're much better off with traditional published frequency lists and doing some local research. Get familiar with all that the publications and websites have to offer. See if any of your local RadioShack employees have an interest in scanning, or check to see if there's a local website; either may offer a wealth of information that will save you a ton of work. If you can't find local frequencies that way, have a look at RadioReference.com (www.radioreference.com) and see what it has for your area.

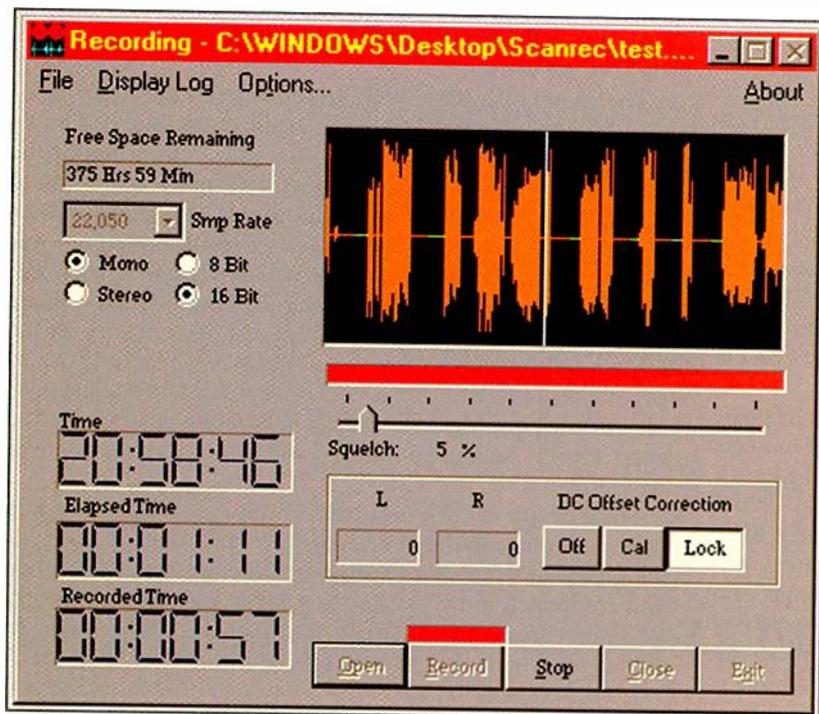
As you get more comfortable, you'll start to

learn the details of departments you're monitoring as well as how they use the channels they have. You may also find additional frequencies or agencies that you didn't think you were interested in but turn out to be quite entertaining or informative. In the process you can begin to develop a band plan for your area. As you find out what's used and by whom, it can be very helpful to make a list of every possible channel on a band and plug in the information you already know. You'll then see how many “holes” there are in your knowledge.

How many bands do you need to look at? Most towns of any size have something on more than one band, but there may be a pattern in your area. Some areas operate almost exclusively in the VHF range, while others (particularly large metro areas) are looking for additional channels anywhere they can be had. Don't ignore the other bands even if your local police and fire are all in one spot. You never know what you'll find.

Once you've completed your list, you can begin searching for unknowns confident that you'll be able to correctly identify the intercepted signal, whether it's really a new frequency for you, or just one you had forgotten about.

Even if you don't read any of the rest of this article (but you most definitely should!), if you actually do these recommended approaches you'll be way out in front of most scanner enthusiasts and have a lot of information to share with your local club. Take the time to catalog what you know and what you don't know.



Scan Record is a program made just for the application of recording your scanner directly to sound files on your computer.

Search Time Management

Searching for new frequencies has always been a chore. Not only is it time consuming, but figuring out what's new versus what you already know about isn't exactly fun. On top of that, there's the nagging feeling (or reality) that you're missing something good on the frequencies you normally listen to while you're wasting time searching.

Adding to the unpleasantness, the search function on most scanners is a bit inconvenient to use, and it is, again, time consuming. Days or weeks can go by with little or no return. But when you do find new frequencies, or identify a new user, it makes it all worthwhile. Some new tools have become available to us in recent years to help this process, and even to make your scanner do things that you never thought of.

The most significant improvement in the searching process has been the power of the com-

Grand Forks, County of >

Frequency	Input	License	Type	Tone	Alpha Tag	Description	Mode	Tag
155.68500	154.75500	KAD79E	RM	192.8 PL	GFSO 5 DISP	Grand Forks S.O. Main	FM	Law Dispatch
155.98500	153.93500	KAB621	RM	192.8 PL	GFCO 7 EAST	Grand Forks S.O. (Grand Forks)	FM	Law Dispatch
155.98500	153.93500	KAB621	RM	192.8 PL	GFCO 8 WEST	Grand Forks S.O. (Larimore)	FM	Law Dispatch
453.90000	458.90000	WINDZ797	RM		GFCO PAGE	County Fire Paging	FM	Fire-Talk
154.23500		WPIE789	BM		GFCO PAGE EM	County-Wide Emergency Paging	FM	Multi-Dispatch
451.05000		WINDZ798	FX		GFCO FIRE	County Fire Dispatch	FM	Fire Dispatch
155.26500		KDW813	BM		ALTRU EMS	Altru ambulance and E.O.D. (E.R.)	FM	EMS-Talk
462.97500	467.97500	KDW813	RM	CSQ	EMS PAGE	EMS Paging / Paramedics	FM	EMS Dispatch
155.04000	153.86000	KDU576	RM	CSQ	GFCO WORKS	Local Govt. Radio	FM	Public Works

Grand Forks, City of >

Frequency	Input	License	Type	Tone	Alpha Tag	Description	Mode	Tag
155.56500	154.71000	KAB623	RM	NAC 218	GF PD 1	Grand Forks PD 1	P25	Law Dispatch
155.07000	159.13500	KAB623	BM	NAC 218	GF PD 2	Grand Forks PD 2	P25	Law Talk
155.13000		KAB623	BM	NAC 218	GF PD	Grand Forks PD	P25	Law Tac
154.35500	155.59500	KRZ254	RM	NAC 218	UND PD	UND Police	P25	Law Dispatch
153.89000	154.17500	KGY213	RM	NAC 218	GF FIRE DISP	Grand Forks Fire	P25	Fire Dispatch
155.73000		KGY213	RM		GF FIRE TAC1	GF Fire Tac 1	P25	Fire-Tac
151.22000	159.25500	KAB623	RM	NAC 218	ALTRU DISP	Altru Ambulance Disp.	P25	EMS Dispatch
155.26500		KDW813	BM		GF EMS	Ambulance to EOD	FM	EMS-Tac

Ralph Engelsted Arena >

Frequency	Input	Type	Tone	Alpha Tag	Description	Mode	Tag
451.28750		M	177.3 PL	CONSC ALT	Concessions Alternate NEW	FMN	Business
451.31250		M	71.9 PL	USHERS	Ushers NEW	FMN	Business
451.43750		M	88.5 PL	PRODC T	Production NEW	FMN	Business
451.78750		M	100.0 PL	PARK ALT	Parking Alternate NEW	FMN	Business
451.83750		M	118.8 PL	CUST	Custodial NEW	FMN	Business
451.88750		M	107.2 PL	MARKET	Marketing NEW	FMN	Business
451.93750		M		AUX	AUX NEW	FMN	Business
451.98750		M	94.8 PL	SEC ALT	Security Alternate NEW	FMN	Security
452.23750		M	151.4 PL	EMERG	EMERGENCY NEW	FMN	Business
452.26250		M	103.5 PL	FACILITIES	Facilities NEW	FMN	Business
452.73750		M	131.8 PL	SUITE	Suite Level NEW	FMN	Business
461.88750		RM	192.8 PL	SEC MAIN	Security RPTR 2 NEW	FMN	Security
462.37500		RM	245 DPL	MAIN OPS	Main Repeater NEW	FMN	Business
463.23750		RM	123.0 PL	CONSC RPTR	Concessions RPTR 4 NEW	FMN	Business
463.81750		RM	114.8 PL	PARK RPTR	Parking RPTR 3 NEW	FMN	Business

RadioReference.com has extensive frequency information on the entire country and some locations outside the United States. Here you see that Grand Forks county is mostly on VHF, but there's a UHF system in use by the city. That's two bands you'd want to check carefully if you're in that area.

puter combined with controllable scanners and the software that drives them. With software, it's not only possible to search large amounts of spectrum, over time of course, but also to turn your non-productive scanning time into a worthwhile part of your hobby activities.

Even without a computer-control system, there are many things you can do to enhance your scanning and searching and to convert downtime into useful time. For instance, with a voice-activated recorder, you can turn time away from the shack into productive activity.

There's still a benefit to analyzing your knowledge even if you have no desire to search. Simply start plugging a group of those unknown channels into an empty bank of your scanner for a week or a month at a time and you may find a lot of

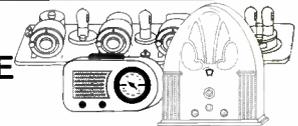
traffic. Or maybe nothing, but you won't know until you try!

Searching For Unknowns

You can use any of several free-ware/shareware/commercial programs for your computer to turn it into a very functional recorder. My favorite for scanner use is Scanner Recorder, a freeware utility built just for scanner and radio recording. You can check it out yourself at www.davee.com/scanrec/index.html. Another popular one is RecAll Pro, which is shareware, but also offers some nice features. It's at www.sagebrush.com/recpro.htm. (A voice-activated tape recorder will also work for this if you have one handy.)

Obviously, adding recording to your

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shack will allow unattended searching. The amount of time that's recorded will give you a feel for how much activity is found, even before you listen to it. By playing back the recording, you can at least get a good feeling for the activity in the range you searched and decide if it's worth your time to pursue the active frequencies any further. If you're searching in a frequency area where you know some channels, you may be able to identify some of the traffic already, just based on how they sound. After that, you can pick specific frequencies that you think might be worth following up on.

Perhaps you've heard through the rumor mill that a certain agency uses a spe-

cific channel. Put the scanner on that frequency (or talkgroup, with a trunked system) and set the recorder for while you're at work, out running errands, or anywhere besides in your shack. You can verify a lot of information in a week just by spending the day on one frequency at a time.

If you're fortunate enough to have a computer-controlled system, you can really make maximum use of your scanning setup while you're away. Almost any computer-controlled scanner can perform a search and keep track of the hits that occur on each channel. In addition, you can keep a log of the frequencies that the scanner found active as well as the sequence/time and date of the activity. By

playing back the tape and following along in the log, it's usually a pretty quick affair to figure out an active frequency. Then you can set it up for more detailed monitoring if you're interested.

The number of computer-based recording programs appearing on the market continues to grow, and many of them are getting quite sophisticated. Most simply use the sound card to record just like a voice-activated recorder, and those make a great substitute for the recorder if you don't need to take the tape with you for portability. Or you can convert the files to MP3 format or something that's more portable if you prefer—and you thought iPods were just for music.

Frequency Of The Month

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

I've had several e-mails and letters from folks telling me that they've dedicated a bank to the Frequency of the Month idea. That's great! To help get you started, I've included a list of the past FOTM frequencies (see below).

I've also noticed that I tend to get two kinds of entries: one from those who recognize the frequency as something local and can tell me off the top of their head, and one from people who have no idea what they're listening to, but have obviously been trying to guess over several days or weeks of traffic.

If you don't hear anything on the frequency, leave it in there for a while. It may just be one of those frequencies that doesn't get used often. And it may just be a channel with no traffic in your area...at least it won't slow down your scanning too much.

Our frequency this month will be **456.200**. Have a listen and see what you hear. Send the results to me (even if you don't hear anything) and we'll enter your name in the drawing for a subscription to *Popular Communications*. Please include your address and make sure to put the frequency as the subject of your email or on the outside of the envelope for correct routing. Send your entry (or other questions) to radioken@earthlink.net or via more traditional methods to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126.

Our winner of a free subscription this month is **Steve Bradley, KC7OMH, of McMinnville, Oregon**, who says he heard nothing on 118.400—yet! Congratulations, Steve, and keep on trying.

Come on, let's hear from everyone (and don't forget that address!).

Past FOTM Frequencies

Here's the complete list of past FOTMs for a possible search bank for your scanner:

3/2009	456.200	3/2007	153.845	4/2005	119.40000	6/2003	42.22000	6/2001	42.02000
2/2009	109.1	1/2007	118.7	3/2005	155.47500	5/2003	155.64000	6/2001	42.02000
1/2009	446.0	12/2006	462.5875	2/2005	857.43750	4/2003	467.58750	5/2001	151.94000
12/2008	119.2	11/2006	42.38	1/2005	460.22500	3/2003	282.10000	4/2001	452.45000
11/2008	154.115	10/2006	154.875	12/2004	154.57000	2/2003	153.89000	3/2001	155.73000
10/2008	118.4	9/2006	453.550	11/2004	153.87500	1/2003	856.68750	3/2001	155.73000
9/2008	456.175	8/2006	155.145	10/2004	118.30000	12/2002	170.97500	3/2001	155.73000
8/2008	42.44	7/2006	459.8750	9/2004	857.71250	11/2002	453.22500	2/2001	152.48500
7/2008	457.9375	6/2006	160.59000	8/2004	155.73000	9/2002	154.16000	2/2001	152.48500
6/2008	867.800	5/2006	154.81500	7/2004	156.45000	8/2002	121.90000	2/2001	152.48500
5/2008	856.5875	4/2006	119.10000	6/2004	856.68750	7/2002	118.90000	1/2001	462.25000
4/2008	42.00	3/2006	154.86000	5/2004	155.25000	6/2002	460.12500	1/2001	462.25000
3/2008	151.880	2/2006	450.58000	4/2004	153.86000	5/2002	156.80000	12/2000	162.40000
2/2008	462.6375	1/2006	160.27500	3/2004	462.67500	4/2002	166.10000	12/2000	162.40000
1/2008	860.5875	12/2005	155.76000	2/2004	157.00000	3/2002	42.12000	11/2000	118.50000
12/2007	151.955	11/2005	155.74500	1/2004	146.94000	2/2002	154.13000	11/2000	118.50000
11/2007	859.4625	10/2005	460.38750	12/2003	155.83500	1/2002	462.66250	10/2000	860.71250
10/2007	39.70	9/2005	121.80000	11/2003	123.45000	12/2001	154.74000	9/2000	460.25000
9/2007	146.52	8/2005	856.58750	10/2003	460.70000	11/2001	450.55000	9/2000	460.25000
8/2007	163.100	7/2005	154.60000	9/2003	155.65500	11/2001	450.55000	8/2000	154.84500
7/2007	450.6125	6/2005	160.23000	8/2003	161.77500	10/2001	155.79000	8/2000	154.84500
4/2007	153.830	5/2005	156.60000	7/2003	157.10000	7/2001	155.56500	5/2000	166.50000

Searching Techniques

One of the biggest mistakes we all make getting started is searching too large an area. It's very tempting to set up a search for the entire military air band, for instance, or the federal portions of the UHF band. You might get lucky and find a few things this way, but the odds are against you.

You have to remember that you're trying to find transmissions that don't take place very often and that don't last long when they do. Your scanner has to be in the right place (on the frequency) at the right time (when the transmission is occurring). In short, you have a moving target being followed by a moving search engine. In a large block of frequencies, you're chances of winning the lottery are probably better.

So if reducing the size of the blocks will improve your chances of hitting something in that block, how small should they be? Well, that depends on exactly what you're looking for, and how fast your scanner can search. With a fast scanner, and assuming you're not looking for a frequency that's only used once in a blue moon, 2 to 4 MHz of space is probably about right. I know, it's going to take forever to get through the large chunk of frequencies that you have to look at, but you'll get better results in the long run.

The second most important skill for a search operation is patience. Particularly with military operations—but it applies everywhere—some of the frequencies are not used on a daily basis. Perhaps some National Guard-type frequencies are only active when during monthly exercises. Other training frequencies may only be active during training operations that take place only occasionally. To find these obscure channels, you may have to search the same area of the spectrum over and over for a month and get nothing until the exercise starts. What fun. But it's worth it when you hit something.

Identify targets for your searching. If you glance at almost any frequency guide, or our handy chart, you'll quickly see that there are pre-determined band plans for each area of the spectrum. In other words, there are places or frequencies in your scanner's coverage range where we should expect to find something, and places where we shouldn't. For example, our local police occupy 154.830 and 154.845, which as it turns out, are adjacent channels under the old plan. In the new frequency split plan, there could be a low power service at 154.8375. Nobody

should be on .835 or .840, but most scanners would pick up 154.8375 if you programmed either of the channels beside it.

By simply mapping the available channels against what you already know, you can find a revealing number of holes in your information. A computer spreadsheet makes short work of this, but it can be done with paper, too. Once you've found your missing areas, it may turn out that you have a very narrow range to search in a particular band. This will cut down your time, as well as help with identifying things on the recorder.

My final piece of advice is to develop a tracking system. Computers are great for this too, but you can do it with a notebook or index cards. Make notes of when you searched what. What day of the week was it? Could you be looking for something that's only used on weekends? Or

every third Wednesday when they test the tornado sirens? What did you find on your search? Can you identify any of it, just based on what you already know, or can you find it from frequency directories and other sources? The more information you have, the more useful the system will become in the long run.

Scan To Taste

Having said all that, maybe this is too much trouble for you. If you're quite happy scanning the local police and fire frequencies that you already know about, keep right on scanning. But if you're getting bored, or wonder who else uses some of those other frequencies your scanner covers, searching, especially while you're away from the equipment anyway, can be extremely fruitful. ■

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Ultralight DXing Goes Loopy

by Bruce A. Conti
BAConti@aol.com

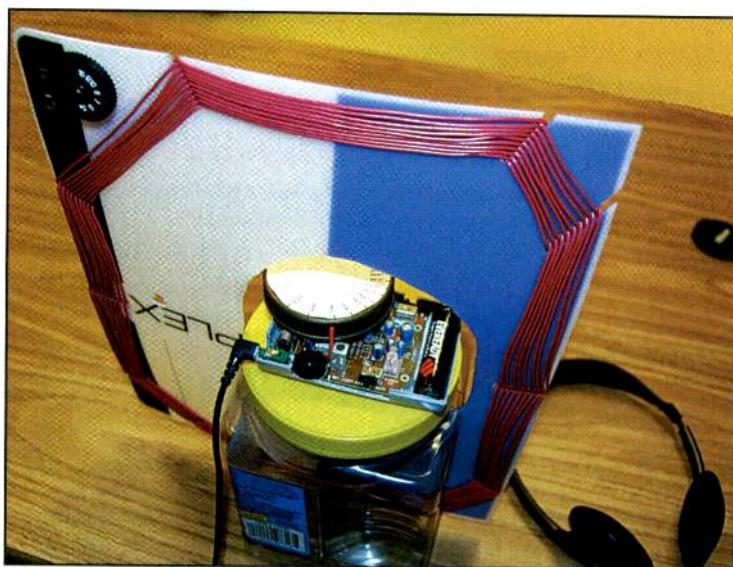
“Now ultralight DXers are finding means to improve reception on these little radios, in some cases rivaling high-end communications gear...Here’s an example...”

The growing popularity of AM broadcast band DXing with ultralight radios has spurred a renewed interest in loop antenna experimentation. DXers discovered that the Sony SRF-59, Sangean DT-200VX, and Etón E100 pocket-sized radios performed better than average for modern AM radios, leading to the designation of a new category of broadcast DXer: ultralight.

Now ultralight DXers are finding means to improve reception on these little radios, in some cases rivaling high-end communications gear, and they’re rediscovering the magic of the inductively coupled passive loop antenna as one way to upgrade performance. Here’s an example, a radio electronics project sure to delight novice and expert hobbyists alike.

Spiderweb Ultralight Loop

During a recent meeting of the Boston Area DXers radio club, Gary Thorburn, KD1TE, demonstrated his “Spiderweb” air-core loop inductively coupled to a Sony SRF-59 ultralight AM radio. The Spiderweb Loop is an environmentally friendly design, using recycled plastic and salvaged electronic parts. As Thorburn explains,



The Sony SRF-59 “on the halfshell” and Spiderweb Loop mounted on a modified plastic container. The radio is retrofitted with a larger tuning knob.

The loop is wound with 18-gauge insulated wire in a spiderweb pattern on a plastic binder cover (8.5 x 11 inches). The number of turns was experimentally determined, about 18 turns in this case. An odd number of slits in the binder results in the spiderweb pattern, with the loop woven between slits such that only nine turns are visible on each side. A notch was cut into a plastic jar, stopping about a centimeter from the jar bottom. The loop assembly is inserted in the notch.

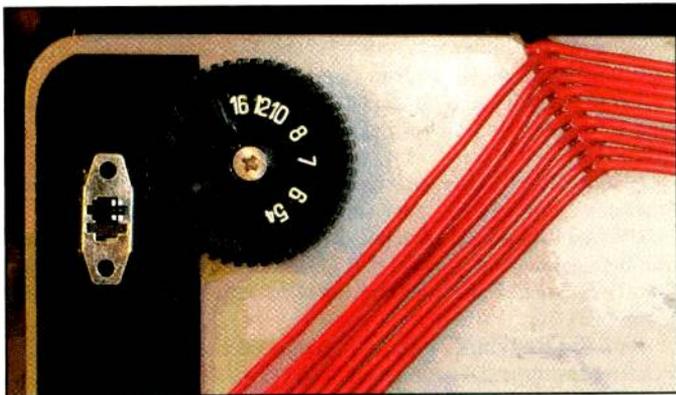
A hole in the notebook cover of the Spiderweb Loop clears the jar cap to provide a resting place for the SRF-59, which is secured by Velcro fasteners. There is no electrical connection to the radio. The SRF-59 is positioned so its internal ferrite rod antenna is approximately centered in the Spiderweb Loop to maximize signal strength. The turns of the internal ferrite antenna and external Spiderweb Loop are in the same plane, resulting in inductive coupling. The whole assembly is easily rotated to null out undesired signals.

Thorburn suggests scavenging yard sales for old junk radios from which a tuning capacitor can be salvaged. The typical variable capacitor found in an old AM radio will adjust 10 to 365 pf. An additional fixed ceramic capacitor with a value between 80 to 200 pf is used along with a single pole single throw (SPST) switch for a high/low bandswitch. Just about anything that’s non-conductive can be used as a form for winding the loop, including sturdy cardboard, pegboard, plastic, or wood forms. Says Thorburn,

A junkbox variable capacitor is connected across the Spiderweb Loop to tune it. A bandswitch shunts a 100 pf capacitor across the variable capacitor to cover the entire AM broadcast band. This is often necessary in homebrew air-core loop antennas, because the loop inherently has more capacitance and less inductance than the typical ferrite rod antenna that a variable capacitor is designed to tune. With the inherent capacitance of the loop already in the equation, a larger swing in tuning capacitance is needed to cover the entire broadcast band.

Turning Point

Although some experimentation is required to determine the exact number of turns of wire on the Spiderweb Loop to cover the entire AM broadcast band, regardless of the size of the loop, 15 to 20 turns is typical for an air-core loop to cover 530 to 1710 kHz using a 10-365 pf variable capacitor and bandswitch. For Thorburn the magic number was 18. Without the bandswitch, 18 turns covered down to 700 kHz. Fewer than 18 turns would have compromised performance at the high



Close-up of the tuning capacitor and bandswitch mounted on the winding form of the Spiderweb Loop.

end of the band; more than 18 turns would shift the frequency range well above 1710 kHz. Thorburn further explains his design process:

There are too many variables to be able to initially predict the correct number of turns. If your Spiderweb winding form is similar in size, then start with 18 turns. Connect the tuning capacitor across the loop. Tune the radio to 1700 kHz. By adjusting the tuning capacitor, you should be able to peak the signal (or noise) at 1700 kHz, indicating that the antenna is resonant or tuned for that frequency. This should be at or very near the upper end of the tuning capacitor range. If 1700 resonates near the middle or bottom of the tuning capacitor range, then add one or more turns to the Spiderweb Loop and try again.

If initially you can't peak up 1700 kHz, then the Spiderweb Loop may have too many windings to tune the upper end of the broadcast band. Tune the radio to somewhere in the middle of the band, and try peaking the signal with the tuning capacitor. If the Spiderweb Loop tuning capacitor peaks signal in the middle, but not at the upper end of the band, then remove one or more turns of wire from the loop. The additional capacitance with the bandswitch will add to the range at the bottom of the dial, so it's important to get the antenna working at the upper end without the bandswitch first.

Obviously the Spiderweb project does require basic electronics hand tools and minimal soldering skills to complete. Always wear safety glasses when reworking parts by hand, using power tools, and while soldering. For those less inclined to the do-it-yourself approach, there are a number of commercially available loop antennas guaranteed to boost ultralight reception. The C. Crane Twin Coil Antenna, Select-a-tenna 541, Terk Advantage, and the old RadioShack AM Loop are examples of passive air-core loops that work without making an electrical connection to a portable AM radio. The ferrite loopstick antenna inside the radio inductively couples to the external loop, just like the Spiderweb Loop design.

Take a look at the online catalog from our friends at Universal Radio (www.universal-radio.com) to learn more about available AM radio loop antennas. Then visit "Canada's original worldband radio website" at www.dxe.ca for more ultralight projects, receiver reviews, contests, and distance records. Don't forget to let 'em know that you read about it here in *Popular Communications*.

Broadcast Loggings

Congratulations to Oregon DXer Patrick Martin for attaining a significant personal record. "After nearly 44 years of QSLing, I have reached a milestone of 3,000 MW QSLs from 95 countries!" exclaims Martin. QSL number 3,000 came from KFBX Alaska, details below. Quite the accomplishment!

Ron Reyno VE3RYN, of St. Catharines, Ontario, checks in from Maui, Hawaii, while aboard the *Spirit* Carnival cruise ship. "Since I've been DXing the MW band, these are the longest distances ever logged," reports Reyno, who's using a Sony ultralight. "My receiver was the Sony SRF-m37v Digital Walkman." His catches:

690 CBU Vancouver, BC
 760 KFMB San Diego, CA
 810 KGO San Francisco, CA
 990 CBW Winnipeg, MB
 1070 KNX Los Angeles, CA
 1160 KSL Salt Lake City, UT

"When conditions are good, there's no telling how far AM broadcast band signals will travel," concludes Reyno. With solar activity at consistently low levels, the conditions for long-distance AM reception have been outstanding as evidenced by this month's selected logs. All times are UTC.

600 WYEL Mayagüez, Puerto Rico, at 0402 parallel 580 kHz with full network "WKAQ 580" ID and jingle into news. Under Radio Rebelde, Cuba. (Black-MA)

612 RTM Sebaa Aioun, Morocco, at 0103 fast Arabic, possibly news, fanfare with further announcements into music. Good to fair signal. (Wood-MA)

621 Radio Nacional de España, Canary Islands and Spain, at 0638 Spanish news/talk peaking to good steady signal level. (Beu-TX)

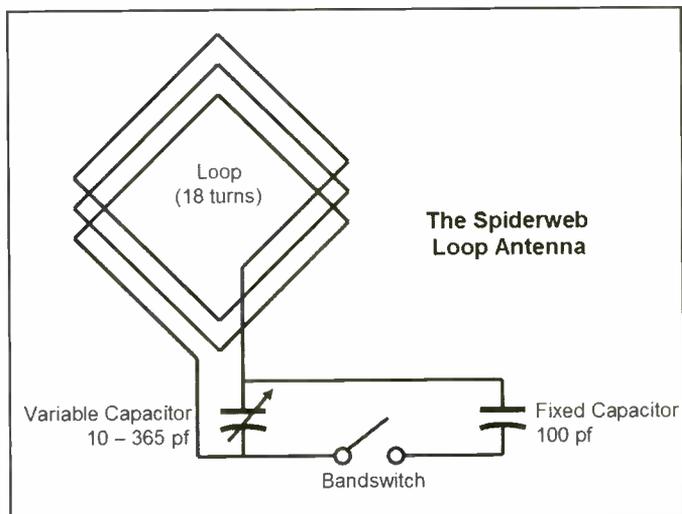
630 HRLP Radio América, Honduras, at 0600 "Noticia al minuto" relay from primary outlet on 610, with San Pedro Sula and several "Radio América" mentions. (Black-MA)

740 CFZM Toronto, Ontario, full detail QSL card including pix of artists they play and program schedules for AM & FM stations, received in 73 days, signed Brian Smith, Official QSL Manager. Address: 155 Main Street North #313, Newmarket, Ontario, Canada L3Y 8C2. (Martin-OR)

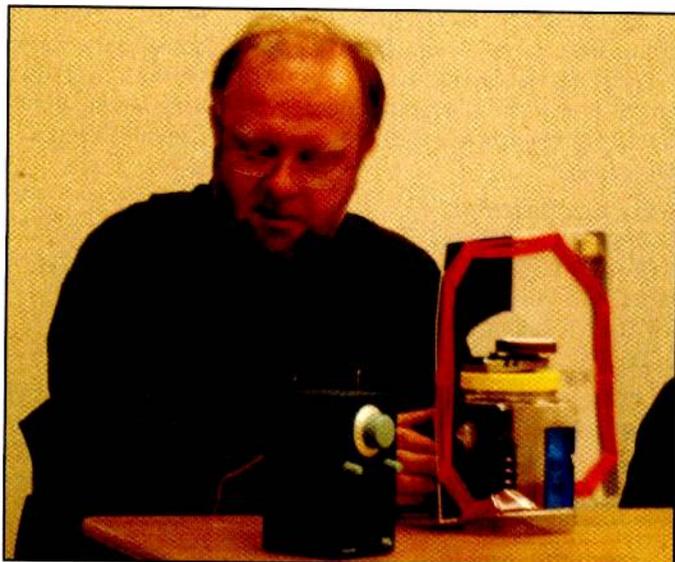
740 ZYH446 Radio Sociedad da Bahia, Salvador, Brazil, at 0001 usual interval music from "Close Encounters," then Portuguese shouting including Salvador and Brazil mentions, briefly over CHCM and CFZM. (Connelly-MA)

747 JOIB Sapparo, Japan, at 1305 talk by a man in Japanese parallel 774 kHz, peaking to a good steady signal level. Frequently audible from 1130 to 1330 UTC. (Beu-TX)

747 Radio 5, Flevoland, Netherlands, at 2244 excellent with discussion in Dutch, then a vocal by Aliyah, parallel to webstream via delicast.com. (DeLorenzo-MA)



Schematic diagram of the passive Spiderweb Loop antenna.



A slightly blurry Gary Thorburn carefully aims his Spiderweb Loop antenna for best reception during a demonstration.

765 RSR Option Musique, Sottens, Switzerland, at 2132 Option Musique jingle, romantic French vocal. (Connelly-MA) At 2237 good with light vocals. (DeLorenzo-MA)

882 BBC Radio Wales, Washford, UK, at 2152 fair with pop music including "If I Lay Here" by Snow Patrol over a second transatlantic signal in Spanish with live sports event. (DeLorenzo-MA)

860 YVYE Radio Enlace, Valle de la Pascua, Venezuela, at 0930 "Radio Enlace 860 AM transmite... Himno Nacional de República Bolivariana de Venezuela," into Venezuelan anthem. (Black-MA)

909 Voice of America, Sebele Pikwe, Botswana, at 2100 end of English transmission and sign-off with "This is the Voice of America, Washington DC" and Yankee Doodle. Good, under BBC 5 soccer match. (Black-MA)

910 KLCN Blytheville, Arkansas, at 2252 University of Arkansas football and *The Sonic Post Game Show*, "News/Talk 910 KLCN." Decent, steady signal. (New-GA)

910 Radio Cadena Agramonte, Camagüey, Cuba, at 0630 chimes and ID, "Cadena Agramonte... en la Habana," and chimes again. (Black-MA)

917 Radio Gotel, Yola, Nigeria, at 2216 a screamer het against 918 Spain. (*What the heck is a het? See below.—bc*) Overall a poor signal with just bits of talk and African music. Used LSB and 1.8 kHz filter to separate audio from 918 kHz. (Connelly-MA)

918 Radio Slovenija, Domzale, Slovenia, at 2314 fair with discussion in presumed Slovene, parallel to webstream via delicast.com. Country #98 heard from Massachusetts. (DeLorenzo-MA)

940 WMIX Mount Vernon, Illinois, at 2243 heard Barry Manilow "Ready to Take a Chance Again" and "AM 940, WMIX." Good, steady signal. (New-GA)

954 Cesky Rozhlas, Czech Republic, at 2300 signed off with announcement in Czech and instrumental national anthem. New log. (Conti-NH)

954 Onda Cero, Madrid, Spain, at 0011 lively Spanish discussion, "tambien" said numerous times; on barefoot Etón E100 ultralight receiver. (Connelly-MA) At 2140 sporting event, then apparent wrap-up with scores, ads, and promos. At 2202 fanfare, Onda Cero jingle, and ID, "Onda media nueve cinco cuatro." (Black-MA)

970 KFBX Fairbanks, Alaska, a very nice QSL card and letter, received in 358 days, signed Scott Diseth, Chief Engineer, who wrote that they rarely get reports from the lower 48 states. Address: KFBX, Clear Channel Radio, 546 9th Ave, Fairbanks AK 99701. Alaska QSL 60, MW QSL 3,000. (Martin-OR)

972 Libyan Jamahiriya, Sirte, Libya, at 2345 excellent with a

Koranic vocal parallel 1053.10 kHz. At 2349 signing off with thundering national anthem. (Conti-NH) At 2348 Arabic singing into Libyan national anthem prior to sign-off at 2351. (Black-MA)

999 Voice of Russia, Grigoriopol, Maiac, at 2300 "Vy efire Golos Rossii, Novosti" with novosti echoed, into news in Russian. (Conti-NH)

1000 XEFV Ciudad Juárez, Mexico, at 0700 with peppy Latin American music and ID, "La Rancherita!" (Barton-AZ)

1053.10 Libyan Jamahiriya, Tripoli, Libya, at 2349 signing off with national anthem, parallel 972 kHz. Measured 1053.10 kHz. The mwoffsets list indicates drifting between 1052.999–1053.102 kHz. (Conti-NH)

1062 Rai Radiouno, Italy, at 2300 a good signal, signing off with orchestra instrumental national anthem. (Conti-NH)

1089 TalkSport, United Kingdom, at 2103 parallel 1053 kHz with ID, "1089 and 1053 AM, TalkSport." (Connelly-MA)

1107.13 RNE5 Caceres, Spain, at 2133 this off-channel RNE station peaking stronger than the pile on 1107.0 kHz. (Connelly-MA)

1125 RTBF VivaCité, Houdeng, Belgium, at 0100 fair with time marker (3 pips), "Deux heures," into news in French. (Conti-NH)

1134 Hrvatski Radio, Zadar, Croatia, at 0002 Slavic news; on barefoot E100. (Connelly-MA) At 0158 presumed with a ballad on a fair signal breaking through HD interference. (Beu-TX)

1140 CHRB High River, Alberta, at 0830 with country music, "Your community radio for southern Alberta!" reappearing here after several months absence. (Barton-AZ)

1190 WBSL Bay Saint Louis, Mississippi, at 1830 *The Darien Anthony Show*, "...on the Gulf Coast Radio Network, WBSL." Good, steady signal for the most part with slight fades. (New-GA)

1206 France Info, Bordeaux, France, at 0039 barely able to pick up French ballads but positive was parallel 1377 kHz. (Wood-MA)

1215 Absolute Radio, United Kingdom, at 2100 Absolute Radio ID/promo, segment of "Rapture" by Blondie, URL given as www.absoluteradio.uk, a good signal over co-channel Kaliningrad. (Connelly-MA)

1320 WBOB Jacksonville, Florida, at 1952 *The Bobby Bowden Call-In Show*, "Florida State football on WBOB." Decent signal with fades. (New-GA)

1323 Voice of Russia, Wachenbrunn, Germany, at 2140 French program with ID, "La Voix Russe," chimes like old Radio Moscow. (Connelly-MA)

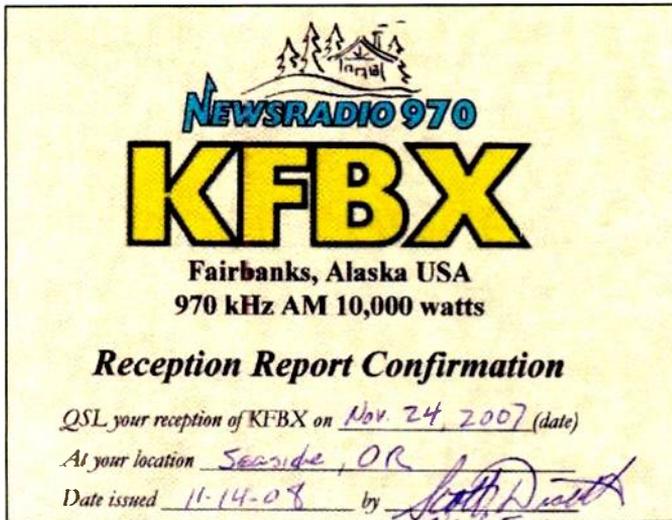
This Month In Broadcast History

Here are some more tidbits for our nostalgia fans (and who among us isn't?):

75 Years Ago (1934): The Wagner-Hatfield amendment to the Communications Act of 1934 called for a number of broadcast radio frequencies to be reserved exclusively for non-profit organizations.

50 Years Ago (1959): "The Father of Rock 'n' Roll" Alan Freed moved from New York City's WINS to WABC, only to later be fired for his involvement in the payola scandal, which ended his illustrious radio career. "It's Just a Matter of Time" by Brook Benton was topping the charts. A new distance record was set with the reception of a radio signal from the solar orbiter Pioneer IV at 400,000 miles.

25 Years Ago (1984): An international agreement between Canada and the U.S. allowed AM radio stations operating on the graveyard frequencies of 1230, 1240, 1340, 1400, 1450, and 1490 kHz to increase nighttime power from 250 to 1,000 watts.



Patrick Martin reached the 3,000 QSL milestone with this card from KFBX Alaska.

1377 France Info, Lille, France. at 0023 good at peaks, but consistently audible with a news magazine-type program, then new age-style music until 0030 ID. (Wood-MA)

1390 XEKT Tecate, Mexico. at 0245 with long talk in Spanish up to the hour. "XEKT, la súper estación!" (Barton-AZ)

1431 Radio Sawa, Djibouti. at 0018 a man and woman in Arabic, at fair level over interference from 1430 kHz. (Wood-MA)

1440 RTL Radio, Marnach, Luxembourg. at 2200 RTL and China Radio International slogans during English-language CRI relay, signal slightly over jumble of stations. At 2251 CRI variety program "China Drive" in English with a huge signal way over WJAE. (Connelly-MA)

1467 TWR Roumoules, France. at 2310 a good signal with Arabic program. Slight het (tone) noted on the high side from presumed Iran. At 2315 carrier off briefly, then back with one cycle of interval signal and *TransWorld Radio UK* program in English. (Conti-NH)

1467.32 IRIB Sarasary, Isfahan, Iran. at 2310 presumed producing a het on the high side of TWR France. Reported by Sylvain Naud, Günter Lorenz, and Giampiero Bernardini via the mwoffsets yahoo group. (Conti-NH)

1476 ORF Wien-Bisamberg, Austria. at 2205 news in German, then polka tunes. A fair signal and the same as their streaming website. New country! (Barstow-MA)

1494 France Bleu, Corsica. at 0010 just getting pop tunes thru sta-

tic, barely able to hear French announcements. (Wood-MA)

1521 BSKSA Duba, Saudi Arabia. at 0004 a good signal with talk in Arabic. This one received with a fair-to-good signal about every night. (Wood-MA) At 0203 a fair signal peak with talk by man in Arabic. (Beu-TX)

1530 KOKC Oklahoma City, Oklahoma. at 0430 with *Friday Night Blitz* roundup of high school sports. (Barton-AZ)

1560 KNZR Bakersfield, California. at 1120 with *Coast-to-Coast*, mixing with XEJPV Zaragosa, Mexico, which IDed at the bottom of the hour. (Barton-AZ)

What The Heck Is A Het?

Sometimes you'll read logs that mention a het, short for heterodyne, a tone created when a receiver's circuitry gets the desired signal mixed up with an adjacent signal. The frequency or pitch of the tone is the difference between the frequencies of each station received. For example, in the preceding log of Nigeria on 917 kHz, a "screamer het" was caused by a strong signal on 918 kHz. When the receiver picked up both 917 and 918 kHz, the difference between the two frequencies produced a 1 kHz tone. Likewise, reception of France on 1467 kHz and Iran on 1467.32 kHz produced a 320 Hz tone. Now you know.

Wow, that was 31 countries heard on AM radio. Our thanks go out to Roy Barstow, Rick Barton, Mike Beu, KD5DSQ, Chris Black, N1CP, Mark Connelly, WA1ION, Marc DeLorenzo, Patrick Martin, Bert New, Ron Reyno, VE3RYN, and Steve Wood.

Until next time, 73 and Good DX!

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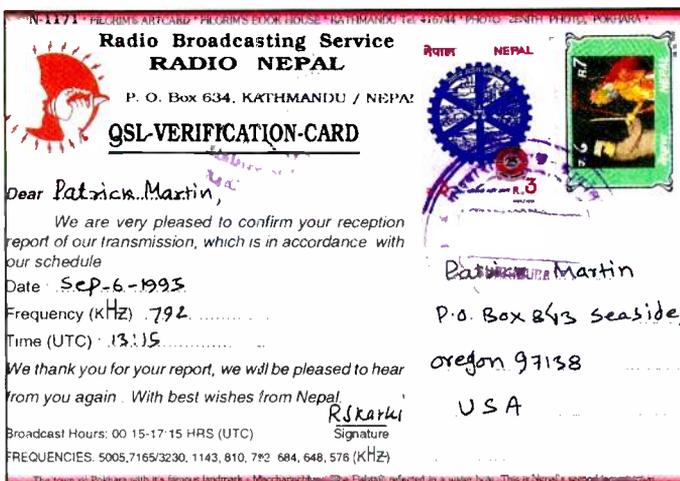
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The Worldwide Listening Guide

By John A. Figliozi

Reviewed by Gerry Dexter **L**et's see...we've finished dinner and the dishes are in the Maytag (I always stack from the back), so now, what's on? No, no—not TV. Please! We are *not* going to watch *Greatest Loser*, or *Dumber than a Second Grader*, or *Extreme Competitive Knitting*. I mean what's on the *radio*, specifically what's on *international radio*? You can find the answer without having to pull your hat down over your eyes as you sneak past those frequencies filled with doctors of doom or somebody asking for a "gift" of a dollar three eighty and they'll thank you with an autographed picture of John the Baptist. There's a much better way: It's a book by John

Gerry Dexter is *Pop'Comm's* "Global Information Guide" and "World Band Tuning Tips" columnist.

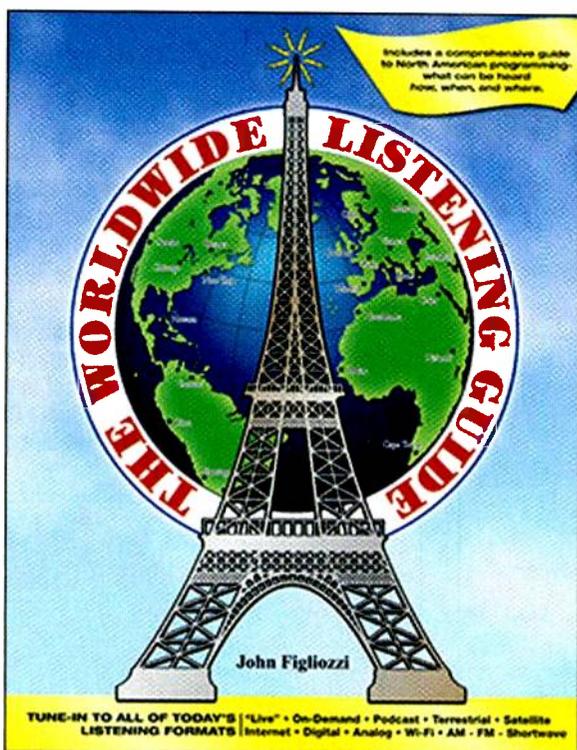
Figliozi called *The Worldwide Listening Guide*.

Figliozi's collected all the information you need to know in this regard. The book has a list of stations sorted by UTC time with program type and the frequency (or "platform," meaning the transmission method) that runs for some 60 pages. Although the book focuses on English language programs from only a select few of the more easily accessed countries (*sans* United States), the listing still contains some 3,300 programs! Had Figliozi gone "all out," the thing would have been as thick as a major metro phone directory and the author would have had to employ half the population of Cleveland to do research. As it is, the listing provides enough listening choices to keep you busy through and beyond the next sunspot maximum.

Also included is a "Classified Program List," a sort of cross reference to the program listing. The programs are divided into many different categories, such as Arts, Culture, and Business; Finance and Economic Development; Current Affairs, Society, Customs, Sites, People and Cultural Values; Everyday Domestic Life; Media and Communications; Ideas, Philosophy and Learning; Environmental Programs, General Documentary, General Interest, and so on. There are over 40 categories, including news, music, drama, quiz, mail-bag, press review, sports, and science. Whatever your particular interest is, it's covered.

But wait, there's more! There's some "how to" information, a UTC Conversion chart, websites of the stations in case you want to access streaming audio via the Internet (Figliozi says an estimated 20,000 stations are now available on the Web). He deals with other listening options as well, such as Sirius/XM satellite services, some clear channel AM outlets and public FM stations which relay the BBC World Service, and the World Radio Network (WRN), which carries international programming from several stations.

Figliozi provides an excellent explanation of the various means by which you can hear international programs, even recommending some receivers with which to achieve it, including the Eton E1XM, the Com One Phoenix Wi-Fi and C. Crane Wi-Fi radios. He also provides web-



The Worldwide Listening Guide by John A. Figliozi is in its fourth edition and is still an excellent international shortwave guide.

sites and other sources for shortwave and Wi-Fi receivers.

There is what I guess you'd call a wrap-up or conclusion that looks at services from the UK, Australia, New Zealand, Ireland, Canada, and South Africa. He notes that Switzerland, Austria, Italy, The Netherlands, and France have either stopped broadcasting in English to North America or dropped shortwave altogether in favor of the Internet. Personally, I will have to be a quite infirm, old(er) man before I get into this Wi-Fi stuff. But when I do, now and then I'll take a break from it (in whatever "funny farm" I'm in) and go wobbling down the halls for exercise. Eventually a nurse will lead me back to my room and then I'll punch up Bhutan to see what's on.

Stay Tuned In

In the meantime, this fine book, now in its fourth edition, is an excellent guide to the endless offerings international radio provides, no matter how you go about accessing it. It measures out at 8 1/2 by 11, runs 112 pages, and is spiral bound so it will lay flat on your radio or computer desk. The suggested retail price is \$24.95. Check it out. ■

Pop'Comm March 2009 Reader Survey Questions

This month we'd like to ask about how the economy is affecting your hobby. Please use the Reader Survey Card and circle all appropriate numbers. We'll pick one respondent at random for a free one-year subscription, or extension, to *Pop'Comm* so don't forget your address. Thanks for participating.

How has the economy affected you personally?

- Things have gotten harder lately1
- Things are about the same2
- I'm actually doing better than a year ago3

How do tough times affect your hobby enjoyment?

- I'm even more engaged in listening so I can de-stress4
- I find I don't have as much time5
- It's about the same6

Have you made any hobby-related purchases within the last three months?

- Yes7
- No8

What are your plans for this year in terms of new expenditures?

- I'm tightening my belt completely9
- I have my normal budget set aside for my hobby needs10
- I'm taking advantage of the sale prices11
- I'm taking a wait-and-see approach12

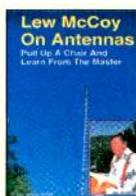
We didn't run a Reader Survey in November or December, so we don't have highlights (or subscription winners!) to share with you from those months. We'll be back with both soon.



Great Books

Back by Popular Demand!



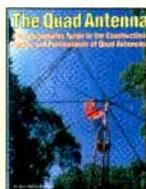


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Romania Roars, Bhutan Is Back, And A New Sudanese Takes To The Airwaves

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

“Considering that it is mired in a seemingly endless war that created the abominable Darfur situation, Sudan is becoming one of the most radio-targeted places on the planet, with yet another support station going active.”

Radio Romania International has finished its long tune-up process. While other European short-wave broadcasters are running for the hills, or rather, the World Wide Web, RRI plows ahead. There are now five 300 kW transmitters, three at Galbeni and two at Tiganesti. There is also a 100 kW unit employed at Saftica (how come you can never find transmitter sites in an atlas?).

Back in the December issue I reflected on Bhutan and the great difficulty involved in logging it, except for a few well-placed individuals. During the few months since, the favored zone has expanded and the Bhutan Broadcasting Service is finding welcoming ears further inland, including a few fortunates in New England and Europe.

If you feel the propagation gods are smiling, you might want to take a shot at BBS on 6035. Although it runs for a considerable length (0000 to 0700 and 0800 to 1600) most recent receptions have occurred around 1200 or 0030. But with daylight/darkness times always changing it's almost guaranteed that those hours will no longer work. Probably we're back to where we started and it will very likely be the spring equinox before we have a chance at Bhutan again. The BBS signal passed up most of the Midwest, certainly including Wisconsin, where yours truly finds himself.

Candela FM in Merida, Mexico, has become active on 6105, trying to make do with a mere 250 watts. Although at the beginning it was weak, somewhat distorted, and not “getting out” very well, at the moment it's quite prominent in the evenings around 0400 and later. It's currently scheduled from 1100 to 0500, sometimes running later. Fairly early in the morning or late evening seems to offer the best chance for hearing it. Reports for Candela FM go to Sistema RASA Yucatan, Edificio Publicentro, Calle 62 No. 508, 97000, Merida, Yucatan, Mexico. Although it's relaying the local Candela FM now, it may very well switch to another domestic outlet sometime down the line.

Radio Vanuatu (7260) is still planning a full return to shortwave. Its regular 10 kW unit is awaiting replacement. Meantime, it's trying to get by with a modified ham radio transmitter. Given that and the lack of logs that have come across my desk, it's safe to say it's not making it very far. We hope that new box arrives soon!

Also in the Pacific, the Solomon Islands Broadcasting Corp. has reactivated its long-disused channel on 31 meters and 9545 has returned, albeit shakily. SIBC is reportedly varying in frequency from as high as 9550 down to about 9541.



Two of the colorful set of native bird QSLs issued by Radio Taiwan International some time ago. (Thanks Richard D'Angelo)



An engineer poses next to the transmitter of Radio Africa, Equatorial Guinea (15190). (Thanks Rich D'Angelo)

On the other hand, 5020, which had been varying down to 5019, seems to have gone silent, although I'm guessing (hoping) that is a temporary situation.

Considering that it is mired in a seemingly endless war that created the abominable Darfur situation, Sudan is becoming one of the most radio-targeted places on the planet, with yet another support station going active. The newest is Radio Dabanga, programming for the Darfur portion of Sudan and using 7315 (Germany) and 13800 via Radio Nederland's Madagascar relay site. It's broadcasting in Arabic and local Sudanese languages from 0429 to 0527.

Trans World Radio, Swaziland, is another station enjoying an upgrade. A new 100 kW transmitter has gone on the air from Mpangela Ranch, about 20 miles from Manzini. It's the third 100 kW unit on duty there. The transmitter was built at HCJB's technology center in Elkhart, Indiana. TWR has been working with the Center for many years on that and other projects.

Reader Logs

Remember, your shortwave broadcast station logs are always welcome. But *please* be sure to double or triple space between the items, list each logging according to its home 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 where's that photo of you at your listening post? You are way overdue!

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 specified English (EE) is assumed.

ALASKA—KNLS, 6150 with *Postcards From Alaska* in progress at 1410. QRM from Taiwan in CC on 6145. (Ng, Malaysia)

ALGERIA—RT Algerienne, 7260 via England with Koran at 0432. (Brossell, WI) 9710 via Skelton at 2212 in AA with alternating M/W and mellow guitar. (Taylor, WI)

ARGENTINA—Radiodifusora Argentina al Exterior, 11710.9 with IS at 0059, into SS ID at 0101 and then their EE pgm. Also Radio Nacional, 15345 with SS ballads at 2250. (Alexander, PA)

ASCENSION ISLAND—BBC Atlantic Relay, 15400 at 1912 with news headlines. (Brossell, WI) 21470 to South Africa at 1610 with interviews of soccer players. (Parker, PA) 1500 with news, *Focus on Africa*. Also 21630 at 1405 in Hausa with a presumed newscast, including EE sound clips. (Schiefelbein, MO)

AUSTRALIA—Radio Australia, 6060 at 1315, 9475 at 0715 and 9660 at 0450 with soccer commentary. Also 15240 at 0355 with music, into news at TOH (Maxant, WV) 11660 at 2121. (Brossell, WI)

ABC Northern Territories Service: 2325-Tennant Creek at 1115 with an interview. (Barton, AZ) 1206 with presumed news. Weak and under noise. (Brossell, WI) 1305 with Australian news. (Strawman, IA) 4910 at 2350 with man in EE. Almost fair at times, but dealing with two distinct WWCR spurs. (Parker, PA) 2310-Alice Springs with pops at 1225, ABC News update. Also 2485-Katherine at 1210 with modern and vintage pops and promos in between. (Schiefelbein, MO)

CVC International, 13685 with CC talk by W at 1215. (Ng, Malaysia)

AUSTRIA—Radio Austria International, 13730 at 1355 commenting on the many emails they've received protesting their planned shutdown. (Maxant, WV)

BANGLADESH—Bangladesh Betar, 7250 with news by M, music bridge at 1230, W with subcontinental vocals. Some co-channel ARO chatter. (Wilkner, FL)

BELARUS—Radio Station Belarus, 7135 at 2100 with opening EE anmts, news at 2101, //7360 was weaker. (Alexander, PA)

BOLIVIA—Radio Santa Ana, Beni, 4451 at 2347 with a fairly strong carrier but just traces of music and M SS anncr. (Parker, PA)

Radio San Miguel, Riberalta, 4699.3 at 2240 with M/W SS talks, guitar bridges. (Parker, PA)

Radio Yura, Yura, 4716.7 at 0135 with SS talks. (Alexander, PA) 2354 with M/W discussion, M crooner. (Parker, PA)

Radio Tacana, La Paz, 4781.5 at 2230 in SS with disco-type things, f/by M/W SS talks. (Parker, PA)

Radio Santa Cruz, Santa Cruz, 6134.8 with SS talks, comls, ballads, mentions of Santa Cruz. Closed at 0114. (Alexander, PA)

BOTSWANA—VOA Relay, Moepeng Hill, 4930 with news at 0302 and 12080 with world news at 1630. (Brossell, WI) 4930 with EE ID at 0330. Also 9885 with news at 0402. (Ronda, OK)

BRAZIL (*All in PP—gld*)—Radio Mundial, Sao Paulo, 3325 at 0513, very weak but in the clear. (Parker, PA)

Radio Cultura Araquara, Sao Paulo, (t) 3363.8 at 0427 M talk to TOH, jingle and possible ID, continued talk by same man. Very poor level. (Taylor, WI)

Radio Imaculada Conceicao, Campo Grande (p) 4754.9 at 0308 with ballads under CODAR. Poor level but better than usual. (Strawman, IA) 0255 with M/W ancrs with some kind of scripted message. (Taylor, WI)

Radio Difusora do Amazonas, Manaus, 4805 at 0025 with M ancr and music. RTTY and CODAR QRM. (Parker, PA)

Radio Clube do Para, Belem, 4885 at 0355 with African-influenced Brazilian music, ID at TOH. (Taylor, WI) 0505 with pops, high-life and slow songs. (Parker, PA)

Radio Difusora Acreana, 4885 at 0255 with long talk, snips of songs. (Parker, PA)

Radio Novo Tempo, Campo Grande, 4895 heard at 0212 with M ancr and slow songs. (Parker, PA)

Radio Anhanguera, Araguaina, 4905 at 0202 with easy listening music. (Parker, PA)

Radio Difusora Macapa, Macapa, 4915 at 0357 with Brazilian music, comml, ID, music with short anmts, more music. (Taylor, WI) 0417 with pops, lots of DJ chatter. (Ronda, OK) 0512 with PP versions of '50s songs. (Parker, PA)

Radio Educacao Rural, Tefe, 4925 at 0150 with M/W over slow piano, reverb ancr. Off at 0200. (Parker, PA)

Radio Capixaba, Vitoria, 4935 at 0157 with M hosting slow songs. (Parker, PA)

Radio Mundial, Osasco, 4974.8 at 2303 with boisterous M speaking. (Parker, PA)

Radio Brazil Central, Goiania, 4985 at 0140 with pops and M host. (Parker, PA)

Help Wanted

We believe the "Global Information Guide" offers more logs than any other monthly SW publication (430* shortwave broadcast station logs were processed this month!). Why not join the fun and add your name to the list of "GIG" reporters? Send your logs to "Global Information Guide," 213 Forest St., Lake Geneva, WI 53147. Or you can email them to gdex@wi.rr.com. (See the column text for formatting tips).

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

Radio Aparecida, Aparecida, 5035 at 2245 with religious talks and songs. (Parker, PA) 6134.9 (p) at 0045 mixing with presumed Radio Santa Cruz. Local anmts, commls, romantic songs. (Strawman, IA)

Radio Nacional Amazonia, Brasilia, 11780 at 0205 with talk, light instls. (Alexander, PA) 0403 with M anc and phone-in pgm. (Barton, AZ)

BULGARIA—Radio Bulgaria, 7200 at 0430 with IS, ID and (p) news in BB. (Brossell, WI) 15700 in BB at 1445, closing at TOH. (Barton, AZ)

Radio Varna, 6000 at 2230 with BB talk, IDs, some local light music but mostly just continuous talk. (Alexander, PA) (*This is Sun—Mon only.—gld*)

CANADA—Radio Canada International, 7230 via Vatican at 0340 with talks in AA, also 11790 via Madagascar at 0343 in AA. (Brossell, WI) 9880 via China with *The Link* at 0005. (Ng, Malaysia)

CFRX, Toronto, 6070 relaying CFRB with talk show, traffic report at 1835. (Parker, PA)

CHU, Ottawa, 7335 time signal at 1750. (Maxant, WV)

CHAD—Radiodifusion Television Tchadienne, N'Djamena, 4905 at 0502 with M anc and highlife music. (Parker, PA) 6165 with FF talks, Afro-pops, off with national anthem at 2234. (Alexander, PA)

CHINA—China Radio International, 7350-Kashi in EE at 2305, seemingly //6040 via Sackville. (Schiefelbein, MO) 9450-Shijiazhuang at 1442 in RR with mostly M/W talks and music bridges. Also 9525-Shijiazhuang in RR at 1418 with anc, musical bridge, M/W anc. (Taylor, WI) 9880-Kunming in JJ at 1443. (Strawman, IA) 11965-Kashi with EE news at 1634. Also 11975 Mali Relay in FF at 2134. (Brossell, WI) 17720-Kashi with W and news in GG at 0705. (Ng, Malaysia)

Central Peoples Broadcasting Station/China National Radio, Qinghai PBS, Xining, 4220 at 2326 in listed Tibetan. Interesting pops, long conversation between two people who sounded like they were on the phone, listed for seasonal use only and first time heard here since last winter. (Schiefelbein, MO)

Xingjiang PBS, Urumqi, 4980 at 0102 in listed Uighur service but too weak for any details. (Strawman, IA)

Guangxi PBS, Nanning, 5050 at 2259 in VV 9820 at 2257 in VV, ID in Mandarin at 2300, then possible news. (Schiefelbein, MO)

Voice of Jinling, Shanghai, 5860 in Mandarin at 1246 with 80s pop and new wave things, string of promos on both sides of 1300. (Schiefelbein, MO)

Nei Menggu PBS, Hohhot, 9750 at 2344 in listed Mongolian. 5 + 1 time pips at 0000, possible news. (Schiefelbein, MO)

CPBS, Xi'an, 11835 in CC at 1245. (Brossell, WI)

Firedrake jammer, 9000 at 1312 reported against Sound of Hope. (Taylor, WI) 9310 apparently against RFA at 1215. (Parker, PA)

11635 covering Radio Taiwan at 1154 and 11805 at 1243 on VOA Northern Marianas. (Brossell, WI)

COLOMBIA—La Voz del Guaviare, San Jose de Guaviare, 6035 (p) at 0115. Several "RN" mentions. (Strawman, IA) 0250 with local romantic ballads. Off at 0303. (Alexander, PA)

Marfil Estereo, Puerto Lleras, 5910 at 0040 with SS ballads. (Parker, PA)

CROATIA—Voice of Croatia/Hrvatski Radio, 3985 in Croatian at 0435. (Parker, PA) 6165 at 0700 with 3-minute EE news bulletin, //9470, 11690 both via Germany. 7375 at 0300 with *Croatia Today*. Also 9830 at 1100 with short EE news, Croatian talk and music. (Alexander, PA)

CYPRUS—Cyprus Broadcasting Corp. 6180nf (ex-5930) at 2215 with Greek music and talk, //7210 and 9760. (Alexander, PA)

CZECH REPUBLIC—Radio Prague, 7345 with EE news at 0300. (Brossell, WI) 17540-Litomyšl to Central Africa in FF at 1300. (Parker, PA)

DJIBOUTI—Radio Djibouti, 4780 at 0300 in AA with sign on, mostly atop co-channel Radio Cultural Coatan. (Schiefelbein, MO) 0325 with traditional unaccompanied African songs. (Ronda, OK) 0345. Good despite CODAR QRM. (Strawman, IA)

ECUADOR—HCJB Digital, 11705 at 1515 in PP. Listed as 4 kW to Brazil but only had intermittent audio and thus a partial decode. (Schiefelbein, MO)

Radio el Buen Pastor, Saraguro, 4814.9 at 2350 in SS with M talk but nearly obliterated by CODAR. (Parker, PA)

HD2IOA, Guayaquil, 3810 with time pips and M anmts at 0250. (Strawman, IA)

EGYPT—Radio Cairo, 6255 with EE news and AA songs from 2210 tune. (Ng, Malaysia)

ENGLAND—BBC, 3255 via Meyerton with *Newshour* at 0336 and 9505 via Al Seela, Oman, in Hindi at 1449. (Taylor, WI) 3255 via South Africa at 0351 and 5875-Rampisham at 0520. (Parker, PA) 3255 at 0340 with African news and 9650 via South Africa at 0420 and 9915 via Cyprus in AA at 1445. (Strawman, IA)

Bible Voice Broadcasting, 6030 via Germany at 0030 with *The Word of God*. (Ng, Malaysia) 12140 via Juelich in listed Farsi at 1535. (Brossell, WI)

EQUATORIAL GUINEA—Radio Nacional, Bata, 5005 at 2245 with Afro-pops, SS anmts, to 2256 close, sign off with national anthem. (Alexander, PA) Heard them closing down with fanfare anthem and abruptly off at 2357. (Parker, PA)

Radio Nacional, Malabo, 6250 at 0505 with variety of African choral music, Afro-pops, SS anmts, ID. (Alexander, PA) (*Sign on time seems to vary by several minutes.—gld*)

ETHIOPIA—Radio Ethiopia, 9704 at 1350 with ID and into music. (Maxant, WV) 1950 to 2101 off. Afro-pops, Amharic talk, possible news at 2000. Then a variety of US



I'll bet he isn't tuned to Brother Stair or the University Network! (Thanks Rich D'Angelo)

pop ballads, rap, country. Off with national anthem at 2059, //7110. (Alexander, PA)

Radio Fana, 6110 from 0255 sign on, IS and ID at 0300 and into instl music, HOA-style instrumentals. Fair to good but very weak on 7209.8. (Alexander, PA)

Voice of Peace and Democracy, 7165 via Radio Ethiopia transmitters, 0348 to 0430* HOA music and anmts in Tigrinya. Mostly continuous talk. Fair to good on //9560. Listed for M-W-F only. (Alexander, PA)

ERITREA—Voice of the Broad Masses, 7100 at *0354. Talk at 0400 when covered by a noise jammer. Also 7175 at *0354, talk, HOA music. (Alexander, PA)

FRANCE—Radio France International, 11615 at 1610 with reports on an "AIDS-free Africa." (Fraser, ME) 15160 at 0510 on French women captured by rebels. Also 17800 at 1202 and *Music of France* (Maxant, WV) 15365 in AA at 1913. (Brossell, WI)

GERMANY—Deutsche Welle, 6075 via Al Dhabbaya, UAE, at 2216 in GG with W and correspondent reports. (Taylor, WI) 7245 at 0430. (Maxant, WV) 7265 Sri Lanka Relay with *Newslink* at 0010. Also 9505 via England with news in GG at 0105. (Ng, Malaysia) 17800 Rwanda Relay in listed Hausa at 1320. (Brossell, WI)

GREECE—Voice of Greece, 7475 at 0330 with talks in Greek. (Brossell, WI) 9420 with Greek vocals at 0420. (Maxant, WV)

GUAM—Adventist World Radio/KSDA, 15260 with *Wavescan* at 1130. (Ng, Malaysia) 15320 with religious pgm monitored at 2237. (Ronda, OK)

GUATEMALA—Radio Cultural Coatan, San Sebastian, 4780 monitored at 0245 with SS songs, "Radio Coatan" IDs. QRMed by Radio Djibouti from its 0300 sign on. (Alexander, PA)

HONDURAS—HRMI Radio Misiones Internacionales, Comayagua, 3340 heard at 0502 with M in SS, upbeat and slow songs. (Parker, PA)

Radio Luz y Vida, Santa Barbara, 3250 at 0346 with M talking in SS. (Parker, PA)

HUNGARY—Magyar Radio, 3975-Jaszberny at 0442 in HH with talks and classical music bridges. (Parker, PA)

INDIA—All India Radio, 9705-Panaji (Goa), EE news at 0000, f/by Hindi songs at

0005. (Ng, Malaysia) 9870-Bangaluru at 1506 in Hindi with South Asian pops, ad string including occasional EE words, possible news at 1515, //9425 slightly weaker. (Schieffelbein, MO) 9870-Bangaluru in Hindi at 1630. (Brossell, WI) 1342 with armchair copy of Hindi vocals. Also 11585-Delhi with listed Sindhi pgm at 1320 airing non-stop vocals with tabla and sitar. (Strawman, IA) 11620 with news heard at 1745 and into vocals. (Maxant, WV)

INDONESIA—Voice of Indonesia, 9525v at 1255 in unid language, then into EE pgm at 1305. (Alexander, PA) 1308 with EE news, deep fades. (Strawman, IA)

Radio Republik Indonesia (*all in II—gld*)—3976, Pontianak at 1311, 3987, Manokwari at 1350 with pop ballads, 3995, Kendari, M in extended talk at 1247, 4790, Fak Fak, at 1332 with pops, 4870v, Wamena, with pops at 1302 and 4750v, Makassar, with pops at 1335. (Strawman, IA)

IRAN—Voice of Islamic Republic of Iran/Voice of Justice, 6120 with Koran at 0135 and into news of Palestine. (Maxant, WV) 13645 at 1200 with CC ID and Koran. (Ng, Malaysia) 15085 in French at 1917. (Brossell, WI)

ISRAEL—Galei Zahal, 6973 in HH with rock at 0020. (Parker, PA) 2245 with dance and techno things, comments by M DJ, presumed news at 2300. (Schieffelbein, MO)

ITALY—Italian Radio Relay Service, 9510 via Slovakia with a pgm on publications for children, clear IRRS ID heard at 1246. (Brossell, WI)

JAPAN—NHK/Radio Japan, 6110 via Canada at 0520 with song and into discussing fish. Also 11985 at 1345 JJ folk songs and talk on North Korea. (Maxant, WV) 6190-Yamata, in RR at 1342 with mostly M talk, occasionally a woman. (Taylor, WI) 11705 with *Hello Dari Tokyo* in II at 1335. (Ng, Malaysia) 11740 via Singapore in CC at 1235. (Brossell, WI)

JORDAN—Radio Jordan, 9830 in AA at 1925. (Brossell, WI)

KUWAIT—Radio Kuwait, 11990 at 1800 with time pips, EE ID, anthem, opening EE anmts, pgm on teachings of Islam, variety of music, more news at 1830. (Alexander, PA)

LATVIA—"Latvia Today," 9290 heard at 1105 with talks and features on Latvia. (Alexander, PA)

LIBERIA—ELWA, 6070 at 2245 with religious music to 2300 sign off with anthem under a strong Romania. Off at 2303. (Alexander, PA)

LIBYA—Voice of Africa, 11860 at 1947 with talks in listed Swahili. (Brossell, WI) 21695 in AA at 1405, occasional mentions of Libya. (Ng, Malaysia) 1425 in EE on forthcoming African summit. (Schieffelbein, MO)

LITHUANIA—Radio Vilnius, 7325nf at 2334 with EE news, ID, sign off with IS. Also 9875 at 2359 sign on in Lithuanian, ex-11690. (Alexander, PA)

MADAGASCAR—RTV Malagasy, Antananarivo (p) 3287v at 0431 in Malagasy, two men in possible interview, poor. (Taylor,

WI) 5010 at 0201 sign on with choral anthem, opening anmts in Malagasy, f/by a variety of choral music and local pops. (Alexander, PA) 0305 with group vocals. (Brossell, WI)

MALI—RTV Malienne, 7285v at *0800 sign on with flute IS and FF anmt, vernacular at 0801, //9635 came on the air at 0803, 5995 at 0750 to 0800 close. FF anmt at 0800 and off, also 9635 at 0800 open with FF anmt, into vernacular. (Alexander, PA)

MAURITANIA—Radio Mauritanie, Nouakchott, 4845 at 0420 in vernacular, possibly listed Wolof or Soninke. M/W talk, occasional mentions of "Jihad." (Parker, PA) 0513 with Koran. (Ronda, OK) 7245 at *0800 open, AA talk, local music. Sign on time varies. (Alexander, PA)

MALAYSIA—RTM Traxx FM, 7295 with EE phone-in pgm at 0020. (Ng, Malaysia)

MEXICO—Radio Transcontinental/XERTA, Mexico City, 4800 at 0517 in SS with live concert, electric guitar. (Parker, PA) 0549 in SS with contemporary ballads and mellow numbers, ID at 0600. (Taylor, WI)

Radio Universidad/XEQ, San Luis Potosi, 6045 at 1216 with continuous classical music, finally a string of anmts at 1256. Seems irregular. (Schieffelbein, MO)

Candela FM, Merida, 6105v at 1230, often with distorted signal and often with confusing mentions of other stations and cities. (Wilkner, FL)

Radio Educacion, Mexico City, 6185 at 0050 with SS talks, light instl, ballads. (Alexander, PA)

NETHERLANDS—Radio Nederland, 9345 Madagascar Relay with *Network Europe* at 1500. (Ng, Malaysia) 11665 Madagascar Relay at 1800 with *Newsline*, ID at 1814. (Fraser, ME)

The Mighty KBC, via Lithuania, 6055 at 2202 with EE ads, jingles, '50s rock and roll, disco. (Parker, PA)

NEW ZEALAND—Radio New Zealand International, 6170 at 1305 with news from National Radio, 9765 at 0730, also 15720 at 0430. (Maxant, WV) 9765 with EE news at 0900. (Ng, Malaysia)

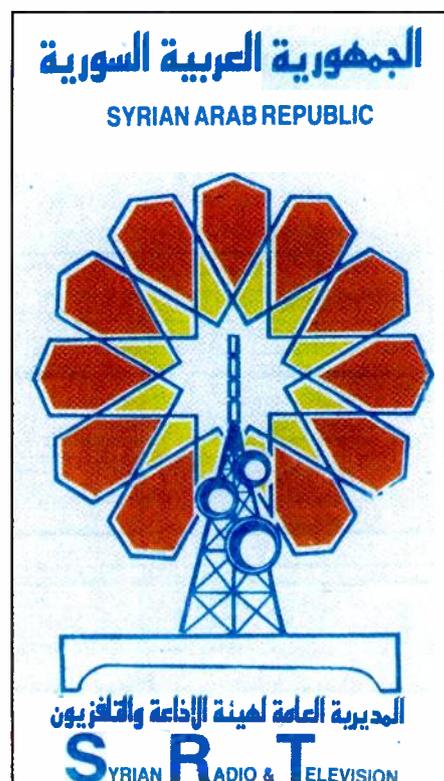
NIGERIA—Radio Nigeria, Kaduna, 4770 at 2252 in vernacular and an Abba tune. (Parker, PA)

Voice of Nigeria, 9690 at 0759 sign on with opening theme, vernacular talk. (Alexander, PA) 1340 on Nigerian elections. (Maxant, WV)

NORTH KOREA—KCBS, Pyongyang, 2850 with apparent news in KK at 1310. (Strawman, IA) 9665v at 1305 in KK with mostly orchestral music, and communist opera with female vocals. (Schieffelbein, MO)

Voice of Korea, 9335 at 1310 seeing Obama as being favorable to Korea. (Schieffelbein, MO) 1349 in EE. W in KK at 1355, quick EE ID, usual music and schedule in EE. (Taylor WI) 11710 at 1345 with EE service, local music and news. //9335 was very weak. (Alexander, PA) 1549. Also 11735 at 1235 with KK victory songs. (Brossell, WI)

OMAN—Radio Sultanate of Oman,



15355 with EE news by W at 0300. (Ng, Malaysia)

OPPOSITION—Nippon no Kaze (to North Korea), 9690 at 1523 in JJ and KK. W seeming to read a list over a slow ballad. Postal and Internet addresses, music interlude and off at 1530. (Taylor, PA)

Radio Dabanga (to Sudan), 7315 via Germany at 0435 with mostly continuous HOA music, some AA anmts and short talks. (Alexander, PA)

Voice of Tibet (to China), 17550 via Madagascar at 1424 with M talk in Tibetan, musical notes and off at 1429. (Parker, PA)

Radio Solh (to Afghanistan), 17700 at 1230 with ME songs. (Brossell, WI)

SW Radio Africa (to Zimbabwe), 11745 nf (ex-12045) with talk about human rights violations, cholera outbreak, IDs. (Alexander, PA)

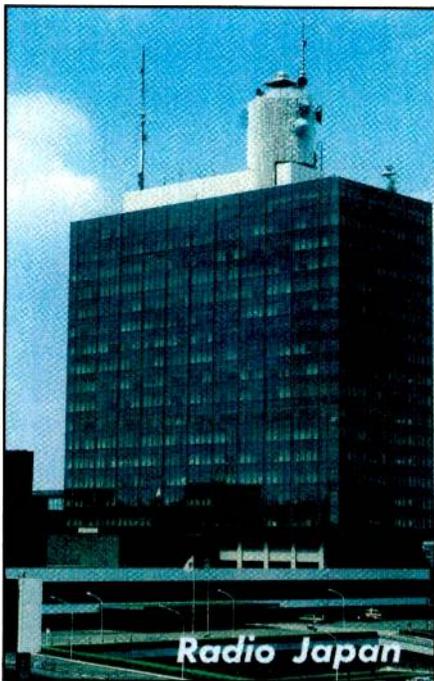
Radio Farda (to Iran), 6115 via Germany at 0005, //5860 via Sri Lanka and 7145 via Germany with ME pop music. (Alexander, PA) 7280 at 0318 with songs and talks in listed Farsi. (Brossell, WI) 15410 via Germany at 1515. (Barton, AZ)

Voice of the People (to North Korea), 6517 at 1105 in KK. Local music. Weak but readable. //6600. (Alexander, PA)

Southern Sudan Interactive Radio, 15325 at 1302 with frequent doorbell SFX, local music to 1330 close. Similar but parallel to 15250. Also 17745 nf (ex-17690) at 1500 with EE talks on Sudan. Listed for M-W-F only. (Alexander, PA)

Shiokaze (to North Korea), 6020 with EE talks at 1316. (Ng, Malaysia)

Voice of the Wilderness (to North Korea), 9330 at 1350 with W and talk in KK. (Ng, Malaysia)



NHK Headquarters in Tokyo.

Radio Free Asia, 11605 via Northern Marianas with talk in listed Tibetan at 1300. (Brossell, WI) 1400 with EE ID and into VV. (Ng, Malaysia)

PAPUA NEW GUINEA—Radio Madang, Madang (New Guinea), 3260 heard at 1200 with the PNG anthem, then off. (Schiefelbein, MO)

Radio West New Britain, Kimbe (New Britain), 3235 at 1130 with island-type music, M anc, seemed //to 3365, but not to 3335. (Schiefelbein, MO)

Radio East New Britain, Rabaul (New Britain), 3385v at 1130 with pops. Weak audio, strong carrier. (Strawman, IA)

Radio East Sepik, Wewak, (New Guinea), 3335 at 1245 in Tok Pisin/EE, EZL songs to anthem. Several minutes of open carrier at 1300, then music again. Abruptly off at 1313. (Schiefelbein, MO)

PERU—Ondas del Huallaga, Huanuco, 3330 fading in regularly around 1025–1040 with rapid SS by W. No music. (Wilkner, FL)

Radio Maranon, Jaen, 4835v with SS anmts and ballads at 1045. (Alexander, PA)

Radio Cultural Amauta, Huanta, 4955, SS talks at 2300, OA music, promos and ads. (Alexander, PA) 2310 with long religious monologue, also W at times. (Parker, PA)

Radio Haunta 2000, Huanta, 4747 heard at 0010 in SS with M/W talk, rooster crows. (Parker, PA)

Radio Atlantida, Iquitos, 4970 at 2308 with spectacular pgm of “musica del campo.” M with clear ID at 2320. (Parker, PA)

Radio Vision, Chiclayo, 4790, 0315 with SS preaching. (Ronda, OK) 0505 with M in SS, reverb and guitar music bridges. (Parker, PA) 0605 with contemporary Andean music, M talking. ID at 0601. (Taylor, WI)

PHILIPPINES—FEBC International, 9400 at 1110 with talks in CC. (Brossell, WI) 15325 in CC at 0730. (Ng, Malaysia)

PIRATES—WKNR relay, 6925u, variable, at 2057 with jingles, mention of Andy Walker, C&W number. (Lobdell, MA)

Radio Azteca, 6925u at *1908 with Bram Stoker and Program #16. Came on immediately after Old Turkey Radio (below), seemingly from same transmitter. Usual Bullwinkle show audio bridges, other spoofs and phony interviews. Belfast address. (Zeller, OH)

Old Turkey Radio, 6925u monitored at 1530 and 1825 with Thanksgiving-related fare. Better copy last week when ancd address of oldturkeyradio@yahoo.com (which bounced). (Zeller, OH)

WAHR, 6925u monitored at *0122–0136* with Halloween pgm, computerized voice, scary noises.

Used slogan of “Automated Halloween Radio.” (Zeller, OH)

Zex Chettel Alien Broadcast, 6925u at 0209. Aliens will be at Obama’s Inauguration, after which they will take over the world. Criticized all the candidates. Ended message at 0212 without giving an address. (Zeller, OH)

WTCR, 6925u at *0104 with usual trumpet fanfare and into usual rock and “Twentieth Century Radio” slogan. (Zeller, OH)

WTPR, 6925u at *1715, *1850, *1911 and *1933. Slogan of “Tire Pressure Radio” and advice to turn your radios off or have flat tires. No address ancd. (Zeller, OH)

WTKY, 6925u at *1404, later in progress at 1809. Many gobbling and other Thanksgiving bits. Slogan of “All turkey, all the time.” No address ancd. (Zeller, OH)

WMR, 6925u with sign on noted at *2729, *1904 and *1925. Slogan: “We Monkeys Radio.” It came on immediately after a WTPR broadcast, apparently from same transmitter. No address ancd. (Zeller, OH)

WBNY, 6925 at *2208 with last minute Election Day plea for votes for Commander Bunny. (Zeller, OH)

James Bond Radio, 6925u monitored at 1755 with some audio clips from Bond movies. (Zeller, OH)

Ann Hoffer Radio, 6925am at 2212 with live, acoustic renditions of the Doors and “Werewolves of London.” (Schiefelbein, MO)

WPON—The Weapon, 6925 at 2150 with heavy metal, Onion Radio News. Usual gunshots ID. (Lobdell, MDA)

Old Vampire Radio, 6925u at *2252 with various Halloween content, sketches and stories. No address. (Zeller, OH)

WJFK clone, 6925u at 2139, also 2304 with an old JFK speech, cheering crowd. The second broadcast was a different JFK speech. No IDs. (Zeller, OH)

Wolverine Radio, 6925u at 0130 and 0408. Classic rock and the jazz on the latter pgm, some of which veered into almost New Age. Gave the usual Wolverine ID at 0446 close. No address ancd. (Zeller, OH)

Outhouse Radio, 6925u monitored at *0048 with country numbers, two renditions of the old CB “Convoy” song. No address copied. (Zeller, OH)

Northwoods Radio, 6925u at 1235 with Native American music. At close, “we now return you to your regularly scheduled static.” (Lobdell, MA)

Undercover Radio, 6925u at 0200 with a repeat of Dr. Benway’s 2005 Halloween show featuring musings on his experiences with life after death. (Schiefelbein, MO)

POLAND—Polish Radio, 6015 via Germany at 1850 in EE on Europe’s reaction to Obama. Also 9450 via Germany at 1337 with financial news. (Fraser, ME) 1310. (Maxant, WV)

PORTUGAL—RDP International, 21655 to West Africa and South America at 1526 in PP. (Parker, PA)

ROMANIA—Radio Romania International, 15105 in EE with *Focus* at 1308. (Fraser, ME) 1315 on Bucharest hospitals in a pilot pgm. (Maxant, WV) 17780 on clock making at 0650. (Ng, Malaysia)

RUSSIA—Voice of Russia, 7200–Yakutsk Radio in RR at 1214, 7250 via Gavar (Armenia) in RR at 0254, 9435–Petropavlovsk with classical music at 0440 and 12040–Moscow beginning FF at 1600. (Brossell, WI) 7255–Vladivostok in CC at 1115. (Parker, PA) 7260–Krasnodar at 0245

This Month’s Winner

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

This month’s prize winner is **Joe Wood of Greenback, Tennessee**, who now has a 2009 edition *The World Radio TV Handbook* at his command, courtesy of Watson-Guptill Publications. If you tune around the shortwave bands, you must have a copy of the current *WRTH* at hand. It’s the law! (Or it should be!) Thanks to Watson-Guptill for its generosity.

In Times Past...

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

TURKEY—Voice of Meteorology, Ankara, 6890 in TT at 0457 on December 12, 1971. Running music and weather information with 2.5 kW. (Dexter, WI)

with folk music, and 7295-Novosibirsk in CC at 1427. (Strawman, IA) 6155 with DX and mailbag pgm at 0350 and 9480 at 0340. (Maxant, WV)

SAO TOME—VOA Relay, Pinheira, 4960 with Aafiyah Darufur (Hello Darfur) pgm in AA at 0412. (Taylor, WI) 0431 with EE news. (Parker, PA) 9830 in FF at 2115. (Brossell, WI)

SAUDI ARABIA—BSKSA, 15250 at 1215 in EE on dental health. Also 17615 with Koran at 0920. (Ng, Malaysia) 17560 in AA at 1639. (Brossell, WI)

ST. HELENA—Radio Saint Helena, Jamestown, 11092.5u. The annual November 15 special best noted at 2000 with recognizable tunes and sometimes intelligible speech during the Japanese beam, good for the European segment. Then a big nose dive during the supposed switch to North America. (I learned later via email that they were late.) Ended transmission at 2344. (Schiefelbein, MO) 2025 to 2345 mostly excellent reception except for big fade from 2230–2246. They changed from overseas SW programming to regular local format but continued on SW to 2345. (Parker, PA) 2025 with low rumble and distorted signal. (Wilkner, FL) 2115 various music, message from the Postmistress, shoutouts to various people. Signal on the North American beam varied from good to very poor. (Taylor, WI) 2327 announcing close but stayed on until 2345. (Barton, AZ)

SERBIA—International Radio of Serbia (via Bosnia—gld), 6190 with EE features at 0115. (Maxant, WV)

SOUTH AFRICA—Channel Africa, 3345 at 0336 with M in EE under strong motorboat QRM. (Taylor, WI) 0406 with EE news. (Parker, PA) 7390 at 0345 with talks in FF. (Brossell, WI)

Radio Sondergrense, 3320 at 0401 with Afrikaans talks, music bridges. (Parker, PA)

SOUTH KOREA—KBS World Radio, 9650 via Canada at 1220 on prospects for the global warming summit. (Maxant, WV)

SPAIN—Radio Exterior de Espana, 3350 Costa Rica Relay in SS at 0411. (Parker, PA) 5970 in FF at 2320. (Ng, Malaysia) 6055 in EE at 0000. (Fraser, ME) 21570 in SS at 1617 and 21610 in SS at 1620. (Parker, PA) 21610 in SS at 1415. //21540 poor and 21570 fair. (Schiefelbein, MO)

SRI LANKA—Sri Lanka Broadcasting Corp., 7190 at 1310 in Hindi. South Asian music with ancr between long selections.

(Taylor, WI) 15745 with the *Back to God Hour* at 0230. (Ng, Malaysia)

SWAZILAND—Trans World Radio, Manzini, 3200 local music, listed in Ndebele at 0305. Also 3240 in listed Shona at 0325. (Strawman, IA) 3240 in listed Ndaui at 0334. Also 4775 in Lomwe at 0349 (Taylor, WI) 0337. (Parker, PA) 0338. (Ronda, OK)

SWEDEN—Radio Sweden, 9400 with *Weekend* at 1400. Same pgm on 11550. (Ng, Malaysia)

TAIWAN—Radio Taiwan International, 11850 via France at 1705 on future trade with mainland China. (Fraser, ME)

TANZANIA—Voice of Tanzania, 11735 (Zanzibar) at 1801. Heard on my Grundig G5 on a rural road in extreme SW Iowa. The 1800 best has never been heard at home in Des Moines. (Strawman, IA) 1815 in Swahili, M with phone-ins. (Parker, PA)

TURKEY—Voice of Turkey, 5960 in EE at 2317. (Fraser, ME) 5975 at 0335 on teen vandalism. (Maxant, WV) 7180 at 2145 with feature on Republic Day. (Ng, Malaysia)

UKRAINE—Radio Ukraine International, 7440 with DX pgm monitored at 0337. (Brossell, WI)

UNITED STATES—Voice of America, 6045 Thailand Relay in Mandarin. Poor at 2300 close. (Ronda, OK) 7225-Thailand in listed KK at 1217, 9310 Kuwait Relay in listed Pashto at 1225 and 12110 Sri Lanka Relay in listed Farsi at 1530. (Brossell, WI) 7235 Northern Marianas Relay in KK at 1422. Also 9680 Philippines at 1359 with singing VOA ID and into CC. 9705 Northern Marianas in listed Cantonese at 1441 and 12040 Philippines in CC at 1110. (Strawman, IA) 9555 Philippines in Korean at 1452. (Taylor, WI) 12040 at 1110 in CC. (Ng, Malaysia)

AFRTS/AFN, 4319-Diego Garcia at 2225 with *NPR News*. (Parker, PA)

Family Radio/WYFR, 3230 via South Africa at 0522. (Parker, PA) 5950 at 2300. (Fraser, ME) 9280 via Taiwan in CC at 1108 and 15760 via Germany in listed Turkish at 1858. (Brossell, WI) 7165 via Petropavlovsk-Kamchatka at 1400. (Strawman, IA) 9615 via Irkutsk in listed Indonesian at 1220 and 12065 via Armavir in listed Urdu at 1520. (Brossell, WI)

WEWN, Vandiver, 5755 at 1210. (Maxant, WV)

Trans World Radio, 7215 via South Africa at 0328. (Strawman, IA)

Adventist World Radio, 3345 via South Africa at 0405. (Maxant, WV)

KOA, Denver, 25950 (FM) studio feed at 0224 with Rush Limbaugh and "Timesaver Traffic" report. (Schiefelbein, MO)

YEMEN—Republic of Yemen Radio, 9780 at 2138 in AA with pleasant, traditional acoustic guitar music and vocal accompaniment. 2201 switched to phone chat and ME pops. (Schiefelbein, MO)

ZAMBIA—The Voice-Africa, 4965 at 0215 reading endless lists of measurements, something to do with various sports complexes. (Parker, PA) 11590 at 1850 with "Hey

Africa, we want to hear from you." Then ID for CVC f/by slogan "One life, one way Africa." (Brossell, WI)

ZIMBABWE—Zimbabwe Broadcasting Corp. 3396 at 0333 with unaccompanied African choral music. (Ronda, OK) Weak at 0342 with music and apparent comment. (Strawman, IA)

And that's the story for this time. A barrage of thanks to the following who attended the party this month: Brian Alexander, Mechanicsburg, PA; George Zeller, Cleveland, OH; Mark Schiefelbein, Springfield, MO; Jerry Strawman, Des Moines, IA; Robert Brossell, Pewaukee, WI; Rick Barton, Phoenix, AZ; Peter Ng, Johor Bahru, Malaysia; Charles Maxant, Hinton, WV; Chris Lobdell, Tewksbury, MA; Richard Parker, Pennsburg, PA; Robert Wilkner, Pompano Beach, FL; Mark Taylor, Madison, WI; Jim Ronda, Tulsa, OK; and Robert Fraser, Belfast, ME. Sincere thanks to each one of you.

Until next month, good listening! ■

WorldRadio

is now part of the CQ family!

**Here's a peek at a few
of the columns
scheduled for the
March issue of
WorldRadio Online**

- * Trail-Friendly Radio
- * FM/VHF/Repeaters
- * Rules & Reg
- * Propagation
- * Aerials

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BROADCASTING

World Band Tuning Tips

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	4985	Radio Brazil Central	PP	0330	6185	Vatican Radio	RR
0000	4747	Radio Huanta 2000, Peru	SS	0330	6110	Radio Tirana, Albania	
0000	7265	Voice of Germany, Sri Lanka Relay		0400	3345	Adventist World Radio, via South Africa	
0000	6200	Radio Bulgaria	RR	0400	9650	BBC, England, via South Africa	
0000	9680	Radio Thailand		0400	7260	Radio Algerienne, Algeria, via England	AA
0030	5035	Radio Aparecida, Brazil	PP	0400	3975	Magyar Radio, Hungary	HH
0030	7145	Radio Farda, USA	Farsi	0400	3340	Radio Misiones Internacionales, Honduras	SS
0030	9755	Radio Canada International		0400	11690	Radio Okapi, Congo, via South Africa	FF/vernacular
0100	6135	Radio Santa Cruz, Bolivia	SS	0400	9420	Voice of Greece	Greek
0100	6973	Galei Zahal, Israel	HH	0400	7100	Voice of the Broad Masses, Eritrea	Tigrinya
0100	5910	Marfil Estereo, Colombia	SS	0400	6020	Voice of Turkey	
0100	4815	Radio El Buen Pastor, Ecuador	SS	0400	7190	RT Tunisienne, Tunisia	AA
0100	4700	Radio San Miguel, Bolivia	SS	0400	5945	Deutsche Welle, via Portugal	
0100	5830	Radio Ukraine International	Ukrainian	0400	9515	Radio Romania International	
0100	6145	Radio Romania International		0400	7175	Radio Sultanate of Oman	AA
0100	15180	Voice of Korea	SS	0430	3985	Croatian Radio	Croatian
0100	7230	Radio Slovakia International		0430	7200	Radio Bulgaria	BB
0100	4915	Radio Anhanguera, Brazil	PP	0440	9435	Voice of Russia	
0130	6120	VOIRI/Voice of Justice, Iran		0500	5875	BBC, England	
0200	6035	La Voz del Guaviare, Colombia	SS	0500	4885	Radio Clube do Para, Brazil	PP
0200	4799	Radio Cultural Coatan, Guatemala	SS	0500	6010	Radio Japan, via Canada	
0200	4755	Radio Imaculada Conceicao, Brazil	PP	0500	6250	Radio Nacional, Equatorial Guinea	SS
0200	4790	Radio Vision, Peru	SS	0500	4905	RN Tchadienne, Chad	FF
0200	6050	HCJB, Ecuador	SS	0500	5965	Vatican Radio	
0200	4052.5	Radio Verdad, Guatemala	SS	0500	7185	Radio Sondergrense, South Africa	Afrikaans
0200	7250	Voice of Russia		0500	7150	Voice of Russia	
0200	5025	Radio Rebelde, Cuba	SS	0500	9745	Channel Africa, South Africa	
0300	6890	Radio Fana, Ethiopia	Amharic	0500	6110	Radio Japan, via Canada	
0300	7345	Radio Prague, Czech Republic		0600	4915	Radio Difusora Macapa, Brazil	PP
0300	11790	Radio Canada International, via Madagascar	AA	0600	5915	NBC Radio, Zambia	vernacular
0300	4955	Radio Cultural Amuata, Peru	SS	0600	6065	Radio Sweden International	Swedish
0300	4780	Radio Djibouti	AA	0600	7130	RDP International, Portugal	PP
0300	6110	Radio Fana, Ethiopia	Amharic	0700	9475	Radio Australia	
0300	3250	Radio Luz y Vida, Honduras	SS	0700	7125	Radio Conakry, Guinea	FF
0300	4976	Radio Uganda		0700	9800	Trans World Radio, Monaco	
0300	7440	Radio Ukraine International		0800	5990	Radio Senado, Brazil	PP
0300	7215	Trans World Radio, via South Africa	vernacular	0900	5995	Radio Australia	
0300	7360	Vatican Radio		0900	11750	HCJB, Australia	
0300	7475	Voice of Greece	Greek	1100	9840	Voice of Vietnam	Indonesian
0300	4930	Voice of America Relay, Botswana		1100	9400	FEBC International, Philippines	CC
0300	5446.5	AFRTS/AFN, Florida		1100	9290	Latvia Today	
0300	4828	Voice of Zimbabwe		1100	9280	WYFR, FL, via Taiwan	CC
0330	6155	Radio Romania International		1100	6180	Radio Nacional Venezuela, via Cuba	SS

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
1100	6348	Echo of Hope, South Korea	KK	1600	11615	Radio France International	
1100	9625	CBC Northern Quebec Service, Canada		1600	21655	RDP International, Portugal	PP
1130	15260	Adventist World Radio, Guam		1600	12080	Voice of America, Botswana Relay	
1130	4750	Radio Republik Indonesia, Makassar	II	1600	9690	Radio Okapi, Congo, via South Africa	
1200	12085	Voice of Mongolia		1700	15190	Radio Africa, Equatorial Guinea	
1200	2485	ABC Northern Terr. Svc., Katherine, Australia		1700	11745	SW Radio Africa, via England (to Zimbabwe)	
1200	4910	ABC Northern Terr. Svc., Tennant Creek, Australia		1730	11620	All India Radio	
1200	11835	CPBS, China	CC	1730	11625	Vatican Radio	
1200	13685	CVC International, Australia		1800	11990	Radio Kuwait	EE/AA
1200	3925	Radio Nikkei, Japan	JJ	1800	13590	The Voice-Africa, Zambia	
1200	3335	Radio East Sepik, Papua New Guinea		1800	15420	WBCQ, Maine	
1200	3260	Radio Madang, Papua New Guinea	Pidgin	1800	15760	WYFR, via Germany	Turkish
1200	7225	Voice of America Relay, Thailand Relay	KK	1800	11655	Radio Nederland, via Madagascar	
1200	9525	Voice of Indonesia	various; irreg.	1800	9580	Africa Number One, Gabon	FF
1200	13645	Voice of Islamic Republic of Iran	CC	1800	15120	Voice of Nigeria	various
1200	9310	Voice of America Relay, Kuwait	Pashto	1800	15475	Africa Number One, Gabon	FF
1200	9615	WYFR, FL, via Russia	Indonesian	1900	15365	Radio France International	AA
1200	13830	Radio Solh, via England		1900	9830	Radio Jordan	AA
1200	3995	Radio Republik Indonesia, Kendari	II	2000	11930	Radio Marti, USA	SS
1200	5765	AFN/AFRTS, Guam		2000	15410	Voz Cristiana, Chile	PP
1200	9525	Polish Radio, via Germany		2000	9885	Radio Kuwait	AA
1200	11750	Voice of Turkey	Mandarin	2000	9970	RTBF, Belgium	FF
1230	5860	Voice of Jinling, China	CC	2030	9704	Radio Ethiopia	Amharic
1230	7220	Voice of Vietnam	VV	2100	11975	China Radio International, via Mali	FF
1300	5975	BBC, Thailand Relay		2100	7335	CHU, Canada	time signals
1300	11985	Radio Japan		2100	7135	Radio Belarus, Belarus	
1300	6130	Lao National Radio, Laos	Lao, EE	2100	9705	La Voix du Sahel, Niger	FF
1300	6020	Radio Australia		2100	6090	Radio Nigeria	
1300	3385	Radio East New Britain, Papua New Guinea	Pidgin	2100	9780	Republic of Yemen Radio	AA
1300	17800	Voice of Germany	Hausa	2100	11840	Voice of Vietnam, via England	VV
1300	6110	BBC, via Oman	Indonesian	2100	9330	Radio Damascus, Syria	
1300	13625	CVC International, Australia		2130	6055	The Mighty KBC, Netherlands, via Lithuania	
1300	9400	FEBC International, Philippines	Mandarin	2130	9950	Open Radio for North Korea, via Armenia	KK
1330	13730	Radio Austria International		2200	6155	Radio Cairo, Egypt	
1330	9450	Polish Radio		2200	15345	Radio Nacional, Argentina	SS
1330	11705	Radio Japan	Indonesian	2200	9710	Radio Algerienne, Algeria, via England	AA
1330	17540	Radio Prague, Czech Republic	FF	2200	9575	Radio Medi Un, Morocco	FF/AA
1330	7465	Radio Sweden International		2200	11780	Radio Nacional Amazonia, Brazil	PP
1400	21630	BBC Relay, Ascension		2200	6165	RN Tchadienne, Chad	FF
1400	15700	Radio Bulgaria	BB	2200	5900	Vatican Radio	Mandarin
1400	11760	Radio Havana Cuba	SS	2200	6255	Radio Cairo, Egypt	
1400	6145	KNLS, Alaska	CC	2200	7105	Sound of Hope, Taiwan	Mandarin
1400	9680	Voice of America Relay, Philippines	CC	2200	6300	Radio Nacional de la RASD, Algeria	SS/AA
1400	21695	Voice of Africa, Libya	AA	2200	7185	Radio Romania International	
1400	7235	Voice of America Relay, Northern Marianas	KK	2230	4319u	AFRTS/AFN, USA, Diego Garcia	
1400	17725	Voice of Africa, Libya		2230	6180	Cyprus Broadcasting Corp.	Greek, wknds
1400	9330	WBCQ, Maine		2230	6070	ELWA, Liberia	
1400	9385	Radio Pakistan	Urdu	2300	7350	China Radio International	
1430	7370	Radio PMR, Pridnestrovie (Moldova)	EE, others	2300	6000	Radio Varna, Bulgaria	BB; Sun/Mon
1500	9870	All India Radio	Hindi	2300	7135	RT Marocaine, Morocco	AA
1500	9905	Radio Free Asia, USA, via Palau	CC	2300	6850	Radio Cairo, Egypt	
1500	9655	Radio Romania International	AA	2300	9280	Radio Cairo, Egypt	
1500	9615	Radio Veritas Asia, Philippines		2300	9550	Radio Havana Cuba	
1530	12140	Bible Voice Network, England, via Germany	Farsi	2300	6010	Radio Incondidencia, Brazil	PP
1530	12110	Voice of America, Sri Lanka Relay		2330	5005	Radio Nacional, Equatorial Guinea	SS
1600	6070	CFRX, Canada		2330	7325	Radio Vilnius, Lithuania	
				2330	4717	Radio Yura, Bolivia	SS
				2330	6000	Radio Prague, Czech Republic	SS

New, Interesting, And Useful Communications Products

by Staff

Klingenfuss Publications Offerings

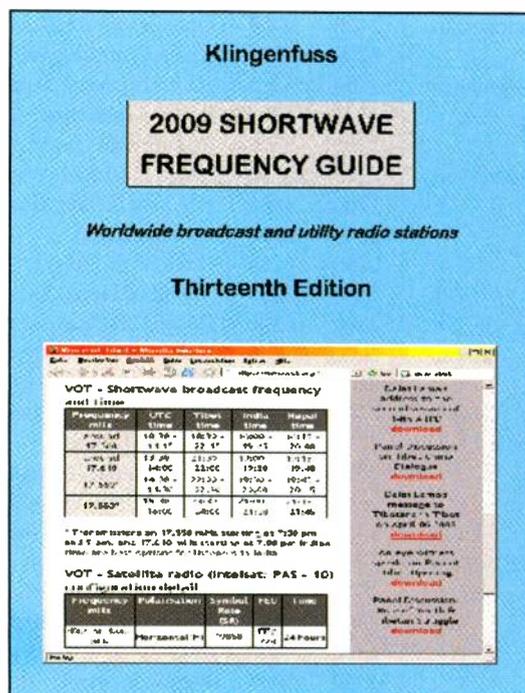
Klingenfuss Publications announced its 2009 offerings for radio hobbyists. Among the titles to look for is the updated *2009/2010 Guide to Utility Radio Stations*. This 25th edition includes hundreds of new frequencies and screenshots, as well as new chapters on disaster communications and terrorist networks. Its content covers aero, diplo, maritime, meteo, military, police, press, and telecom communications. Over 600 pages long, the *Guide* is also updated continuously via the publisher's website. The 454-page *2009 Shortwave Frequency Guide*, 13th edition, offers the latest schedules of clandestine, domestic, and international broadcast stations from the company's "2009 Super Frequency List on CD." The listings are arranged alphabetically and by frequency and include both broadcast and utility stations. The "2009 Super Frequency List CD" itself, which is

in its 15th edition, offers more than 40,000 entries, including all shortwave broadcast stations worldwide, all HF utility stations from 0 to 30 MHz, and hundreds of digital data decoder screenshots.

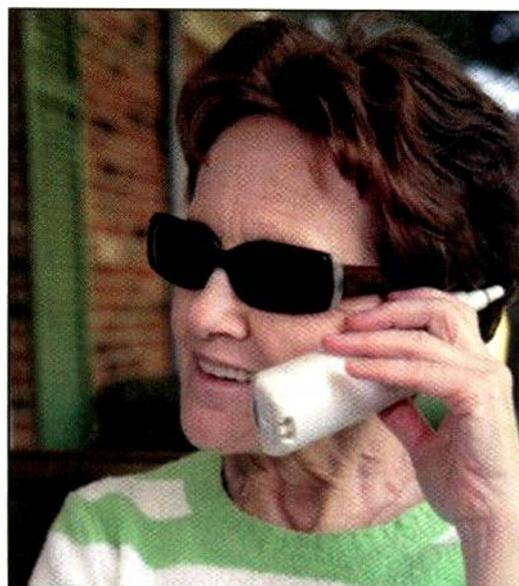
For more information and pricing, visit www.klingenfuss.org.

Audiopoint's Voice Terminal Service Opens Internet To Visually Impaired And Limited Access Users

Audiopoint, a provider of voice data solutions, announced the release of its Voice Terminal Service, or VTS, that provides instant access to user-defined Internet content in real time over any ordinary landline or mobile phone. Designed for both the visually impaired and users with limited Internet access, VTS combines Internet surfing capabilities and email access with Audiopoint's Notifier service to provide a comprehensive and secure personalized data service that is available



The *2009/2010 Guide to Utility Radio Stations* has been updated with hundreds of new frequencies, new screenshots, and other content.



Audiopoint's Voice Terminal Service, designed for the visually impaired and users with limited Web access, gives instant access to user-defined Internet content via ordinary landlines or mobile phones.

anywhere, anytime from any telephone. Using advanced text-to-speech technology, VTS subscribers can listen to and respond to email messages, surf the Web over a natural language interface, and access real-time Web content. VTS goes beyond traditional automated speech software to recognize colloquial language, dialects, and accents.

With no software to download, VTS is accessible from any phone, making it a safer and more convenient alternative to PDAs, especially while driving or when manual dexterity is limited. Because it requires no special equipment, VTS is also an ideal solution for the elderly and individuals who need to receive important notices or newsfeeds, but do not have constant access to the Internet. Included in the VTS, Audiopoint's Notifier broadcast system securely pushes important information to up to 5,000 individual recipients with single-point activation and delivery authentication. Powered by Audiopoint's proprietary, patented voice interpretation technology and delivered via global internet and telephony networks, Notifier is compatible with the Amber Alert system and can be implemented into home monitoring/smart-home management systems, as well as emergency response management plans.

VTS offers plans for \$4.95 a month for 125 minutes of service, \$9.95 a month for 250 minutes, and \$19.99 for 1,000 minutes. Annual plans are also available at \$229 for 1,000 minutes of service per month or \$499 for one full year of service

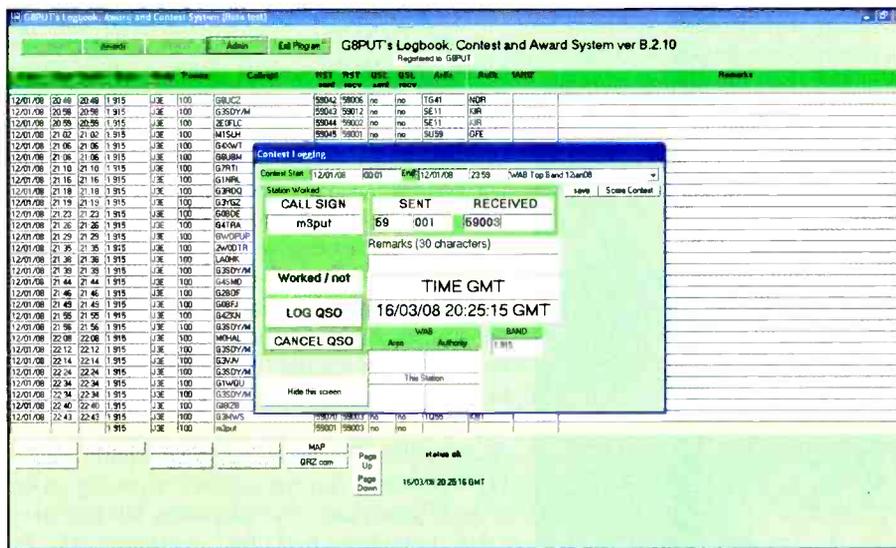
with unlimited call minutes. In addition, Audiopoint provides its VTS service free to all visually impaired U.S. veterans of the wars in Iraq and Afghanistan.

For additional information, visit www.audiopoint.net/vts or call 1-866-545-1560.

The G8PUT Logbook, Contest, And Award System

The G8PUT Logbook, Contest, and Award System is a computerized logbook designed to look and feel like a real logbook. Available in trial version for some time, the first full release was slated for the beginning of 2009. According to the developer, it was designed for quick and easy use with simple entry of QSO details onto a screen that looks just like a page in a log book, and entering a single QSO can be done with just two more key presses than there are letters in the callsign. It allows for multiple contacts to remain open when operating in a net. Single stations can be logged out individually, or the whole net closed with the press of a button. It also offers a rapid-entry screen for working contests.

The G8PUT Logbook, Contest, and Award System is available at www.g8put.com; registration payments are requested to support the work in progress. Program development is expected to continue, augmenting the list of features and functions. For additional information, send an email g8put@g8put.com.



The computerized G8PUT Logbook, Contest, and Award System was designed for quick and easy use with simple entry of QSO details onto a screen that looks just like a page in a log book.

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More HDTV Antenna Choices

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

“The new ‘adaptive equalizers’ in DTV converters are very good at cleaning up the mixed signals cause by reflections, but they need extra signal level to do their work properly.”

It’s absolutely amazing when something really comes together. The response to the “Cheap HDTV Antenna” in the September 2008 issue shows that it was the right project at the right time. And for the first time, *Popular Communications* has made a project from the pages of the magazine available as a website download. So if you’re still interested in the Cheap HDTV Antenna (**Photo A**), but can’t find your issue of *Pop’Comm*, you’ll be happy to know it’s available at www.popular-communications.com/23-AntennasWeb92708.pdf. Our readers have been telling me that it’s very easy to build and its performance has been very good.

HDTV Antennas In General

When it comes to TV antennas for HDTV reception, the FCC engineers designed the HDTV signal strengths to have the same coverage as the old analog signals. Well, they were a bit too optimistic about how sensitive the TV sets were and how fuzzy an analog picture we were willing to put up with. In short, the HDTV stations are not running enough power to get the same coverage as the good old analog stations.

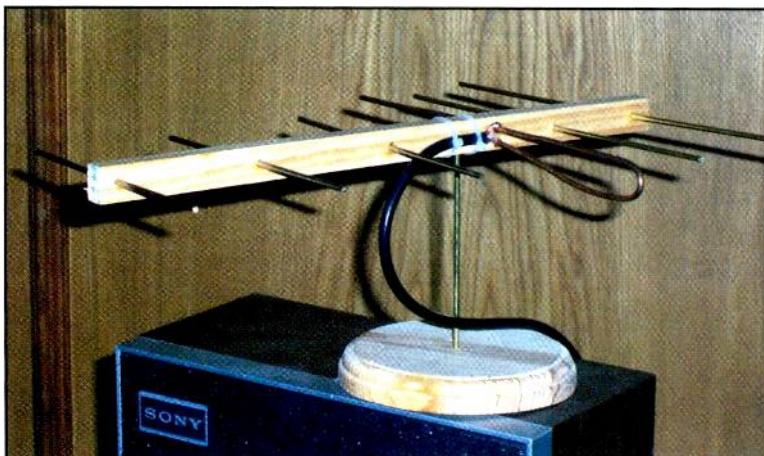


Photo A. A home-built HDTV antenna.

The TV stations would be happy to crank up the power, but the government engineers set their power levels. This means you may need to upgrade your antenna system. A nice big outside TV antenna up real high is the best TV antenna; however, many viewers will have to do the best they can with an indoor TV antenna. But the HDTV picture will be fantastic when you get enough signal for the digital circuits to start processing pictures.

In **Photo B** we have the classic indoor UHF TV antennas. The bowtie and UHF loops were good, yet inexpensive, indoor antennas with good reception out to 30 miles or so. Both will still work, but with a range more like 15 to 20 miles from the stations now.

About 90 percent of the HDTV transmitters will be on UHF. To make it easy on consumers, the HDTV or converter will lock up on the UHF channel, but display the old channel number. For example, locally, HDTV Channel 43 displays Channel 2 on the screen for the viewers.

In **Photo C** we have the next step up: log periodic UHF TV antennas. On the left is the classic of HDTV indoor devices, the “Silver Sensor”; on the right is one I’m a bit more fond of, the RDI DTV-1000—and not just because my initials are on the circuit board (hihi). The DTV-1000 has the same UHF performance as the larger “Silver Sensor,” but also has modest VHF high performance.

The log periodics give you about three to four times as much signal as the loops or bowties and are somewhat directional. It’s this directionality that gives you more signal and helps cut down on reflections. Ghosting can be annoying on analog TV, and it doesn’t help on digital all that much, either. The new “adaptive equalizers” in DTV converters are very good at cleaning up the mixed signals cause by reflections, but they need extra signal level to do their work properly. So the directional antennas are a good choice especially, when most of the TV transmitters are in somewhat the same direction.

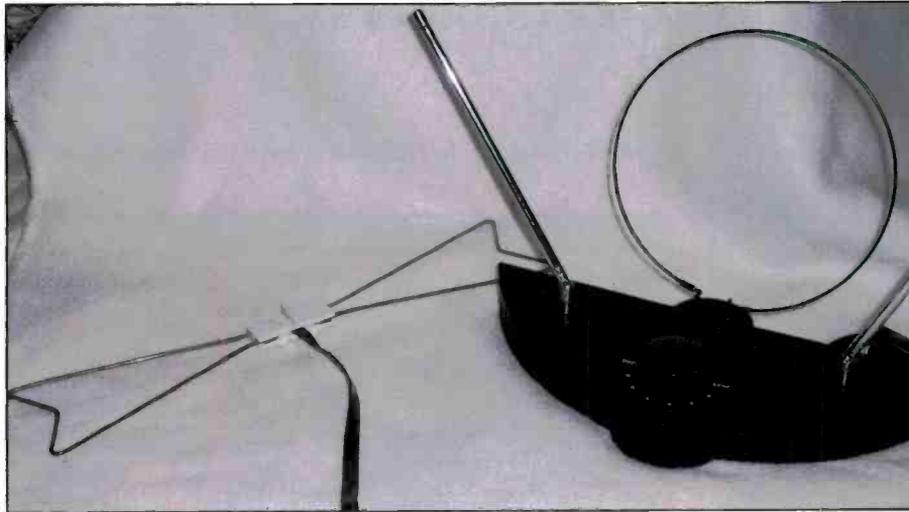


Photo B. Bowtie and loop antennas for HDTV reception.

Photo D shows a real classic TV antenna going back to the 1940s. The stacked bowties still make for a very good UHF TV antenna and the elements and connecting lines are long enough to also give the antenna a modest VHF high (Channels 7–13) performance. It may be a bit large for some set-top applications, and like the log periodics it needs to be aimed at the TV transmitters, but it's still a good antenna. I like to put them up in the attic and drop the coax down to the TV set.

Now For Something Completely Different

I've been asked to supply two antennas for a microsat satellite being built by the University of Texas (see **Photos E** and **F**). I love projects like this and have made them some small Inverted F surface-mount antennas. The project is going to be fun as I only have 5 inches to work with

and the antenna must be flush with the satellite. No quarterwave whips here! I'll be using this as a basis for future columns.

Mail Call

From James we get the following question on coax:

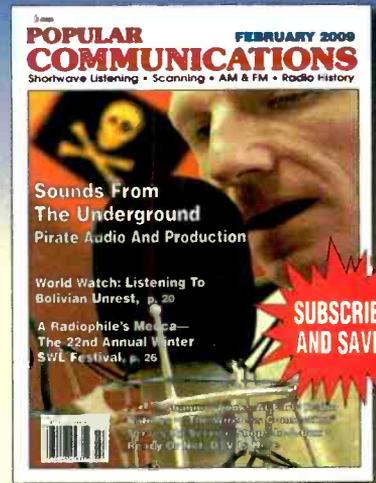
"I recently replaced my RG58 coax lead in (50 Ohms) with an RG59 run (72 Ohm), and signals are a lot stronger on my scanner. I thought my scanner was made for 50 Ohm coax, was I wrong?"

Well, James, did you notice that the RG59 was much larger? With the wider diameter RG-59, your lead in has about 1/2 the loss of RG58. Your scanner is most likely designed for 50 Ohm systems, but the loss between 50 and 72 ohms is only a few percent. A small price to pay for the 50 percent less loss in the RG59. Want to do even better? There's a lot of scrap RG-



Photo C. Log periodic HDTV antennas.

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← Photo D. Stacked bowtie indoor TV antenna.

Photo E. University of Texas Microsat under construction. ↓



6 from CATV drops and satellite TV runs floating around. RG6 will work just fine on your scanner and have about 1/2 the loss of your RG59. That's a big boost especially on the 460 MHz and 800 MHz bands.

And here's a question from reader Phil:

"Why do the hams run lower sideband on 75 and 40 meters, but upper sideband on all the higher bands. Is there some advantage to LSB on the lower frequencies?"

There's no advantage at all between LSB and USB, just convention, which

goes back to the late 1940s and early 1950s. Back then, sideband filters were handmade or very expensive, so rigs just had one filter. Using a handful of 9,000 MHz surplus crystals, a dedicated ham would mix and match crystals to build his own 9 MHz USB sideband filter. A 9 MHz filter worked out pretty well, but hams could also take a 5 MHz VFO and mix 9 + 5 for 14 and get on 20 meters; or mix the other way, 9 - 5 for 80 meters. That got them on the two most popular SSB bands at that time. When you "mix up," USB stays USB, but when you invert mix the 9 MHz SSB exciter down to 80

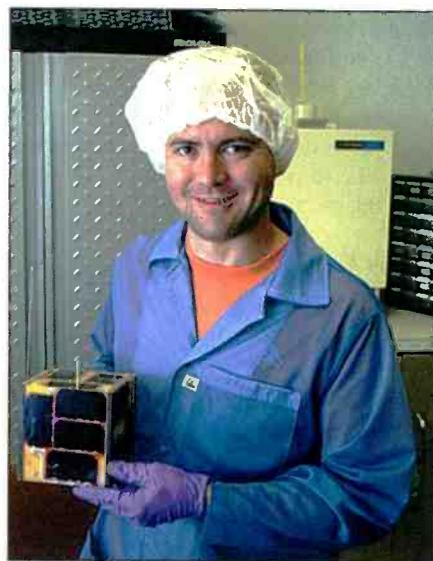


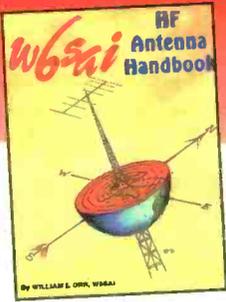
Photo F. This photo sure shows just how small the Microsat really is.

meters, the USB gets flipped to LSB. Multiband, multimode rigs were still 20 years away, and the tradition persists.

Coming Up

I have a camera full of photos from Marvel Communications, which cranks out about 10,000 Fiberglass Whip antennas a week, so I've got a lot of antenna manufacturing to cover next time.

As always we welcome your questions and suggestions for column topics. Just drop me an email at wa5vjb@cq-vhf.com or send snail mail to my call book address.



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The Digital Local Broadcasting Vision

by Dan Srebnick, K2DLS
k2dls@arrl.net

“When Benn heard Don say that ‘the 26 MHz band is a special case, good for local broadcasting, and this could be achieved in a couple of years in the US,’ he nearly fell out of his chair.”

Bennett Kobb, KC5CW, is a man with a plan. He’s lobbying the FCC to allow domestic broadcasting within the United States in the 26 MHz (11 meter) broadcast band. These broadcast stations would use relatively low power, Digital Radio Mondiale (DRM) technology, and antennas specially designed to minimize skywaves. It could result in hundreds of new local and regional radio stations around the United States, provide access to the airwaves for those who are currently locked out by the high cost of buying a broadcast license, and give listeners the opportunity to hear a cornucopia of new idea—and, dare I say, talent?

Benn is truly a visionary, but the idea is backed up with solid engineering experience. Ben’s partner in this effort is Don Messer, with broadcast engineering experience from the likes of the Voice of America on his resume. Benn and Don did a terrific presentation on their plans for 26 MHz DRM broadcasting at last year’s SWL Winterfest (see below), and I had an opportunity to speak with Benn at the Fest and subsequently.

Why Use 26 MHz For Domestic Digital Broadcasting?

Benn met Don Messer when they both attended a meeting of the National Association of Shortwave Broadcasters. Don’s a former spectrum chief at the Voice of America, a past chair of the DRM Technical Committee, and was involved in the development of satellite broadcasters Sirius and XM. When Benn heard Don say that “the 26 MHz band is a special case, good for local broadcasting, and this could be achieved in a couple of years in the US,” he nearly fell out of his chair. You can see a copy of Don’s Winterfest presentation on the Web at http://klixie.com/26mhz/files/HDM_DRM_MAR2008.PDF.

While 26 MHz is already allocated for international broadcasting as the 11 meter band, it is not currently used anywhere in the world for that



Figure 1. The anti skywave antenna used in the French DRM tests. (Photo from <http://drcotedazur.canalblog.com/>)

purpose. Opening the band up to local broadcasting makes sense and would not require reallocation of spectrum from a non-broadcast service. Benn says that “26 MHz has VHF-like propagation characteristics” and that with use of antenna designs that attenuate skywaves, it should be quite usable for local coverage.



Figure 2. The Uniwave Di-Wave as pictured on the Universal Radio website (www.universal-radio.com).

If you think that this idea is off the wall, you should know that the Europeans are already experimenting with it. There is a DRM station serving the area around Grasse, France (above Cannes in the Maritime Alps), on 25.775 MHz in the 11 meter band (see **Figure 1**). With a power of 1 kw at a height of 500 meters, the tests are going well. If your French is better than mine, you can learn more at <http://drm.cotedazur.canalblog.com>. As I never studied French, I put this page through a Web-based translator, and came up with the following, "I took a little holiday before becoming insane and with the return I thus have manufactured this antenna..." I wonder if Lt. Uhura did any better on her Bluetooth, I mean, Universal Translator.

Tip: An online translator, such as Babelfish can help you decipher foreign language content on the Web. Try <http://babelfish.yahoo.com>, where you can translate a phrase or an entire webpage. They can also help you get past the Web filters at work!

Check Benn's website at <http://26MHz.us> for up-to-date information on this effort. Who knows, you could one day have the opportunity to apply for a 100 watt DRM license to broadcast to your own community.

What Is DRM?

According to the webpage of the DRM USA group (www.drmsusa.org):

Digital Radio Mondiale (DRM) is the world's only open standard, digital system for short-wave, medium-wave/AM and long-

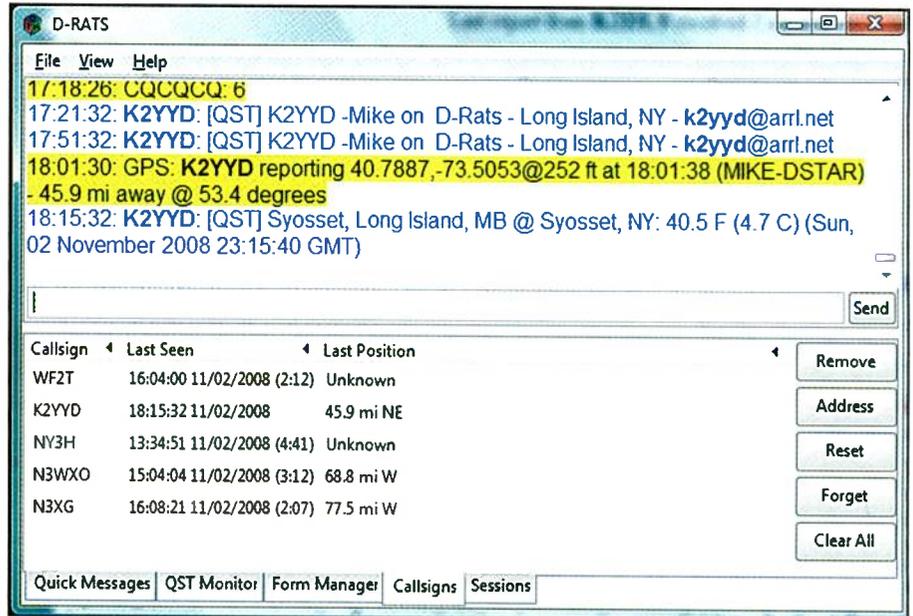


Figure 3. D-RATS brings text messaging, file transfers, and forms to your D-Star radio in one simple package.

wave with the ability to use existing frequencies and bandwidth across the globe. While DRM currently covers the broadcasting bands below 30 MHz, the DRM consortium is in the process of extending the system to the broadcasting bands up to 120 MHz.

DRM has near-FM sound quality plus the ease-of-use that comes from digital transmissions. The improvement over AM is immediately noticeable. DRM can be used for a range of audio content, and has the capacity to integrate text and data. This additional content can be displayed on DRM receivers to enhance the listening experience.

The Problem

It's hard to find a receiver that can demodulate DRM. Your options so far are:

- Software-defined receivers that can pipe output into a computer soundcard (software required);
- Receivers that can be modified for or natively have a 12 kHz IF output that can be plugged into a computer soundcard (software required); or
- Several portable receivers such as the Himalaya, Morphy Richards, and now the Uniwave Di-Wave.

Universal Radio lists the Di-Wave on its website, along with the nice photo shown in **Figure 2**. The radio is not yet approved for sale in the United States by the FCC, will not be available until early 2009, and no specs are published on the Universal website. But there is potential.

The device is billed as a multimedia playback machine, with AM/FM/LW/SW capabilities, DRM built in, and the ability to accept USB and SD devices. So this is a real hybrid of a device, bringing together old technology, such as AM broadcasting, with new ideas, such as mp3 and mp4 playback. You can even view a slideshow of the photos from your most recent DXpedition or hamfest.

The Uniwave product is said to contain a software-defined receiver chip from Mirics Semiconductor. This chip allows decoding of various digital broadcasting formats. It's targeted for mass production of digital receivers supporting DAB, DRM, and HD formats. This may be the technological leap needed to bring digital radio to the masses.

It's Winterfest Time

The 22nd SWL Winterfest will be held on March 13-14, 2009, in Kulpville, Pennsylvania. It's not too late to plan to attend, and all details are available at <http://swlfest.com>; there's also a good description of what you can expect in the February *Pop Comm*. One regular feature has been a demonstration of DRM broadcasting, with several international broadcasters hosting special transmission schedules beamed direct to Kulpville. Kim Andrew Elliot of VOA has headed up the DRM demonstrations in the past, last year adding WiFi radio as well to the mix. In the past I've seen modified



Figure 4. D-StarUsers.org keeps you up to date on who's using the worldwide D-Star network.

Kenwood TS-2000s and Yaesu FT-847s, plugged into a soundcard and grooving to the bits of a DRM broadcast. Will we see you there?

Hams Go Digital Too

I've been having some fun with the ICOM IC-2820H. This is a dual-band, dual-receive transceiver. It is D-Star capable, with the addition of the UT-123 D-Star Voice/GPS unit. The November issue of *Pop'Comm* featured a nice overview of D-Star, if you need to get up to speed. Speaking of speed, the IC-2820H is a 2 meter/70 cm rig, so it supports the low-speed data signaling capability. This channel is nominally 1200 bps, but in the real world equates to about 950 bps of throughput.

While 950 bps is only three times faster than Grandpa's old acoustic coupler, you can use this capability to do some interesting things. You can send DPRS (D-Star Position Reporting System) reports out to the APRS-IS (Automatic Packet Reporting System-Internet Service) network servers, allowing your position to be tracked via findu.com. This does not require a separate TNC; the radio has a GPS input and can create a specially formatted text string that is compatible with the DPRS <=> APRS gateway which runs on your local digital repeater. The November "RF Bits"

column on situational awareness explains how the APRS network is used for position tracking.

But there's more. Through use of free software you can transfer photos, files, and instant messages—all while ragchewing with your friends in the local area, or in New Zealand for that matter—via the Gateway. D-RATS is one such package that I've been playing with. D-RATS (Figure 3) is a D-Star communication tool and is available free from <http://d-rats.danplanet.com/wiki/>.

Using your digital radio with this application, you can engage in IM-style chat, send automatic bulletins and beacons, GPS position reports, and transfer files, though I'd keep those small on the low-speed data channel. It also supports forms for traffic handling and emergency operations. No wonder the Emergency Operations Centers around the country are starting to realize the value of amateur radio and digital data offered by this new mode.

Your D-STAR radio identifies you by the value entered in the MYCALL setting. When I started gating position reports from D-RATS into the DPRS/APRS network, I realized that I needed to differentiate the reports from my APRS station and my D-Star radio. So I decided to apply the SSID (Service Set Identifier) differentiation technique

to the D-Star radio and changed MYCALL to "K2DLS H," with the H indicating a home digital station. If you want to see how this plays out, query findu.com for the location of K2DLS-H.

You can also find out the last time a D-Star user was on the air by checking www.dstarusers.org/. A complete listing of all stations heard on the D-Star gateways can be viewed. Click on the callsign for a qrz.com display of the licensee data.

There's a growing number of D-Star nets on the air (Figure 4). On the second and fourth Tuesday of the month, my local repeater (NJ2DG-B) carries the Atlantic D-Star Net at 19:30 local time. This repeater is located in Martinsville, New Jersey and is gated via reflector 2A to a network of repeaters in New York, New Jersey, Pennsylvania, and beyond. If you have D-Star capability, find out when your local net meets on the air!

If you want to find me through your local gateway, you can try programming "K2DLS H" into the YOURCALL field of your D-Star radio and give me a call via your local D-Star gateway. I'll be glad to hear from you. ■

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NIMS And EmComm Message Handling

by John Kasupski, KC2HMZ
kc2hmz@verizon.net

“Those of us who volunteer our time to work with various non-governmental agencies that are active in times of disaster are by no means immune to the issues that [National Incident Management System] was created to help deal with.”

While most emergency situations are handled locally, when there’s a major incident, such as the earthquake depicted in **Photo A**, help may be needed from other jurisdictions, maybe even the state and the federal government. In the past, this has often resulted in chaos as personnel from agencies with different radio procedures and codes struggled to communicate with each other.

To address this and other issues that arise from multijurisdictional responses, the National Incident Management System (NIMS) was developed so responders from different jurisdictions and disciplines can work together to better handle natural disasters and emergencies. NIMS teaches a unified approach to incident management, standard command and management struc-

tures, and emphasis on preparedness, mutual aid, and appropriate management of resources; in fact, the Incident Command System (ICS), perhaps the best tool out there for managing resources, is one of the backbones of NIMS.

In the aftermath of a large disaster, *every* entity from the Red Cross and Salvation Army to the communications groups such as ARES, RACES, and REACT (**Photo B**) to the Citizen Corps groups like CERT and the Medical Reserve Corps are out there to help somehow. Those of us who volunteer our time to work with various non-governmental agencies that are active in times of disaster are by no means immune to the issues that NIMS was created to help deal with. Imagine the REACT operators are using CB “10” codes, hams



Photo A. A shot taken from the road near the epicenter of 2008 Sichuan Earthquake. (Photo via Wikipedia)



Photo B. Waterloo Regional REACT solves power requirements with 6500 watt generator on all wheel drive tractor. (Courtesy Waterloo Regional REACT)

are using “Q” signals and prowords specified by RACES SOPs and sending messages using ARRL Radiogram format, complete with numbered ARL radiogram content, and MARS operators are using their own prowords and traffic handling procedures. In a situation like this, it’s a miracle if we can even communicate effectively with each other, let alone the dozens of local, state, and Federal personnel we may be working with.

This is precisely why NIMS calls for plain-English radio communications. In an emergency situation, when lives are at stake, time is precious. Nobody should be wasting that time on trying to determine the plain-language meaning of a transmission they just received from someone else. The phrase “medical assistance needed” along with the location where it is needed requires no reference material to explain its meaning. To send “ARL 17” or “10-38”—or anything else that has a special meaning not universally understood by English-speaking people—is not only contrary to the intent of NIMS, it is also asking for trouble. In the aftermath of a disaster, “spontaneous volunteers” come out of the woodwork wanting to do something—*anything*—to help. These volunteers tend to be mostly, or even completely, untrained, and may have no idea what prowords or numbered radiograms mean.

To compound the problem, the ARRL Radiogram is not the NIMS-compliant message format. There is a NIMS general message form: ICS-213, the accepted

general message form under NIMS. It looks *nothing* like an ARRL Radiogram form, but in a sense, that’s the whole point of having it—you could yank the average schoolboy out of a high school English class and chances are good that he would be able to successfully write down a message on an ICS-213 form. Many, and these days maybe even most, *hams* would be hard-pressed to fill out an ARRL Radiogram form correctly. This is no problem if the correct message form under NIMS (ICS-213) is being used.

Why is this important? Imagine what happens if—no, *when* (Murphy will make dead certain this happens)—“ARL 17” is received and written down on an ICS-213 form by an untrained volunteer pressed into service to handle messages during a time of dire need for manpower. Imagine this message is properly addressed and gets passed to a public safety dispatcher. Odds are that the dispatcher is not a ham and has no idea what ARL 17 means. At best, precious time is wasted while the message gets sent back through channels with a request for clarification. At worst, it goes in the circular file and somebody dies because the urgently needed medical assistance that was being requested was never dispatched.

The means to avoid such a tragedy is clear. This is why NIMS exists. If you’re still using special terms, prowords, signals, or codes in your radio communications, get rid of them and get used to using plain English. If you’re still using some sort of proprietary message format, ditch it and

migrate to the NIMS-compliant ICS-213 message form. Do it now, before the ICS gets reorganized and Communications gets put under Command, instead of under Logistics where it is now (mark my words, this change is coming...in some places, it has already been implemented!).

Correction Department

No, I am not suddenly going to start talking about radio communications for prison guards! I do, however, wish to set the record straight on a point of reference in my inaugural column back in November. In that column, I mentioned that Rich Arland had used the phrase “preparedness is not optional” in the “Homeland Security” column (a forerunner of the column you are now reading). And...well...he did, but I’m afraid I conveyed the impression that Rich had given birth to the expression of this idea, which I borrowed and expanded on in my November piece. The fact is that Alan Dixon, N2HOE, first used it way back in October 2002 when he created the column in *Pop Comm*. We must give credit where credit is due!

The way I look at it, preparedness is the *only* option! The bottom line is that the days of stumbling through life blissfully unaware of what’s going on around you are gone—assuming that whatever happens, you want to still be around to talk about it afterward—and that preparedness is the key to getting through any kind of disaster. The term “Homeland Security” conjures up images of September 11, 2001, and terrorist attacks, but you can wind up just as dead if you’re caught unprepared for an earthquake or a severe winter storm. Unless you want to become a statistic, it’s quite clear that preparedness is the only sensible option.

Coming Attractions

In my next column, we’ll take a look at an advancing technology that allows emergency managers to directly contact employees, students, customers, and others regarding threatening events, and which has quite possibly already saved lives here in the United States. I’m also planning a column aimed at those who are on tight budgets with a less painful method of building up a cache of emergency supplies.

In the meantime, keep at it with your efforts toward preparedness. And so, with a nod to both Alan and Rich, I repeat—preparedness is the *only* option! ■

Portable Operating: The Cure For The Urban Ham Blues

by Kirk Kleinschmidt, NTØZ
kirk@cloudnet.com

“Building on the fact that portable antennas don’t have to last forever, I’m toying with the idea of building something really over-the-top this summer at my uncle’s farm.”

As a teenage DXer with a modest, small-town station, accommodating parents, and a lot of radio gumption, getting on the air from my basement shack (where else?) was always a thrill. Unlike the present doldrums, sunspots were *very* cooperative in the late '70s and early '80s, and there was DX aplenty—even on the Novice bands—with stations wall to wall on several (most) bands at once.

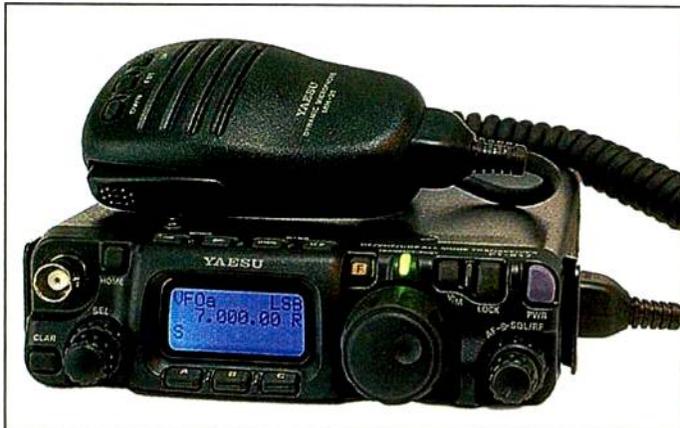
On a Saturday morning I’d chat with Scandinavians on 10 meters...hams in the rest of the world (or stateside) on 20 and 15 meters for the bulk of the day...and at supper time I’d practice my Japanese by talking with JA hams on 10 meters. Twenty and 40 meters were jam-packed but, alas, 30 meters wasn’t yet a ham band!

Each passing day brought something new, but propagation was sure and steady (now I’d kill for conditions *half* that good!). I’d “clunk-clunk”

down the wooden stairs into my basement room/shack, flip the switch on my Tempo One transceiver (built by Yaesu and a lot like an FT-101) and diligently scour the bands for interesting signals.

What’s that? No *juicy* DX? No problem. I could swish over to 75-meter SSB and check into Minnesota’s Piconet All Day Watch to chat with the friendly Old-Timers from around the state. Out in the boonies, Piconet was the closest thing I had to a 2-meter repeater! Some ops were strong, sounding like broadcast stations, while some were weaker. Everyone, however, was copyable, because *there was no noise!*

Universities aside, there were no computers around spewing RF into the ether (and no packet spotting systems, either), no broadband over power line issues (no broadband, period!), no Nintendo game systems, no cranky neighbors and no deed restrictions, hence, no need for hidden or indoor antennas. If a power pole had a noisy insulator or RF-buzzing transformer, a ham-friendly lineman would inherently understand the situation and would often fix it the same day. The utility companies didn’t retain RFI specialists and PR agencies because they just weren’t necessary.



Yaesu's FT-817ND is definitely *not* bigger than a breadbox—unless you’re referring to its amazing versatility, solid performance and DC-to-daylight frequency coverage! Truly a station in a hand-holdable package, the low-power '817ND is a multimode transceiver that covers 160 meters through 440 MHz, with lots of built-in options and goodies. It can even be powered with internal batteries! This tiny radio is easy to carry up hills, through surf, while skydiving, etc. There are many third-party accessories and enhancements for the popular little radio. About the only thing it can’t do is moonbounce...yet!

Fast-forward To Today...

In our condo, one of 24 side-by-side units, my YL and I have five PCs, sometimes more (I do some PC tech work). To save precious electricity we switched to inexpensive compact fluorescent light bulbs throughout the house, and so did everyone else in a 100-mile radius. My antenna, a 40-meter horizontal loop that runs around the inside perimeter of the third-story attic (my unit and my through-the-wall neighbor’s, with permission), is fed through an automatic antenna coupler that’s also in the attic.

Performance-wise, the attic loop *kicks butt*, and I often don’t even notice that I’m using a “compromise antenna.” The big problem, however, is the loop’s proximity to all of that “garbage RF” coming from dozens of PCs, light bulbs, doorbell transformers, furnace motors, bi-metallic ther-

mostats, dimmer switches, street lights, etc., from the entire “modern” neighborhood. It’s a sea of hellish radio noise. When compounded with the generally terrible band conditions, you’ve got a real operating challenge on your hands. Unfortunately, tens of thousands of hams and SWLs in the United States share this predicament. If you’re a real newcomer to the hobby, perhaps it’s best that you’ve never heard what fabulous, day-after-day propagation sounds like when paired with an S-0 noise level!

My rig’s noise blanker is completely ineffective against this stuff, but the DSP noise-reduction circuit helps a bit. I never turn it off, because things always sound better when it’s enabled! I need to whip up a portable, directional “noise receiver” to identify some of this crud, and when I do, I will write about it in this column. I could also try a small receiving loop for 160 through 40 meters, which has worked well in the past for SWLing, but requires special T/R switching, separate RX and TX, or a transceiver that has a receive-only antenna input.

Also on the list to try is a phasing-type, noise-canceling box, such as MFJ’s Model 1025. You connect your main station antenna to one port and a second “noise antenna” to the other. By adjusting the phase relationship between the two antenna ports, unwanted RF noise and other garbage can be nulled, often dramatically. The unit has a bit of a learning curve, but many users experience amazing relief. I’ll try to review the 1025 in a future column. SWLs can use this, too. You can see the MFJ-1025 at www.mfjenterprises.com.

So, until I have the time and money to explore some of the above-mentioned techniques (or I win the lottery and can afford my own tropical island), there’s another way to completely eliminate the hassles of getting on the air from my RF-noisy, ham-unfriendly condo: Portable Operation! I can always take my station to a hilltop, the beach, the park, a friend’s farm, etc. Unless there’s a Jacob’s Ladder manufacturing plant on-site, there will certainly be better radio conditions in these other locations!

This getting out and about also dovetails nicely with my yet-to-be-made New Year’s resolution...to get out and about! (As I write this, two late-December blizzards are approaching Southern Minnesota from the West, limiting my portable operating to a 40-foot, diesel-powered motorhome with an attached, tilt-over, crank-up tower. Where’s that lotto

ticket?) As you read this issue, though, spring may be just around the corner. In that light, I’m planning on writing several columns this year focused on “away from home” operating, if only to offer some relief to the masses of urban, deed-restricted hams. We know who we are!

Future columns will highlight VHF/UHF “hill-topping” and the latest portable craze called “HF Pack.” First up, however, is a bit about portable operating in general. After all, Field Day—the annual pilgrimage to practice emergency communication and portable operation—is just around the corner, too. June 27 will be here before you know it!

Getting Out While You’re Out And About

Choosing a place to operate—for Field Day or just for fun—depends on where you are and what you’re doing. Try to remember that the basics of amateur radio still apply. The thing that’s different is your location. Instead of being in your home shack you’re out in the boonies somewhere.

Hilltops are pretty good for just about any radio activity, especially VHF/UHF. HF operators will want at least a few tall trees for stringing antennas, while VHF/UHF ops may have better luck if there are *only* a few trees (or even none) to absorb those precious higher-frequency signals.

Remember to show the proper respect for the land (and the landowners) when you set up a portable station or campsite on property that’s not your own. Don’t break branches when stringing antennas, be sure to take down any antennas you put up and don’t leave *any* garbage or debris behind when you leave. Try to get permission ahead of time, if possible.

Hardware-wise, just about any rig will work from the field as long as you can supply the required power, but most hams who operate portable do so with compact commercial mobile rigs, commercial or kit QRP transceivers, or QRP gear they’ve built themselves.

Because most portable operation is done without access to the AC power mains, most ops opt for gear that runs on 12 VDC. Unless you’re hiking or biking, you probably have a source of 12-volt power nearby (car alternators, automotive or marine batteries, solar panels, and so on).

When relying on battery power, transceiver characteristics that can be ignored at home can be quite important in the

field. One of the most important is power consumption. If you’re operating from a battery that can’t be recharged until you get home (common), your rig’s power draw will determine your operating time. Reducing your transmitter power can make a big difference when you’re *transmitting*, but will do nothing to save power while you’re receiving, which accounts for the bulk of your operating time.

Some manufacturers produce rigs that are designed for minimal current consumption while receiving. For example, Elecraft’s KX1 could probably be powered by a glass of pineapple juice and a pair of electrodes! Yaesu’s FT-817ND—a pint-size, low-power, DC-to-daylight transceiver—offers amazing convenience and relatively low power consumption. Thanks to the march of technology, it seems as though every ham radio manufacturer is cranking out miniature full-featured rigs that excel in the field, so be sure to check out all of the new gear. Amazingly, most “portable” gear is reasonably affordable, so if you’re operating away from home for the fun of it—or to get away it all—you’ll still have money left over to purchase plane tickets or a Land Rover!

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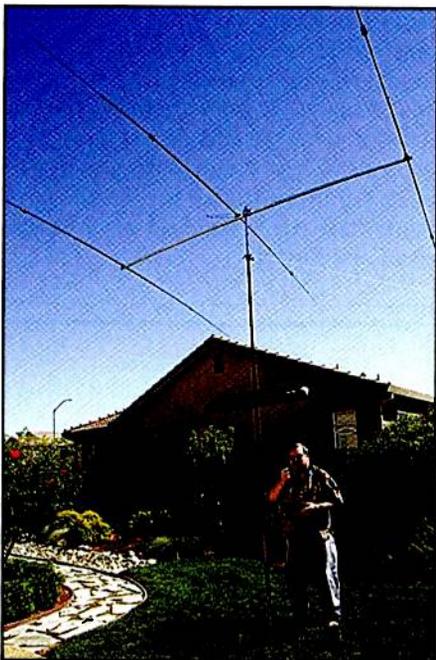
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Antennas In The Field

Antennas for field use should be lightweight and unobtrusive. You don't want to mar your (or anyone else's) scenic vistas with a rat's nest of wires, feed lines, or aluminum tubing. That said, whether at home or at a scenic overlook, ham radio lives and dies by its antennas.

I've used two main types of portable antennas over the years. One is a 40-meter dipole fed with 300-ohm TV twin lead. The elements are made from 20-gauge magnet wire, the center and end insulators are made from small, thin plexiglass scraps and the center and ends are held up with 30-pound-test monofilament fishing line. With a small antenna tuner (with a built-in balun and an SWR meter) I can work all the bands from 40 meters and up and not worry about feed line loss, etc.



Want to add some punch to your portable ops? W6MMA's YP-3 (which I assume stands for Yagi, Portable, with three elements) from Super Antennas puts out a *big* signal from a little package! The lightweight portable antenna breaks down into three-foot sections and fits inside its own nylon travel bag. It can quickly be assembled for any band from 20 through 6 meters. Use it on a tripod, as pictured, or with a "drive on" mast mount held firmly upright by the weight of your vehicle. With a drive-on mount, users attach the flyweight Yagi to the top of 20- to 30-foot push-up masts and aim the antenna via "armstrong rotation" for impressive signals from the beach or the boonies. See more photos and info at www.superantennas.com.

For the ultimate lazy-op experience I simply toss a 33-foot insulated wire into (or over) a tree and connect the near side to the business end of my antenna tuner. I then roll out one or two additional 33-foot counterpoise wires and connect it (them) to my tuner's grounding post. This lazy vertical or inverted-L (depending on tree height, placement, and density) *starts at the tuner*, which eliminates any loss from feed line runs, etc. I can tune this antenna on all bands from 80 meters and up using a conventional tuner.

While using the vertical wire I haven't had any problems with "RF in the shack" at QRP levels, but it's occasionally troublesome at 50 watts or so (not to mention potential RF exposure issues at power levels above 50 watts). To make this antenna even easier to use I sometimes place an autocoil at the base of the wire vertical and run a short coaxial feed line to my operating position. This is especially handy while operating from a mini camper.

Feel free to make a "portable" version of your favorite antenna. Remember to keep things simple, compact and lightweight. Portable antennas don't have to last forever, and they don't have to survive hurricanes and winter storms, so don't be afraid to sacrifice ultimate survivability to achieve something that doesn't hog all the space in your backpack!

Building on the fact that portable antennas don't have to last forever, I'm toying with the idea of building something really over-the-top this summer at my uncle's farm. I plan to string a 100-foot rope between two tall trees. In the middle I'm thinking about a seven-element wire delta loop beam (quad) for 40 or 20 meters aimed at Europe (or wherever). Or maybe a five-element bobtail curtain. Something outrageous, just for the fun of it! Don't try either of these for Field Day unless you're in Alaska or Hawaii—the take-off angle will probably be fantastic for long-haul DX, but horrible for stateside QSOs.

TV twin lead has always been a favorite for portable use. It has very low SWR losses, it's lightweight, it can be rolled into a small, flat package, and it doesn't require special connectors. You'll need to use it with a tuner/balun, but you'll probably have that on hand anyway.

If you have the room and can stand the weight, conventional coax works in the field as it does at home. If you're thinking of using a mini coax such as the teeny RG-174, confine your efforts to 80 and 40

meters and keep the coax run as short as possible. Mini cables are just too lossy at higher frequencies or with long cable runs.

Fire 'er Up

Powering portable stations can be a challenge. If you're traveling by car or boat, you probably have a handy source of 12-volt power along for the ride. But if you're hiking, biking, or canoeing, for example, you'll have to carry batteries, a small generator, or a bulky solar panel—none of which are appealing. When it comes to providing power there are no free lunches.

Essentially, you need to scale your power requirements to match your available energy. For backpackers, hikers and those "traveling light," a mini QRP rig designed for minimal (or micro) power consumption may be a practical upper limit. Go beyond that and you'll exhaust your flashlight-size batteries in a jiffy. If you can manage to carry a larger NiCd pack or a gel cell, a less-exotic low-power rig will work just fine. And if you can handle a medium- to full-size deep cycle marine battery—recharged by a vehicle alternator, a compact gasoline-powered generator, or a solar panel—the sky's the limit. As long as it's not too large to be practical, you can power a regular 100-watt base station rig away from home.

Trial Before Trail

Before you venture forth, assemble the *exact* station you'll be using and put it on the air in your backyard before you leave town. Use the same antenna, the same battery, the same tuner, etc. That way you'll know if you have *everything* you need when it's time to leave. When things seems perfect, carefully make a checklist of your station's components and look it over while you pack items prior to departure.

As space and weight allow, consider bringing along a miniature logbook or notebook, a tiny digital multimeter, a pocketknife, or multifunction Leatherman-style tool, electrical tape, extra wire, clipleads, a compact set of screwdrivers, a small wire cutter/stripper, a pair of Walkman-style headphones with an appropriate adapter—whatever you might need. It's a real bummer to hike to your new radio summit only to have Murphy cut short your fun for lack of something simple.

Future columns will include more tidbits on hill-topping, contest roving, and HF Packs. See you out and about! ■

THE PRACTICAL SIDE

Gordon West's Radio Ways

Tune In High-Frequency Marine And Aero Weather

by Gordon West, WB6NOA
WB6NOA@arrl.net

"Not all sailors are ham radio operators, so two enterprising weather experts offer daily weather reports, one on the East Coast for Atlantic weather, and the other on the West Coast for Pacific weather."

For casual cruising sailors as well as long-range commercial shipping, voice weather reports over high frequency are extremely important. They can also make for exciting high-frequency single sideband listening. If you have a portable or fixed HF receiver capable of tuning SSB, there's plenty of weather information on upper sideband.

US Coast Guard Weather Reports

You can get started right away by checking out these US Coast Guard frequencies:

4426 kHz, upper sideband
6501 kHz, upper sideband
8764 kHz, upper sideband
13089 kHz, upper sideband
17314 kHz, upper sideband

Listen on the hour and the half hour for the synthesized voice of one or several US Coast Guard official weather broadcasts. The USCG transmits National Weather Service (NWS)

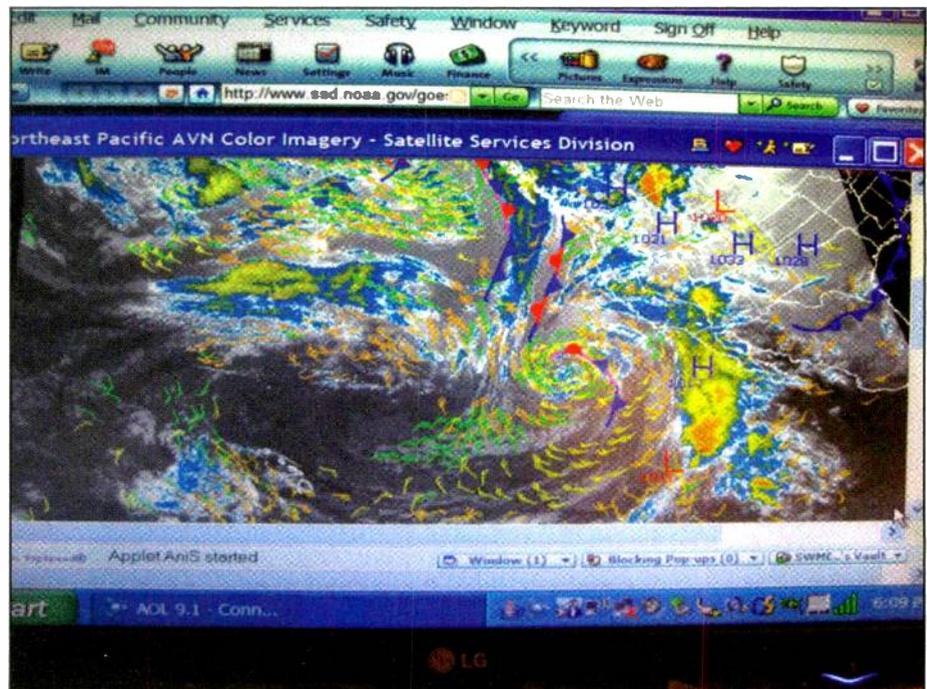
forecasts and warnings, using multi-kilowatt HF transmitters, transmitting on frequencies between 3 and 30 MHz, located at 7 USCG Communications Centers in the following locations:

Chesapeake, VA
Miami, FL
New Orleans, LA
Kodiak, AK
Pt. Reyes, CA
Honolulu, HI
Guam

These powerful broadcasts are easily picked up with a modest long wire antenna system. Be sure to have a chart or map with latitude and longitude coordinates; these official broadcasts cover large ocean areas, and you'll need some sort of reference when they give the latitude and longitude boundaries.

Commercial Weather Broadcasts

Synthesized voice weather reports are also



Computerized weather information gets translated into words by Don Anderson on 8122 kHz.

coast. He's a 25-year weather broadcast veteran, and he goes the extra nautical mile by suggesting the best routes to steer clear of approaching storm fronts. Tune Herb in at 2000 UTC on marine frequency 12359 kHz, upper sideband.

His 2000 Zulu East Coast afternoon weather report is divided into geographic areas. He takes reports from sailors at sea, helping him refine current weather conditions out on the water. His reporting is *so* accurate that when he tells mariners to "stay put" at their anchorages, everyone obeys! His friendly chatter with the boaters is entertaining and the questions he asks about the current conditions make for excellent training for anyone deciding to become a professional weather forecaster. Herb offers up the weather just once a day, so be on time to tune in!

On the West Coast, the marine weather expert is Don Anderson, and you can hear him every day at 1415 hours Zulu, on marine frequency 8122 kHz, upper sideband. At this time of the early morning, along the West Coast, propagation is confined to about 700 miles from his station near Los Angeles. He customizes his weather for boaters heading south into Mexico.

Two hours later, on marine frequency 12359, the same frequency Herb uses later on in the day, Don's 1630 hours Zulu weather forecasts predict conditions 500 to 2,500 miles out in the deep South Pacific. A half hour later, he moves up to 16534 kHz and offers weather forecasts up to 7,000 miles from his station.

Don has years of experience cruising around the world and knows the oceans as well as Herb does. He rolls his marine single sideband voice weather reporting much like a college professor—he demands full classroom attention and participation, and heaven help any sailor who checks in late to his daily, entertaining weather routine. The weather broadcasts take place on marine single sideband, and any cruising "student" in his daily class had best speak up *only* when spoken to. He's not bashful about demanding radio respect. Marine official callsigns are a *must!*

Both Don and Herb offer their weather services on an absolute volunteer basis. They don't offer professional for-hire sea-going weather routing, but both of these gentlemen will gladly discuss your options when contemplating course changes to dodge an incoming blow.

It's refreshing to hear real voices and real concerns for fellow sailors when Don and Herb give their daily Pacific and Atlantic reports. Government and commercial pre-recorded weather lack the emotion found in these live weather forecasters' voices when they tell everyone on the marine SSB net to "batten down the hatches," and get set for an incoming major storm. You'll stay glued to your radio dial, listening to the high-frequency signals from boaters all over

the region reporting in with increasing wind speeds.

Stay Safe By Staying Tuned

Weather is rarely ho-hum over high-frequency single sideband with the great reports from so many sources: the Coast Guard, stations WLO and KLB, air radio, hams, and our super skilled volunteer weather routers. Listening in is both entertaining and a smart approach to smooth sailing. ■

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The Sun Often “Tears Out A Wall” In Earth’s Magnetic Shield

by Tomas Hood,
NW7US, nw7us@arrl.net

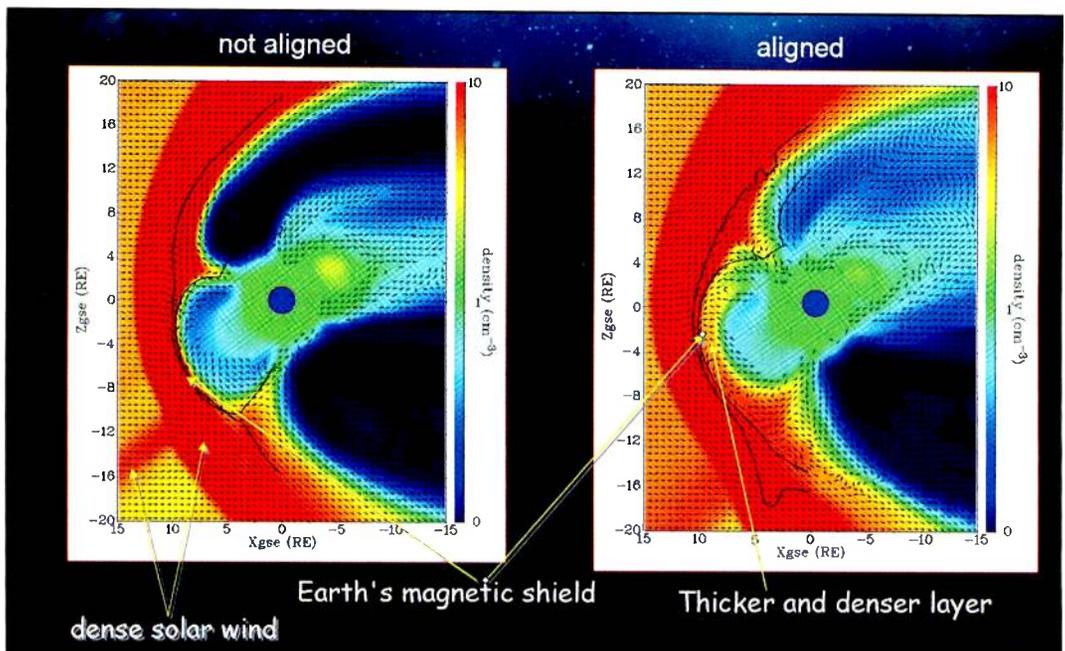
“March is one of the optimal DX months. As the spring equinox approaches, the gray-line begins to run straight north and south.”

In past columns, we’ve explored the basic mechanics of the Earth’s magnetosphere’s interaction with solar wind and the plasma that rides the magnetic field lines spiraling out away from the sun. The model used defined the magnetosphere as a type of shield around the Earth that deflected most of the solar wind and that kept solar plasma from entering our atmosphere. The model also defined how the solar wind and solar particles (ions and electrons) could enter our atmosphere if certain conditions occurred. It was believed that when the sun’s magnetic field lines were aligned with those of the Earth, the magnetosphere deflected most of this solar plasma. On the other hand, when the orientations were reversed, a “reconnection” occurred that allowed

the plasma to “rain” down along Earth’s magnetic field lines, ending up at our planet’s north and south magnetic poles.

Scientists were surprised when NASA’s THEMIS (Time History of Events and Macroscale Interactions during Substorms) mission blew away this long-standing belief. “Twenty times more solar particles cross the Earth’s leaky magnetic shield when the sun’s magnetic field is aligned with that of the Earth compared to when the two magnetic fields are oppositely directed,” says Marit Oieroset of the University of California, Berkeley, lead author of one of two papers on research of THEMIS data, published May 2008 in *Geophysical Research Letters*.

Solar and geophysical researchers have sus-



A computer model of solar wind flowing around Earth’s magnetic field on June 3, 2007. Background colors represent solar wind density; red is high density, blue is low. Solid black lines trace the outer boundaries of Earth’s magnetic field. Note the layer of relatively dense material shown in the right graphic, toward the top of the Earth (blue sphere in the center)—that is solar wind entering Earth’s magnetic field through the breach. (Image courtesy Jimmy Raeder/University of New Hampshire)

pected a mechanism that allowed solar particles to enter through the magnetosphere during periods when the sun and Earth were magnetically aligned. However, they never realized how important this mechanism might actually be. "It's as if people knew there was a crack in a levy, but they did not know how much flooding it caused," says Oieroset.

Before THEMIS, a number of research spacecraft could only sample a small part of this enormous layer of solar particles inside the Earth's magnetic shield. Now, because there are five spacecraft in the THEMIS fleet, scientists could use these spacecraft to span the entire rapidly growing layer to give definitive measurements.

While the THEMIS researchers discovered the size of the leak, they didn't know where these leaks might exist. This was discovered by Wenhui Li of the University of New Hampshire, Durham, New Hampshire, and his team. They used a computer simulation to discover where two holes frequently develop in Earth's magnetic field, one at high latitude over the Northern hemisphere, and one at high latitude over the Southern hemisphere. The holes form over the daylit side of Earth, on the side of the magnetic shield facing the sun (see image).

The scientists created a simulation that modeled just how these leaks develop. The model is actually pretty simple. As has been explained in past issues, the old model was correct in the physics involved when the two fields point in the same direction, at equatorial latitudes. However, Li's team realized that the solar magnetic field drapes against Earth's field as it passes by and that they point in opposite directions at high latitudes. When compression forces the opposite fields together, they link up with each other in a process called magnetic reconnection. This process tears the two holes in Earth's magnetic field and appends the section of the solar field between the two holes to Earth's field, carrying the solar particles on this section into the magnetosphere, according to Li's team. "We've found if the door is closed, the sun tears down a wall. The crack is huge—about four times wider than Earth and more than seven Earth diameters long," said Li.

We've learned in past months that severe geomagnetic conditions are not caused only by the presence of solar particles entering our atmosphere. However, if the space particles are energized when the solar magnetic field becomes oppositely directed to Earth's and reconnects

in a different way, magnetic storms occur. "The more particles, the more severe the storm," said Joachim Raeder of the University of New Hampshire, a co-author of Li's paper. Raeder continued:

If the solar field has been aligned with the Earth's for a while, we now know Earth's field is heavily loaded with solar particles and primed for a strong storm. This discovery gives us a basic predictive capability for the severity of solar storms, similar to a hurricane forecaster's realization that warmer oceans set the stage for more intense hurricanes. In fact, we expect stronger storms in the upcoming solar cycle. The sun's magnetic field changes direction every cycle, and due to its new orientation in the upcoming cycle, we expect the clouds of particles ejected from the sun will have a field which is at first aligned with Earth, then becomes opposite as the cloud passes by.

So it seems that there may be stronger storms during this new solar cycle. That's good news for VHFers, because it means that the chance of aurora-mode propagation is a lot higher than during the last solar cycle. At the same time, such storms are the bane of shortwave listeners and ham radio operators, depending on HF propagation. When severe geomagnetic storms occur, they tend to depress the ionospheric energy, causing the maximum usable

frequency (MUF) to be lowered by as much as 30 to 40 percent of the MUF under quiet geomagnetic conditions. It will be interesting to see how the new solar cycle develops. Stay tuned to this column for a play-by-play report each month.

HF Propagation

March is one of the optimal DX months. As the spring equinox approaches, the gray-line begins to run straight north and south. With the return of sunlight to the polar north, north-to-south openings on 11 through 25 meters are improving. However, since we're still at the very beginning of the new solar cycle, openings on east/west paths on higher frequencies will be short, if they occur at all.

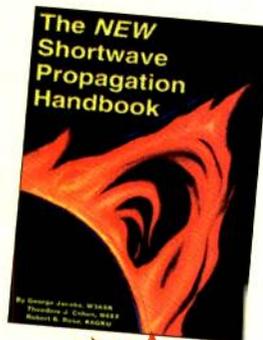
Sixteen meters will still stay open into the evenings. You will occasionally find 16 meters open all night long into regions in the other Hemisphere. Daytime paths will not significantly degrade until mid-summer. You'll experience early closures if you live closer to the North Pole, if any openings occur at your latitude.

Twenty-two and 19 meters will remain in excellent shape. Both short- and long-path circuits are reliable and solid. All nighttime paths are open during March, though they will be short and weak. The

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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	20	18	16	14	13	12	12	11	10	10	10	9	11	16	18	20	21	22	22	22	22	22	22
NORTHERN SOUTH AMERICA	28	28	26	24	21	20	18	17	16	15	14	13	13	13	18	21	23	24	26	27	28	28	28	29
CENTRAL SOUTH AMERICA	28	26	23	21	20	18	17	16	15	14	14	13	13	13	21	24	25	26	27	28	28	28	28	28
SOUTHERN SOUTH AMERICA	29	28	27	24	22	20	19	18	16	15	15	14	14	13	16	21	24	26	28	29	30	30	30	30
WESTERN EUROPE	9	9	9	8	8	8	8	9	9	8	8	8	8	13	15	17	17	18	17	16	15	13	10	
EASTERN EUROPE	9	8	10	12	13	10	10	9	9	8	8	8	12	14	15	15	15	15	14	14	13	12	11	
EASTERN NORTH AMERICA	23	22	19	15	14	13	12	12	11	11	11	10	10	15	19	22	23	24	24	25	25	24	24	
CENTRAL NORTH AMERICA	13	13	12	10	8	7	7	7	6	6	6	6	5	9	11	12	13	13	14	14	14	14	13	
WESTERN NORTH AMERICA	7	7	6	6	5	4	4	3	3	3	3	3	3	2	5	6	6	7	7	7	7	7	7	
SOUTHERN NORTH AMERICA	22	21	20	18	15	14	13	12	12	11	10	10	10	10	14	18	20	21	22	23	23	23	23	
HAWAII	20	20	19	19	18	16	14	13	12	11	11	10	9	9	9	8	10	13	16	17	18	19	20	
NORTHERN AFRICA	10	10	9	9	8	8	8	9	9	8	8	8	8	14	16	17	18	19	17	15	12	11	11	
CENTRAL AFRICA	14	13	12	12	10	10	9	9	9	8	8	8	8	14	16	17	18	18	19	19	18	17	16	
SOUTH AFRICA	19	18	16	13	12	11	11	11	10	10	10	10	10	17	20	21	22	23	23	24	24	23	22	
MIDDLE EAST	9	8	8	8	9	10	9	9	9	8	8	8	12	15	16	17	17	14	11	10	10	9	9	
JAPAN	19	19	19	18	17	16	14	10	10	9	9	9	9	8	8	8	9	8	8	14	16	18	19	
CENTRAL ASIA	20	19	19	18	17	16	14	10	10	9	9	9	8	8	8	12	12	12	11	11	11	16	20	
INDIA	12	12	13	13	13	13	10	9	9	8	8	8	8	8	8	8	8	9	10	11	12	12	12	
THAILAND	17	19	19	18	17	16	14	10	10	9	9	9	8	8	8	13	15	14	13	12	12	11	13	
AUSTRALIA	24	26	27	28	27	25	21	19	18	17	16	15	14	13	13	13	16	15	14	14	14	18	20	
CHINA	18	19	18	18	17	16	14	10	10	9	9	9	8	8	8	8	9	9	8	8	8	8	14	
SOUTH PACIFIC	29	30	30	29	27	25	23	21	19	18	17	16	15	14	13	13	15	14	14	19	22	24	26	

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CARIBBEAN	24	23	21	19	17	16	15	14	13	12	12	11	11	16	19	21	23	24	25	25	26	26	25	25
NORTHERN SOUTH AMERICA	26	25	24	22	20	18	17	16	15	14	13	13	12	15	18	20	22	23	24	25	26	26	26	26
CENTRAL SOUTH AMERICA	28	26	23	21	20	18	17	16	15	14	14	13	13	19	22	24	25	26	27	28	28	28	28	28
SOUTHERN SOUTH AMERICA	29	28	26	24	22	20	19	17	16	15	14	14	13	15	20	23	25	27	28	29	30	30	30	30
WESTERN EUROPE	9	9	9	9	8	8	8	8	8	8	8	10	14	16	17	18	18	18	18	17	16	15	13	10
EASTERN EUROPE	9	9	8	8	8	9	9	9	8	8	8	8	14	16	17	17	17	16	16	15	15	14	12	9
EASTERN NORTH AMERICA	16	15	13	11	10	10	9	9	8	8	8	8	13	15	16	17	18	18	18	18	18	18	18	17
CENTRAL NORTH AMERICA	8	7	7	5	4	4	4	4	3	3	3	3	3	5	6	7	8	8	8	8	8	8	8	8
WESTERN NORTH AMERICA	13	13	12	11	8	8	7	7	6	6	6	6	6	6	9	11	12	13	13	14	14	14	14	14
SOUTHERN NORTH AMERICA	15	15	14	12	11	10	9	9	8	8	7	7	7	8	12	13	14	15	16	16	16	16	16	16
HAWAII	23	22	21	20	18	15	14	13	12	12	11	11	10	10	10	10	12	16	18	20	22	22	23	23
NORTHERN AFRICA	13	12	10	10	9	9	9	8	8	8	11	15	17	18	19	19	20	20	20	20	20	16	15	14
CENTRAL AFRICA	14	13	10	10	10	9	9	9	8	8	8	11	15	17	18	19	19	20	20	20	20	18	17	15
SOUTH AFRICA	19	18	17	16	15	14	14	13	13	13	13	12	10	24	26	28	29	29	29	29	27	25	23	21
MIDDLE EAST	9	9	9	8	8	9	9	9	8	8	8	10	15	16	17	18	19	17	16	12	11	10	10	9
JAPAN	19	18	18	16	15	10	10	10	9	9	9	8	8	8	9	9	9	8	8	8	13	16	18	19
CENTRAL ASIA	19	18	17	16	14	10	10	9	9	9	8	8	8	12	14	13	12	12	11	11	11	16	19	
INDIA	8	8	9	9	9	9	9	9	8	8	8	8	9	9	9	8	8	8	8	8	8	8	8	8
THAILAND	17	18	17	16	14	10	10	9	9	9	8	8	8	8	14	16	16	15	14	13	12	12	11	12
AUSTRALIA	25	26	27	26	23	20	19	17	16	15	14	14	13	13	12	17	16	15	14	14	15	18	21	23
CHINA	17	18	17	16	14	10	10	9	9	9	8	8	8	8	10	9	9	9	8	8	8	8	13	16
SOUTH PACIFIC	29	30	28	27	25	22	21	19	18	16	15	15	14	13	13	15	14	14	16	20	23	26	27	29

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

prime evening hours in the United States are sunrise hours across Russia, Africa, and both the Near East and Far East. Expect occasional short- and long-path DX from these areas of the world.

Between sunset and midnight, expect occasional DX openings on all bands between 15 and 41 meters. Conditions should favor openings from the east and south. These bands should peak for openings from Europe and Africa sometime around midnight.

From midnight to sunrise, expect optimum DX conditions on 31 through 90 meters and occasionally on 120 meters. Conditions should favor openings from the west and south. Some rather good openings on 19 and 22 meters should also be possible from the south and west during this time.

Noise levels are slowly increasing as we move toward the spring season. Geomagnetic storms will increase, disrupting the mid- and high-latitude ionosphere. During the spring equinox, Earth's magnetic field is sufficiently perturbed by solar wind particles flowing into the auroral zone (between 50 and 70 degrees north geographic latitude) to cause the ionosphere to be depleted. During days of high solar activity (coronal hole mass ejections, high-speed solar winds, flares, and so on), an increase in aurora and geomagnetic storms will shut down many paths, while VHF openings off the auroral zone may increase.

Daytime MUFs continue to drop and the planetary A index (A_p) is on the rise, so take advantage of the current conditions and hunt for those weaker signals. Look for gray-line DX in the mornings and evenings on lower frequencies. Transequatorial propagation will be more likely toward sunset during days of high solar flux and a disturbed geomagnetic field; look for days with an A_p greater than 15, or a planetary K index (K_p) greater than 3. Sporadic-E openings should be increasing for shorter-range openings.

VHF And Above

Check for low-VHF short-skip openings during the daylight hours. Some short-skip openings over distances of about 1,200 to 2,300 miles may occur. The best times for such openings are during the afternoon hours.

Auroral activity often occurs during periods of radio storminess on the HF bands. Look for days when the A_p is climbing and the K_p reaches 4 or higher.

These are the days when VHF auroral-type openings are most likely to occur.

Current Solar Cycle Progress

The Royal Observatory of Belgium reports that the mean monthly observed sunspot number for November 2008 is 4.1, showing a nice rise over October's 2.9. The lowest daily sunspot value during November 2008 was zero, occurring on November 7-10 and from the 18th to the 30th. The highest daily sunspot count for November was 14 on the 12th. The 12-month running smoothed sunspot number centered on May 2008 is 3.5. A smoothed sunspot count of 21 is expected for March 2009, give or take about 6 points.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 68.6 for November 2008, continuing a slow but steady monthly rise since July. The 12-month smoothed 10.7-cm flux centered on May 2008 is 69.7. The predicted smoothed 10.7-cm solar flux for March 2009 is about 77, give or take about 7 points.

The observed monthly mean planetary A_p for November 2008 is 3. The 12-month smoothed A_p index centered on May 2008

is 6.9. Expect the overall geomagnetic activity to be quiet to unsettled for most days during March, with possible minor storms. Refer to the "Last Minute Forecast" found in the propagation column in *CQ Magazine* and at http://hfradio.org/lastminute_propagation.html for the outlook on conditions during February.

I'd Like To Hear From You

You can join in with others in discussing space weather, propagation, and shortwave or VHF listening, at <http://hfradio.org/forums/>. Be sure to check out the latest conditions, as well as the educational resources about propagation, which I have put together for you at <http://prop.hfradio.org/>. I also provide a WAP/WML resource for wireless devices. If you want the latest propagation information like the solar flux, 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!

73 de NW7US, Tomas Hood



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Restoring The Indicating Traceometer

by Peter J. Bertini
radioconnection@juno.com

Let's delve into the restoration the Hickok model 155 Indicating Traceometer featured in our last column. It may seem odd to devote a column to the restoration of a rare, eclectic piece of test equipment, but there are enough similarities between the Hickok and those made by other competing manufacturers to make the endeavor worthwhile. Also, restoration is restoration, and many of the tips and techniques are equally applicable to other vacuum tube-based vintage equipment.

The restoration will be covered in a two-part article because of the number of supporting photos and diagrams required and because of the relatively complexity of the project due to the instrument's numerous service functions.

If you're going to be restoring a Hickok Traceometer, I suggest having schematics for both the 155 and 156 models on hand. My 155 incorporated many circuit changes that were documented in the manual for 156; having both schematics cleared up the confusion whenever

small circuit changes didn't follow the model 155's schematic; in those cases the changes were depicted in the model 156 schematic. You can download, without cost, either manual from <http://bama.sbc.edu/hickok.htm>.

Getting Started

I always begin by doing a quick check of all of the resistor values. I do so with the resistor in circuit since, at worst, parallel paths would only lower the resistance readings. In most cases carbon composition resistors tend to increase in value as they age. If a resistor shows a lower value, a quick glance at the schematic usually gives a clue about whether further investigation is needed. The resistors in the Hickok 155 were about the worst I've encountered, with values that ranged from three to four times higher than marked! (**Photo A** shows a bottom view of the unrestored chassis.)

Ditto for the wax paper capacitors. After years of restoring I've learned that it's hardly worth the effort to test wax paper capacitors...if they aren't leaky now, they *will* become so, requiring repairs down the line or causing equipment damage. Whew! **Photo B** is a graphic example of what I'm taking about. The red pen tip is pointing towards what's left of a 1500 Ohm dropping resistor that supplied B+ voltages to a stage in the IF-RF tuned RF voltmeter band-switched coil assembly. This mess was caused by a bypass capacitor that shorted. Two 1500 Ohm resistors suffered the same fate because of shorted bypass capacitors.

While restoring the Hickok chassis seemed deceptively easy, the pile of replaced components shown in **Photo C** gives some idea of the amount of labor entailed in this restoration.

Restoring The IF-RF Voltmeter Channel

Restoring the IF-RF Voltmeter required removal of the band-switched coil assembly, shown in **Photo D**; the top shield was removed for this photo. Removal is necessary to provide access to parts attached to four associated tube sockets. The assembly is held in place by several sheet metal screws. Once these, and the band-switch knob, are removed it's possible to careful-

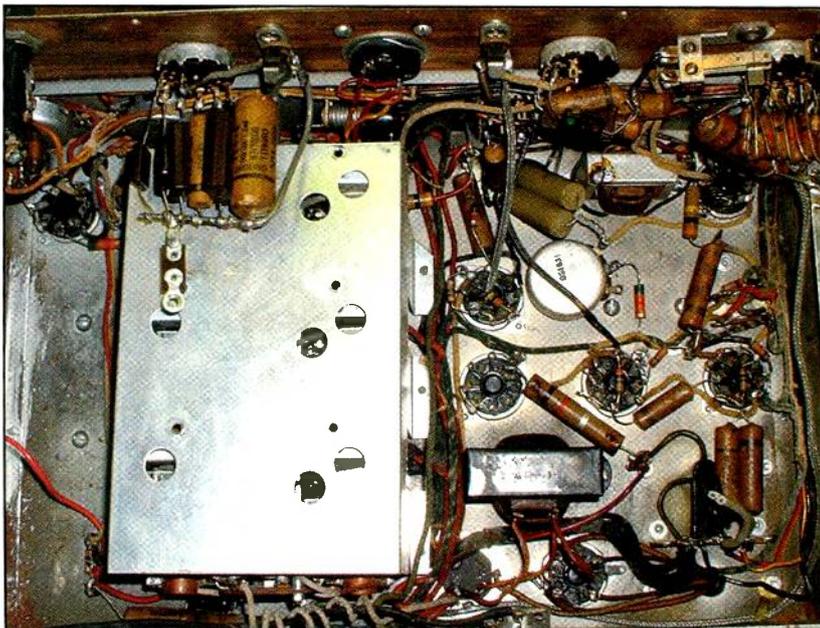


Photo A. This is the under chassis view of the unrestored Hickok Traceometer. The battery pack, which is missing, occupied the open chassis area to the left of the band-switch assembly shielded enclosure. The banks of resistors and capacitors on the front panel are associated with channel attenuators.

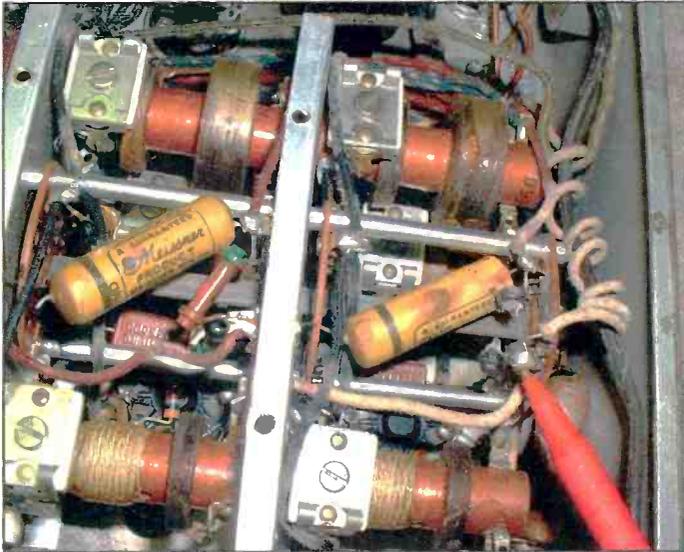


Photo B. Here's graphic proof of why it's better to be safe and replace all of the wax capacitors, regardless of how they might test. They will all eventually fail! The red pen tip is pointing to the space once occupied by a 1500-ohm plate-dropping resistor—only burnt leads remain. The nearby wax bypass cap is shorted. Look at those inaccessible tube sockets and bypass caps that are buried by the assembly!



Photo C. This is the pile of resistors and capacitors that were replaced during the restoration. There was much more involved than I had envisioned.

ly move the assembly far enough to permit cutting wire leads going to the tuning capacitor (best done on the top of the chassis, at the tuning capacitor) as well as the leads going to the sockets for the three 6SK7 RF amplifier tubes and to the 6SQ7 detector.

Carefully note the location of these wires before cutting! This will involve leads from the band switch assembly that are attached to pin eight of the first 6SK7, pins four and eight of the second and third 6SK7 tube sockets, and to pins four and five of the 6SQ7 socket. Leads from the band-switch assembly also go through the chassis to the three-gang tuning capacitor.

Removing the RF assembly makes an easy task of replacing the resistors and bypass capacitors on the sockets used for the amplifier stages. When replacing the bypass capacitors use the original ground points for the capacitors. Modern components have much smaller body sizes than their vintage counterparts; this often makes using a closer ground point tempting, but doing so might induce unwanted ground loops that can result in oscillation and instability (see **Photo E**).

One other suggestion: Many of the ground points relied on riveted joints for electrical connectivity. Over decades these mechanical connections can develop high resistances and cause problems. As shown in **Photo E**, I usually take the time to solder the rivet metal parts direct-

ly to chassis. This may require some scrapping to clean the chassis surface until it's shiny so it will take solder. I use a dental cleaning tool for this purpose.

The next task will be replacing the bank of capacitors used for the switch attenuator. I'll cover this aspect, as well as the restoration for the attenuators the

oscillator, AF, and DC voltmeter channels, in my next column.

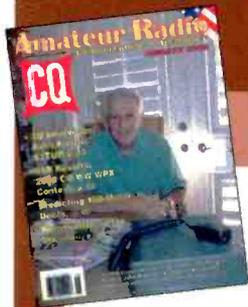
The Wattmeter Channel

Early Traceometers used a true "electrodynamometer" to measure and display wattage. In the Hickok wattmeter, the



Photo D. Here's a view of the full IF-RF voltmeter channel band-switch assembly. Sharp eyed readers might note that in addition to the damage illustrated in Photo C, the plate dropping resistor at the other end of the assembly also shows severe signs of overheating—another failing wax cap at play. The entire assembly needs to be removed to reach hidden bypass capacitors on the tube sockets below; Photo E shows more detail. Several wax caps in the switch assembly also had to be replaced.

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Once the band-switch is removed, you'll be able to replace the previously unreachable bypass caps on the four associated tube sockets. The red pen tip is pointing to an unused ground tap that's present on some styles of octal sockets. Don't be tempted to use these for RF bypass cap returns; it might lead to unexpected ground loops, which can cause unexpected oscillation or stability problems. Be sure to solder over any riveted parts to ensure good electrical connections as needed.

meter outwardly resembles a conventional D'Arsonval meter movement (**Photo F**), except that internally the magnetic field is developed by an electromagnetic coil (a relatively few turns of heavy wire) in series with the AC circuit instead of using a permanent magnet. The AC voltage develops the current that passes through the meter's moveable coil, after passing through a fixed, precision dropping resistor (**Photo G**). Thus the meter reading is based on a product of two currents: one developed by the amperage passing through the field coil, which is related to the current drawn by the load, and the amperage through the moveable coil, which is based on voltage delivered to the load.

The resulting product of the two currents (and meter deflection) is proportional to the power drawn by the load. Later models used a 3-ampere meter with a scale that assumed a 115-volt AC line voltage. Alas, this was a bean counter's cost-cutting measure and not an improvement. If owning a Hickok Indicating Traceometer isn't enough to impress visitors just imagine the look on their faces when you tell them it sports a honest-to-goodness electro-dynamometer!

Eliminating The Dry Cells

The vacuum tubes used in the four different voltmeter channels used a bank of

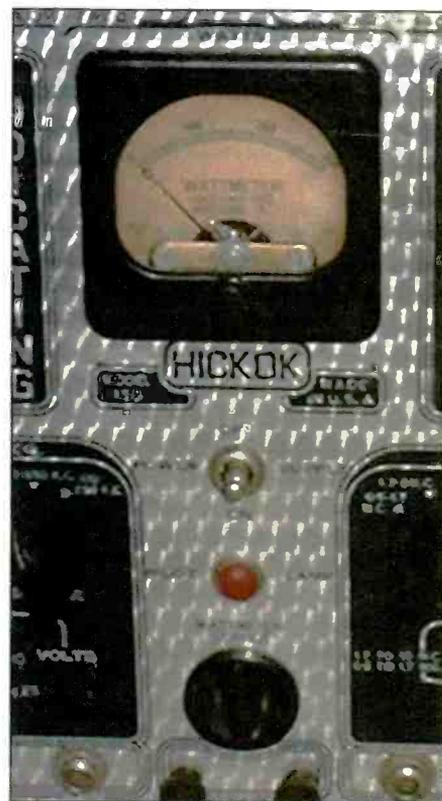


Photo F. The Hickok model 155 Traceometer incorporated a true wattmeter, the meter shown is an electro-dynamometer and calculates power based on I times E magnetic fields generated by the I and E components.



Photo G. A behind-the-panel peek shows that the external precision wire-wound resistor that's in series with the AC supply voltage going to the moveable coil in the meter movement. The meter bears a serial number, giving some indication that these were relatively expensive wattmeters. Hickok only used them in early Traceometer models.

dry cells to provide cathode bias. Each stage had its own front panel meter zeroing control; these were needed to keep the meters "zeroed" as the tubes warmed up and to compensate for tube and battery aging. The batteries provided a *negative* 4.5 volts with a rated life of about 1000

hours. This presented several problems. Aging batteries required constant fiddling with the front panel zeroing controls, or the use of a master pot (P1) on the rear panel when sagging battery voltage exceeded the authority of the range provided front panel controls (this was



Photo H. The original battery pack may have been state-of-the-art 60 years ago, but the problem-prone dry cells are now easily replaced by a small handful of modern solid-state components. Note that I tack-soldered the shields between the band-switch sections directly to chassis to ensure stability.

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required at about 200-hour increments). Many Traceometers were retired with the batteries in place. Eventually the cells would leak, causing corrosive damage to the chassis and to the battery holder.

Fortunately today it's a fairly easy matter to do away with the dry cells. The **Figure** shows a simple circuit that provides a regulated negative volt supply to replace the batteries. The circuit is simple: The 6.3 VAC filament voltage is applied to a simple full-voltage doubler, and the resulting DC voltage (about -15 volts) is applied to a 7905 5-volt voltage regulator. All of the requisite parts can be mounted on a terminal strip under chassis (see **Photo H**). A heatsink isn't needed for the 7905 since the bias supply current requirements are very low. Be careful! The metal heatsink tap on the 7905 is at the same potential as pin 2, which is the unregulated voltage input.

AC Power Wiring

I did a few changes to the AC power wiring. First, I added an internal fuse holder to protect the Traceometer transformer from overloads. A 1-amp fuse is adequate here. I also wired the existing front-panel AC fuse holder so it was only in series with the wattmeter's front-panel

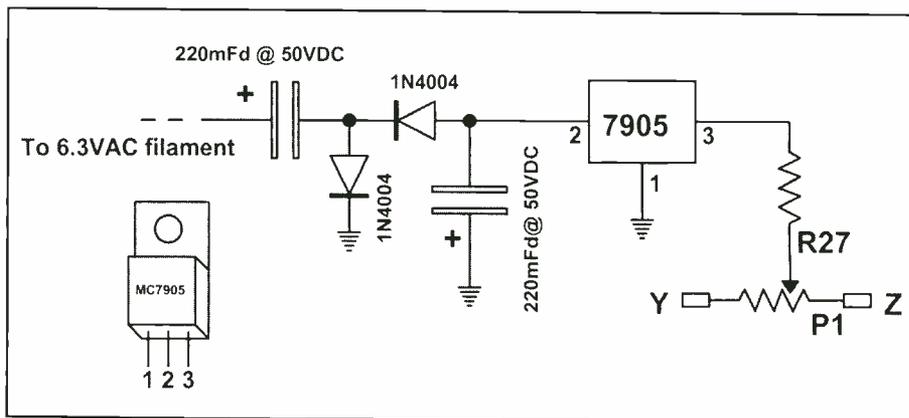


Figure. A simple full-wave voltage-doubler and IC regulator chip provide a stable negative five-volt source, replacing the problematic dry cell pack used in the original design.

mounted AC socket (seen below the meter in **Photo F**). A fast blow 3-amp fuse serves here to protect the wattmeter. I added a three-wire power cord. The ground wire goes directly to the chassis, while the neutral is wired to the common returns for the wattmeter and Traceometer power. The hot lead is switched (power switch) and has the individual fuses for the wattmeter and Traceometer protection. The dry cell wiring no longer needs to pass through

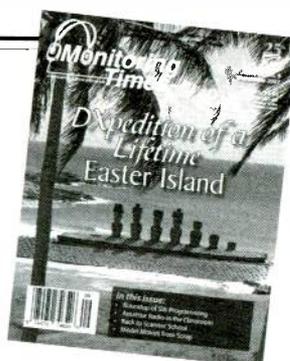
the AC power switch if the previous modification to eliminate the bias cells is incorporated. The front-panel power switch controls both the wattmeter circuit and power to the Traceometer.

More To Come...

Well, that's about all I have room for this month. We'll do the project wrap-up next time. In the meantime, keep those old tubes glowing and those soldering irons warm!

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Trivia And Toons

by R.B. Sturtevant, AD7IL

Q. How did the Germans set up their spying apparatus in England before World War II and why was it so unsuccessful?

A. Hitler was obsessed with the idea that England and Germany would join together to fight Communism. He forbade Admiral Canaris to have any agents inside Great Britain until 1937. That's a pretty late start for a war that began in 1939. Colonel Karl Busch, a veteran intelligence officer, was tasked with setting up spy rings inside Great Britain.

Busch actually set up two layers of spy organizations. The first was a layer of petty agents that was composed of hundreds of young girls who were to go to Britain and seek work as family domestics (the German word is *maedchen* and means something similar to the French *au pair*). Trained by German military intelligence to undertake such diverse tasks as cooking English style and setting up clandestine radio stations, these girls sought employment in the highest levels of English society they could reach. Some were fairly well placed prior to the war. The second layer, and where the real work was to be done, was composed of better trained James Bond-type spies. The *maedchen* did their part, however, which was to take up the time of British counter espionage agencies.

Both levels, it seems, were known to Britain's counter-intelligence and security agency, MI 5, by the time the war broke out and were quickly rolled up. MI 5 was very busy, but two years really isn't a lot of time to set up a large number of undercover agents effectively.

Q. How many Signals troops did we have in Vietnam?

A. Because of people moving in and out, sent in on temporary duty, multiple tours and short or extended assignments nobody in the Army can tell us for certain just how many people were assigned to Vietnam during the entire period of the U.S. presence there. We do know that the 1st Signal Brigade had responsibility for most of the Signal soldiers who served there between 1962 and 1970. The 39th Signal Battalion was the first Army ground unit to be sent to Vietnam. By 1968 there were six Signal Groups and 22 Signal Battalions. These were made up of 23,000 troops and comprised the largest Signal organization ever deployed to a combat zone from the United States. The unit was larger than a division and, when coupled with the field force Signalmen, was a very formidable command and control organization.

Q. What is frequency hopping and when was it first developed?

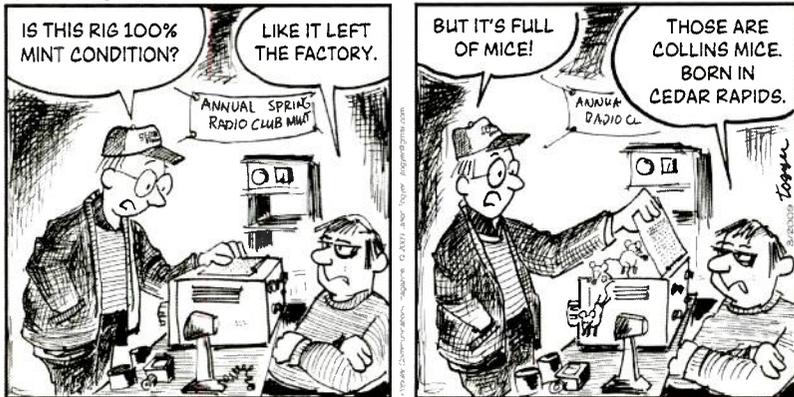
A. Frequency hopping is a method of radio signal transmission that involves rapidly switching a carrier among many channels. It's used when security is needed and the sending and receiving stations have a pre-arranged pattern to change the frequency they are working on at regular intervals. Using this system both coded and uncoded messages can be secure. The length of time on any frequency is relatively short so an eavesdropper without the pre-arranged change sequence can't follow the "hops."

It was developed by the Army Signal Corps using spark gap transmitters at Fort Leavenworth, Kansas, in about 1916. Wireless sets of those days could only be tuned to what we would call an approximate frequency, but the width of the signal was slightly wider than today's AM radio band. The operator would send a word or two, then give his assistant time to adjust loading coils and the variometer to a different frequency setting before he resumed sending. The receiving team would already have established that the two stations were closely tuned to each other and would follow the pre-arranged schedule of changes.

Operating over a frequency range of 675 to 2220 meters, there was room for many changes when frequencies were kept 50 meters apart. Practice tests were done over 75 and 185 miles, which was considered near the operational limits of the equipment. Because spark gap transmitters were known to throw a nasty spark, it was considered best to keep the upper frequency range at something near 1800 meters for safety sake.

Spurious Signals

By Jason Togyer KB3CNM



Grand Forks AFB To Add HF-GCS Duties

by John Kasupski,
KC2HMZ,
kc2hmz@verizon.net

“The HF-GCS is currently operated by communications technicians at Andrews Air Force Base, Maryland... but ‘Utility Communications Digest’ has now learned that the USAF’s Air Mobility Command has selected Grand Forks AFB in North Dakota to serve as the system’s alternate control station...”

The question before us this month is: Who will be the first to log the new Grand Forks HF-GCS station when it becomes operational this year?

Utility listeners with any amount of experience are undoubtedly at least aware of the High Frequency Global Communications System (HF-GCS), a network of HF communications stations which supports a variety of U.S. and allied military commands as well as elements of the National Command Authority (specifically, the White House Communications Agency and the Joint Chiefs of Staff). HF-GCS is a highly automated communications system linking USAF command and control aircraft to other airborne and ground-based command nodes via HF radio.

The HF-GCS is currently operated by communications technicians at Andrews Air Force Base, Maryland, just outside of Washington, D.C., but “Utility Communications Digest” has now learned that the USAF’s Air Mobility Command has selected Grand Forks AFB in North Dakota to serve as the system’s alternate control station, expected to become operational in that capacity this year.

To prepare for this mission, the base, home of the 319th Refueling Wing as well as several tenant units, has commenced major renovations to its facilities to house the support computers and high-speed communications circuits that will soon be installed. An HF-GCS station consists of three major pieces: the transmitter, receiver, and the control equipment (including station infrastructure such as antennas and feedlines). Also part of the station are numerous other support systems, along with the operators and maintenance technicians, logistics support personnel, and the training system. According to the Air Force, the 319th Communications Squadron is 130 persons strong.

“The new circuits will ensure reliable connectivity to antenna locations around the world to provide secure data and voice connections to command and control aircraft.” said Staff Sgt. Russell Mullens of the 319th CS Plans and Resources Flight, quoted in a news story carried by the USAF’s Air Force Link website (www.af.mil).

Grand Forks AFB (Photo A) is a facility covering 8.2 square miles of land, located about 15 miles



Photo A. LGM-30 Minuteman III missile on display at the entrance of Grand Forks AFB. (USAF photo)

west of the city of Grand Forks, the home of the University of North Dakota. The actual construction of the base began in February 1956. Grand Forks was originally constructed as a fighter-interceptor air base, and initial construction was completed in 1960, when the 18th Fighter Interceptor Squadron began operations with the F-101 Voodoo. In July 1963, the base was placed under the command and control of Strategic Air Command (SAC), and became home of the 4th Strategic Aerospace Division. Added in November 1964 was the nation’s first Minuteman II intercontinental ballistic missile (ICBM) wing, the 321 Strategic Missile Wing, which became fully operational in



Photo B. KC-135 Stratotanker sits on the flight line during an exercise at Grand Forks Air Force Base, North Dakota, on November 28, 2007. (USAF photo)

December 1966 (the 321st received the Minuteman III upgrade in 1973).

The base has also served as home to the B-52G bombers, which were replaced by B1B bombers in 1987. In 1992, both the 319 Bomb Wing and the 321 Missile Wing became part of the new Air Combat Command. But in 1993, the 321 Missile Wing became part of the Air Force Space Command. Its ICBMs have since been moved to Malmstrom AFB in Montana. The last of the B1B bomber aircraft left the base in May 1994. In conjunction with this, the 319th Air Refueling Wing was activated (**Photo B**) and the base was aligned under Air Mobility Command.

Other Upgrades In Store For Grand Forks

As the base prepares for this important mission, another USAF program known as the Combat Information Transport System (CITS) will install a significant upgrade to the base's existing communications lines and network equipment. The mission of CITS is to ensure that every Air Force installation has the latest network equipment and infrastructure available to support the base's mission. AMC officials recently selected Grand Forks AFB as one of the first locations to receive the latest upgrade in 2009.

"This upgrade will add to the base's already sizeable network infrastructure by extending and upgrading our high-speed fiber optic network to provide reliable and redundant voice, data, and video links," said Tech. Sgt. Joe Nash of the 319th CS Plans and Resources Flight,

quoted in the same USAF news story mentioned above. "This will help to minimize outages and prepare us for any mission the Air Force might send our way."

Shortly before press time Grand Forks began receiving a planned squadron of four MQ9 unmanned aerial vehicles. The first of these UAVs landed at the base on December 6 and will soon begin patrolling the northern border as part of a partnership between U.S. Customs and Border Patrol, the Grand Forks Air Force Base, the North Dakota Air National Guard, the University of North Dakota and the city of Grand Forks. Its mission will be to patrol and provide security along the northern border against terrorists, illegal immigration, and narcotics traffickers.

A press release from the office of North Dakota Governor Joe Hoeven indicated that the Custom and Border Patrol UAS launch and recovery team will be located at the Grand Forks AFB using their agents, as well as contract pilots. The press release also stated that the University of North Dakota's Unmanned Aircraft Systems (UAS) Center of Excellence and a team of global defense and aviation technology companies were awarded a nearly \$50 million Air Force Contract last July to help train pilots for the newest generation of the military's unmanned aerial vehicles.

It is worth noting, for those who may have previously read about this, that most press releases concerning the UAVs referred to these aircraft as MQ9 Predator-B aircraft. This is technically incorrect: The UAVs in question were originally built as the RQ-9 Predator-B,

which the military now refers to as the MQ9 Reaper (**Photo C**).

The U.S. Department of Homeland Security had originally ordered one of these aircraft for border patrol duty, referred to as MQ-9 CBP-101, and it began operations in October 2005, but crashed in the Arizona desert on April 25, 2006. During its operational period, this aircraft flew 959 hours on patrol and had a part in 2,309 arrests, contributing to the seizure of four vehicles and 8,267 pounds of marijuana. Because of these successes, a second USAV (CBP-104, though it was initially referred to as CBP-102) was delivered in September 2006 and began limited operations the following month. The CBP-101 was equipped with the Lynx Synthetic Aperture Radar, AX-15 payload, ARC-210 radios, and other sensors and communications equipment. CBP-104 was enhanced with Ku band satellite command and control link and MTS-A EO/IR sensors.

Correction

Just to set the record straight—the item of ammunition shown in the photo on page 79 of the November 2008 issue is not a .50 caliber round as I indicated. Mark Cleary of Charleston, North Carolina, owner of the item and the shack it's located in, advises that it's in fact a 20mm CWIS dummy round. CWIS (pronounced "sea-whiz") stands for Close-In Weapon System and provides U.S. Navy ships with a terminal defense against anti-ship missiles and aircraft that have penetrated other fleet defenses. Perhaps better

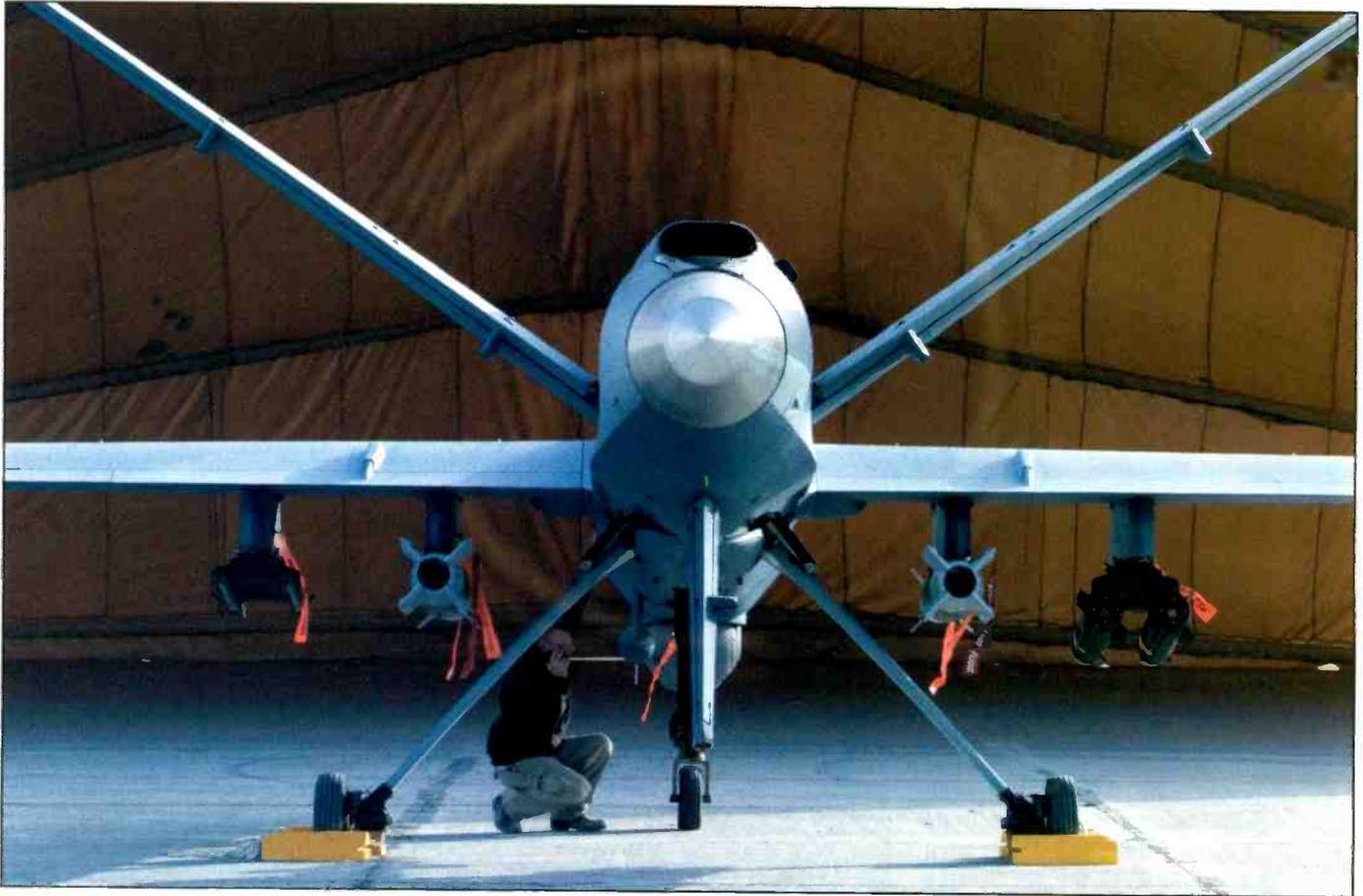


Photo C. A maintenance Airman inspects an MQ-9 Reaper in Afghanistan on October 1, 2007. (USAF photo)

known as a Phalanx gun, CWIS is present on specific class destroyers and amphibious ships as well as aboard Ticonderoga-class cruisers, and several aircraft carriers are also equipped with it.

Reader Logs

With the deadline for this month's *Pop'Comm* moved up on account of the holidays, the collection of loggings is a bit thinner than usual this month. However, we still received a good collection of UTE catches from Al Stern, Satellite Beach, FL (ALS); Mark Cleary, Charleston, South Carolina (MC/SC); Steven Jones, Lexington, KY (SJ/KY); and Glenn Valenta, Lakewood, CO (GV/CO). To them we offer many thanks and a tip of the "Utility Communications Digest" hat. And now, on with those logs!

3047.0: Unid station using speech inversion in USB at 0419Z. (GV/CO)

3810.0: HD2IOA, Guayaquil Ecuador Time Signal under several hams in QSO, in AM at 0632Z. (GV/CO)

4001.5: USN MARS net, very slow hand-keyed CW, NNN0EI and several other stations heard, in CW at 0048Z. (GV/CO)

4015.0: Army MARS net in informal mode, AA9CV, AA9TW and others, in LSB at 0453Z. (GV/CO)

4026.9: AAV4HL, AAR4BH, AAR4CW, AAT4TV in Army MARS Region 4 net in USB at 1215Z. (MC/SC)

4032.9: AAA3VA, Virginia in Army MARS Region 3 net in LSB at 1220Z. (MC/SC)

4721.0: G05036 (AH-64D) clg ADW (Andrews HF-GCS) in ALE USB at 1912Z. (MC/SC)

4924.5: R23476 (UH-60A) clg TZAVGL in ALE USB at 2104Z. (MC/SC)

5649.0: Gander Radio working various aircraft in USB at 0339Z. (GV/CO)

5833.5: R23555 (UH-60A) clg TZAVGL in ALE USB at 1257Z. (MC/SC)

5875.0: R24533 (UH-60A) clg KBDLNG (CT ARNG Bradley ANGB) in ALE USB at 0107Z. (MC/SC)

6265.5: 9HAT9, CITRON, 46,600-ton Malta-registered crude oil tanker w/MMSI and ID "GDCT" in SITOR-A at 1740Z. (SJ/KY)

6911.5: R23572 (UH-60A) clg KBD (CT ARNG Bradley JNGB) in ALE USB at 2103Z. (MC/SC)

7361.5: T12 (12th Aviation Bn) clg R24609 (UH-60A) in ALE USB at 1819Z. (MC/SC)

8156.0: CORAL HARBOUR BASE (Royal Bahamas SDF) wkg C6R2067 regarding patrol, hurricane Paloma, and message traffic comms with C6R2066 in USB at 1239Z. (MC/SC)

8171.5: R00293 (CH-47D) clg KBDLNG (CT ARNG Bradley JNGB) in ALE USB at 1550Z. (MC/SC)

8291.0: CAMSLANT making callouts in USB at 1225Z. (MC/SC)

8294.0: SHARK 12 in clear and green comms in USB and ANDVT at 1422Z. (MC/SC)

8379.0: V7NW6, FR8 VENTURE, 74,065-ton Marshall Islands-registered crude oil tanker w/MMSI, abbreviated ID "VENT" and TEST command in SITOR-A at 1535Z; C6IR8, HAIGHT, 27,209-ton Bahamas-registered bulk carrier w/MMSI and several commands for WLO, Shipcom R., Mobile, AL in SITOR-A at 1555Z; KIRH, HORIZON TRADER, 31,394-ton U.S.-registered container ship w/BBXX format WX OBS, 400 miles NE of Nassau, Bahamas in SITOR-A at 2330Z; V7ET4, EXPRESS, 9,200-ton Marshall Islands-registered WX Maritime Ro-Ro cargo ship w/AMVER/SP for departure from Santo Tomas de Castilla, Guatemala en route to Port Everglades, FL. to arrive in 2 days, included INMARSAT ID, unknown abbreviated ID "CXPV" and route leg list of

13 coordinate positions as single line in the report, in SITOR-A at 0115Z, vessel heard again 5 days later w/AMVER/SP and similar information for departure from Port Everglades en route to Puerto Limon, Costa Rica, to arrive in 3 days, in SITOR-A at 1730Z. (SJ/KY)

8381.0: VRWS2, *YONG HUAN*, 74,500-ton Hong Kong registered bulk carrier w/MMSI and abbreviated ID "YOHU" in SITOR-A at 2100Z; S6CJ2, *EAGLE VIENNA*, 306,999-ton Singapore-registered AET ultra-large crude carrier w/MMSI and abbreviated ID "EVIE" in SITOR-A at 2215Z; 3EH4, *STAR PRIMA*, 13,189-ton Panama-registered refrigerated cargo ship w/MMSI, abbreviated ID "PRIM" and TEST command in SITOR-A at 0125Z. (SJ/KY)

8391.0: Unid. station w/on-off transmissions of encrypted traffic beginning w/strings of YYY, in 50 baud/170 Hz Baudot RTTY at 1100Z. (SJ/KY)

8393.0: Unid. vessel w/SELCAL QVXV (2010) for XSG, Shanghai R., China, good signal here but no contact, in SITOR-A at 1930Z. (SJ/KY)

8602.0: CWA, Cerrito Radio, Uruguay, with CQ loop in CW at 0046Z. (GV/CO)

8677.0: CBV, Chilean time station in Valparaiso, under RTTY QRM, in USB at 0043Z. (GV/CO)

8747.0: Unid. shrimp fishermen in Cajun-accented English, discussing their economic situation, in USB at 0040Z. (GV/CO)

8806.0: WLO (ShipComm Mobile, Alabama), automated YL/EE with high seas WX broadcast, unid Russian YL voice underneath, in USB at 0019Z. (GV/CO)

9007.0: CANFORCE 2593 (CC-130) p/p via TRENTON MILITARY in USB at 1942Z. (MC/SC)

9025.0: ADW (Andrews HF-GCS) c/g 450031 (KC-10A, 305 AMW) in ALE USB at 1837Z. (MC/SC)

11175.0: TUFF 11 (B-52H, 2 BW) c/g RAYMOND 06 (Barksdale AFB CP), raising and working TUFF 02 in USB at 2018Z. (MC/SC)

11175.0: HF-GCS Station HICKAM then ANDREWS w/g TOPCAT 39 for phone patch to DSN number for 38th Recon Squadron (Offutt AFB), no answer, in USB at 1730Z. (ALS)

11175.0: HF-GCS station ANDREWS w/g BOMBARDIER (U.S. Mil) trying to contact unheard RICOCHET; misspelled call sign as BOMBADEER, in USB at 2254Z. (GV/CO)

11220.0: BASEBALL (U.S. Mil) w/g HF-GCS LAJES with data transmission at 2027Z. (MC/SC)

11232.0: SHADO 99 (MC-130) w/g TRENTON MILITARY for WX at Eglin AFB in USB at 2150Z. (MC/SC)

11494.0: CG 1704 (HC-130) p/p to Sacramento Air regarding arrangements for arrival at Elizabeth City to turn aircraft over, in USB at 1950Z. (MC/SC)

12479.0: C6TL7, *APL BRAZIL*, 55,495-ton Bahamas-registered container ship w/AMVER/PR 350 miles southeast of St. John's, Newfoundland, included MMSI and abbreviated ID "BRAZ," in SITOR-A at 1625Z; S6DU6, *PAK ALKAID*, 26,515-ton Singapore-registered general cargo ship w/MMSI and abbreviated ID "ALKD" in SITOR-A at 1835Z; HBDF, *SILS*, 39,425-ton Switzerland-registered container ship w/AMVER/PR 800 miles due west of Managua, Nicaragua, and en route at 18.7 knots to Shanghai, China, to arrive in 18 days, included INMARSAT-C ID, good signal in SITOR-A at 1857Z; WAAT, *OVERSEAS LONG BEACH*, 46,111-ton U.S.-registered chemical/oil products tanker w/weak AMVER/PR, en route to Port Angeles, WA, in SITOR-A at 2020Z; KNJL, *HMI PETROCHEM*, 29,763-ton U.S.-registered chemical/oil products tanker w/callsign and several commands for WLO, Shipcom R., Mobile, AL, in SITOR-A at 2205Z. (SJ/KY)

12482.0: 9MCK7, *SELENDANG INTAN*, 47,174-ton Malaysia-registered bulk carrier w/AMVER/PR, 400 miles ENE of Nassau, Bahamas en route to Coatzacoalcos on Mexico's southern Gulf coast, included INMARSAT contact numbers for FAX and TLX as well as abbreviated ID "INTN," in SITOR-A at 1620Z; MHME, *OCEAN PREDATOR*, 27,656-ton United Kingdom-registered bulk carrier w/AMVER/PR, 50 miles off the eastern tip of Cuba and sailing

NNE, included IMO number, MMSI and abbreviated ID "PRED," in SITOR-A at 2135Z. (SJ/KY)

13927.0: USAFMARS Operator AFA6PF (Los Angeles) w/g TUFF 21 (B-52H, Barksdale AFB 2BW) for phone patch in USB at 1810Z; AFA6PF w/g TIGER 11 for M&W phone patch to commercial number in California in USB at 1835Z. (ALS)

13927.0: kHz USB 1624Z: USAF MARS Operator w/g "Reach 700" for radio check in USB at 1624Z. (ALS)

13927.0: USAFMARS Operator AFA2XZ (Salt Springs FL) w/g EVAC 99102 (Self-Ided as a C-130H, Youngstown-Warren RAP, AFRC 910AG 757AS, "just south of Richmond, VA") for phone patch to DSN number for MacDill AFB Base Ops, announces ETA of 1830Z, in USB at 1632Z. (ALS)

15016.0: Andrews with EAM broadcast "For PREMIUM" in USB at 1507Z. (MC/SC)

16747.0: V7109, *BARBARA*, 73,390-ton Marshall Islands-registered bulk carrier w/brief traffic: "DATE: 15-NOV-2008 21:16 THIS IS TEST MESSAGE [sic] PLS DISREGARD. THANKS FROM MV BARBARA/V7109"; transmissions relaying news in English about the Philippines heard on this frequency several times over the past few years but never before w/vessel ID, booming signal strength in SITOR-B at 2116Z. (SJ/KY)

16910.0: HLJ, Seoul R., South Korea w/marker: "CQ CQ CQ DE HLJ HLJ HLJ QX 16 MHZ K," fair signal in CW at 2245Z. (SJ/KY)

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The Fire Tower DXpedition Contest Of '79

by Shannon Huniwell
melodyfm@yahoo.com

“Doubling as a bathroom tissue dispenser, the 9-volt battery-powered AM receiver was specifically and unmistakably designed for ‘in John’ listening, and was appropriately dubbed ‘Little John.’”

My long-suffering junior-high math teacher had a sign over his desk urging, “Hire a teenager now...while he or she still knows *everything!*” That may be a bit of an exaggeration. But the former adolescent—and present day *Pop’Comm* reader—who gave me his story for this month’s feature admits that a youthful know-it-all attitude was largely responsible for his first frostbitten foray into the radio hobby.

Nick Ventner remembers being plunked into a 9th grade class at the rural Elizabethtown (New York) Central School sometime in mid January 1979. His single parent father had found construction work in Florida so sent him to stay with an elderly aunt and uncle who had a winterized camp on Lincoln Pond about six miles outside of what the Adirondack natives called “E-Town.” On that first day in the new school, he sat alone at lunch wishing for a buddy to talk with, but felt better that nobody came close enough to notice him nibbling on Meals-On-Wheels leftovers.

Just before the bell rang, though, a chubby-cheeked kid perusing a magazine absentmindedly wandered over his way and plopped down. He was one of those readers who silently moved his lips.

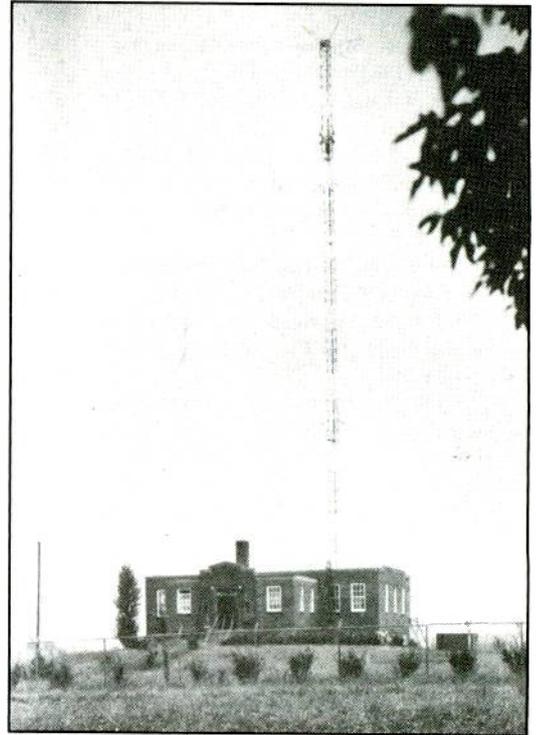
“What’s so interesting?” Nick asked.

Matter-of-factly, the boy responded with three words, “Distant Radio Stations.”

The next day, Nick’s new acquaintance was more talkative. During lunch, he identified himself as Chippy.

“Kids call me that because I have a fat face,” he stated with an air of resignation. “To them I guess I don’t look like I’m good for much, but I’ve got my hobbies.” With that, he pulled his magazine out of an army surplus knapsack. “I get paid in books and stuff from an old lady next door I do odd jobs for. Last week, she gave me a box of printed matter, including this publication from nearly 20 years ago.” He held up the spring 1960 edition of *Radio-TV Experimenter* and then from its recesses pulled out a black & white snapshot. “I’m aiming to pick-up the station in this picture here,” he announced in a high-pitched voice that’d surely annoy anyone not particularly interested in what the kid had to say. “It’s way out in Chicago.”

The top of the little publicity still had long been stained with a rusty staple gripping several tight-



Tracing its roots back to April 1922, Chicago’s WMAQ was originally called WGU and owned jointly by the *Chicago Daily News* and the Fair Department store. WGU’s debut was marred by a crummy antenna and balky transmitter.

ly typed paragraphs from National Broadcasting Corporation’s public relations department. Its headline read, “WMAQ To Step Up Power.” Full of superlatives, the copy boasted:

WMAQ’s 50,000 watt transmitter will begin operation Sunday September 15, 1935 replacing the old transmitter in use by the pioneer station since 1928. The 490-foot, 3-sided, non-tapered vertical radiator—first of its kind in the Country—is topped by a 60-foot capacity top tuner—the largest ever built. The tower has received its coat of alternate orange and white paint to safeguard daytime flyers. At night, ever burning marker lights and revolving beacon are used for illumination.

Ask most people where the best AM radio reception might be found, and they’ll instinctive-



Prior to the 1960s explosion of inexpensive transistor radios, kids seeking their own portable set considered diode receivers like Tiny-mite a practical way to hear their favorite local AM. Of course, these cute radios were only as portable as the length of the antenna wire that had to be clipped to something like the little metal finger stop tang on a rotary telephone dial.

ly point upwards. That's probably because when folks think "radio broadcasting" tall towers come to mind. Following that logic, many assume that the higher the receiver is situated, the better its antenna will snag signals. While certainly advantageous in line-of-sight FM or TV DX pursuits, some of the best amplitude modulation receiving records have been set at sea level.

Radio frequency neophytes miss this counter-intuitive ground waves/sky wave AM reality. That was certainly the case one Friday in our main characters' science class. There, the know-it-all, "cool kid" son of a local attorney couldn't resist making a comment about Chippy and the *Radio-TV Experimenter* magazine Chippy was devouring.

"So now you're a radio expert!" the teen taunted loud enough for the whole class to be redirected.

"I'm studying long-distance RF reception and the possibility of detecting hundreds of stations all listed herein," Chippy responded in his best, *mind your own beeswax* tone.

"Ha! You couldn't even get Chile on a shortwave radio if you stuck your antenna out the window in a blizzard! Ha, ha, ha." The insults continued, "You couldn't even hear Turkey on Thanksgiving!"

The bully's victim was visibly impacted. His arms uncontrollably shaking, with both hands clenching the magazine, Chippy turned red and began blowing great audible breaths past his lower lip, lifting his bangs and steaming his glasses.

"Gentlemen!" their teacher bellowed, focusing his gaze primarily on the spoiled rich kid. "That'll be enough unless one of you wants me to transmit a telephone signal to the principal's office!" It didn't take long for the participants to pipe down. Nor were there more than a few seconds before the science teacher's disciplined stare morphed into a Eureka expression that heralded his capture of a serendipitously teachable moment. Apparently, the teacher was a bit of a radio buff, too.

Nick reports that the fellow skillfully shifted their magnetism/earth science lesson into information about electromagnetic waves and broadcast reception. He asked to borrow Chippy's magazine, opened it to the *White's Radio Log* section, had a girl in the front row take it to the main office for a quick transparency copying job, and beamed the resulting sheet on the overhead projector. The students couldn't believe how many stations were listed. "And that's on just one page," he replied, holding up Chippy's publication and fanning through the entire *White's Radio Log* portion.

"Could someone pick-up all of those stations?" a curious kid in the middle wondered aloud without raising his hand.

"Not from one location," the teacher noted, "but with a good radio and antenna, you'd be surprised how many you could receive—even tiny 250-watt AM broadcasters hundreds of miles away."

By this time, Chippy was so centered on the topic he started rummaging in his knapsack for something he earned for washing the neighbor's windows. His expression power-shifted from nerd neutral to Wal-Mart smiley face as he set a colorful little cardboard box on his desk and waited for the teacher's remark. Sure enough, the instructor deftly requested that Chippy come to the front of the class for a bit of show-and-tell. Out of the carton, labeled "Tiny-mite," came what looked to be a new old stock 1940s Bakelite table-style radio shrunken to fit in the palm of one's hand. An earphone bud and alligator clip wire hung from its back cover.

"That's sooo cute!" one of the pretty J-V cheerleaders squealed. Her clique quickly agreed. But the preppy girls' unlikely status conferral only served to rile-up the rich boy. He pointed at

Chippy's Munchkin receiver and let out a dramatic belly laugh. "You couldn't get anything on that pip-squeak thing even if were hooked directly to a 50-million watt UHF color TV transmitter!"

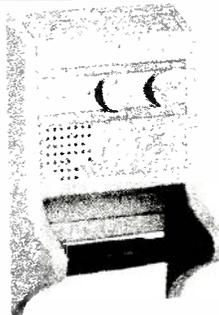
"Tell you what," the science teacher proposed, "let's see who can log the station furthest from Essex County. And I don't care what radio you use to do it. You may bring in your reception notes of what you heard and when. I'll consult with your English teacher to see if we can make an extra credit project for anyone who participates in this radio challenge by sending stations a neatly typed reception report. The winner will be the person who, within 30 days of this coming Monday, presents the class with a signed verification letter from the furthest station as determined by me and this U.S. map here in front of the classroom. And just to sweeten this deal, I'm making the following offer..."

Incentive, GE Mod Molded Plastic Style

He then granted a rare peek into the personal life of one's instructor. He had won a nice door prize at Marvin's Furniture, a local store that handled everything from mattresses to major appliances. With the purchase of a new bed, he received a General Electric P'Jammer AM/FM clock radio molded in

"Little John" AM Radio

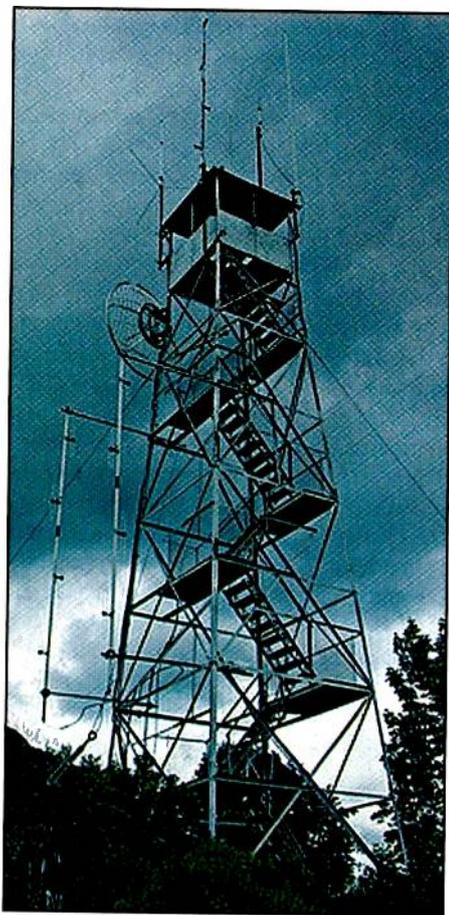
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I sent this image from a 1976 Lafayette Electronics catalog to our story's main character, Nick Ventner. He confirmed that Little John sure looks like the radio he borrowed from his Uncle's bathroom. Note that Lafayette cites that its "delightful little solid state AM" is "imported." Nowadays, few folks could imagine otherwise for any piece of electronic gear!



Nick Ventner emailed me this shot of the Belfry Mountain fire tower from the fascinating website, Fire Towers of New York by Captain Paul T. Hartmann. Nick reports that, except for most of the antennas now mounted on the 47 foot structure, this contemporary picture of Belfry Mountain's metallic giant looks identical to his late 1970s memory of the tower. It's officially been out of service since 1989.

non-earth tone hues. Given its model name to make one think of pajamas and listening to this radio while in the sack, the GE not only featured wake-up and snooze controls, but also had a small compartment that—through a transparent plastic port hole on the side—displayed a ready pair of personal earphones labeled “bedbuds.” From a top shelf in the classroom coat closet, he produced the neatly re-packaged P’Jammer AM/FM and declared it to be the DX project’s prize (his wife had not taken kindly to its late night reception).

Nick was sufficiently inspired by the challenge to confidently announce that he and his underdog friend would wholeheartedly participate. On cue, the dismissal bell rang. The rich kid shot to his feet and predicted he’d use his father’s

“fancy German all-band set to make Nick and Chippy look like dopes.”

Uncle, Can I Borrow Your Bathroom Radio?

Plans called for their adventure to take place from mid Saturday afternoon through sometime Sunday. Nick’s guardians weren’t too happy about him missing church, but agreed it was nice he’d made a friend and was involved in extra credit for school. He had permission for the DXpedition to take place at his aunt and uncle’s place, but when Chippy got dropped off there at about 2 p.m. Saturday, the kid was packed down with two arctic-rated sleeping bags and an unswerving determination to hold the session in the 50-foot fire tower on Belfry Mountain, hiking distance from Lincoln Pond. “That’d put us way up in the air! Almost 1,800 feet!” he smiled with a diabolical chuckle.

Besides determining the RF stakeout, Chippy’s contributions included a loaf of bread, peanut butter, a plastic knife, and that super midget receiver. Nick had packed a flashlight, scrap paper, and a pencil. But when he asked for a closer look at Chippy’s funny little germanium diode set, Nick knew their DXpedition needed more firepower.

Fast action and quick thinking being necessary for the remote DXpedition’s success, Nick considered the only other conveniently located radio that didn’t require AC power. His Uncle Ned kept such a receiver in his modest home’s toilet. Doubling as a bathroom tissue dispenser, the 9-volt battery-powered AM receiver was specifically and unmistakably designed for “in John” listening, and was appropriately dubbed “Little John.”

“Well heck,” Uncle Ned said, “I suppose that poor little transistorized guy would appreciate some mountain fresh air for a change.” Seconds later, he finagled the solid-state novelty from its mounting screws and handed it to Nick. “There’s a new battery near the butter dish in the fridge,” the old gentleman smiled. Fifteen minutes later, he drove the boys to the trail marker pointing toward the mountain road/trail, and wished them luck “up on Belfry.”

Nick noticed that light snow had already started to accumulate when the taillights of Uncle’s 1973 Plymouth Cricket 4-door sedan disappeared down the road. Chippy had a terrible time getting over—and eventually around—the cable preventing vehicles from traversing the hairpin thoroughfare to Belfry’s summit. Nick counted four

times that Chippy had to rest along the way to the foot of the fire tower. The kid took another three breathers while clanking up the tower’s stairs.

Had Nick even suspected that the trap door to the Spartan fire tower observation booth might be padlocked, he wouldn’t have ever consented to stage their radio soiree there. Fortunately, the last Ranger out had not closed up the place, but his relief evaporated when they rounded the final landing and spied the hatch door hasp dangling in the increasingly crisp, stiff breeze.

A Fast Funeral For Tiny-mite

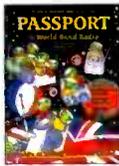
“Do you hear anything?” Nick asked while he unpacked their gear and Chippy fiddled with the crystal set. Chippy had already clipped its antenna lead to a half dozen places on the observation booth’s framework. Anticipating spectacular listening opportunities, he practically jammed the earphone into his head. A piece of errant coax protruding through a wall provided some reception pay dirt, causing the chubby youth to tightly cup his hands over his ears. “I got something! I got something!” he yelled. It was a steady whisper from WVMT, the 5 kW Burlington, Vermont outlet at 620 kHz. That was certainly no record catch. Being the Eastern Adirondack/Lake Champlain region’s AM station gifted with the lowest frequency, one might expect to get it on a toaster.

Another ten minutes of twisting Tiny-mite’s diminutive dial also yielded a shred of what probably represented 50,000 watt WGY in Schenectady, New York, but as far as Tiny-mite was concerned, that’s all she wrote. Moments later, the one-diode wonder became the sole casualty in a potential human disaster. Apparently, Chippy caught a shoelace in the trapdoor. Prying through the crack, he over estimated what it would take to get the door open, lost his balance and slid over the side of the bottomless rectangle. Nick caught the kid’s leg just in time. The mishap, though, ripped Chippy’s beloved crystal radio from his ear and the antenna clip off of its copper connection. Tiny-mite’s case careened down, its wiry guts getting hung-up in protective mesh positioned around the stairwell structure. Chippy began sobbing. “All those darn windows washed for nothing,” he wept. Nick encouraged his pal with reminders of how much worse they’d both feel if Chippy—in addition to the little crystal set—had met his doom. The hatch re-

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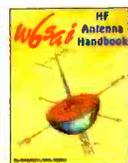
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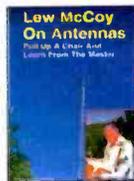
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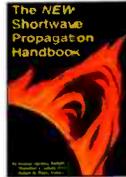
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The patio style studio/transmitter site of WSLM in Salem, Indiana. The station's sales literature notes that their letters stand for Wisdom, Sincerity, Loyalty, and Might.

secured, Nick handed Chippy the toilet paper transistor radio, and the DXpedition resumed.

Hey, Let's See What Our Big Gun Will Do!

By now it was nearly sunset and cold enough for the DX team to take refuge in their respective sleeping bags. They zipped up all but about eight inches of their down-filled Dacron cocoons so communication could be exchanged through the floppy openings. That's also how the radio, flashlight, knife, bread, and peanut butter made their rounds. Nick remembers approximate results of the Little John receiver's 4:30 p.m. dial scan. As the session's official scribe (a job he got by default because of Chippy's indecipherable handwriting), Nick jotted down the presence of 550 WDEV Waterbury, VT; 620 WVMT Burlington, VT; 690 CBF Montreal, Quebec; 800 CJAD Montreal, Quebec; 810 WGY Schenectady, NY; 960 WEAV Plattsburgh, NY; 1000 WHWB Rutland, VT; 1230 WJOY Burlington, VT; 1250 WIPS Ticonderoga, NY; 1400 WDOT Burlington, VT; and 1490 WFAD Middlebury, VT.

Slowly reversing the process yielded pretty much the same results except Nick thought he also detected 1340 WIRY Plattsburgh in the hash that was bouncing harder into the AM band some 15 minutes before (5 p.m.) average sunset in the Eastern Standard Time zone. And then the dial went strangely silent. Nick says "dark" is a better way to describe the sound between 540 and 1600 kHz during those twilight moments. "It was kind of a lightly throbbing bassy tone that seemed to camouflage all but WVMT," Nick says.

Although the de-facto eastern Essex County local station still had a few minutes until sign-off, daytimer WIPS Ticonderoga (maybe 22 miles away as the

crow flies) was now virtually inaudible at the fire tower. Chippy suggested installing Uncle Ned's new 9-volt Ray-O-Vac battery. He did the honors as if the procedure were cardiac surgery. The re-power gave noticeably greater volume, but hadn't filled the trough into which the earlier AM signals seemed buried.

Holy Cow! Now They're Coming Through Like Popcorn!

Just before 5 o'clock, heterodynes spooked up and down the dial. At first they hummed slow and low, and then whistled faster with higher pitch. These effects were gone as quick as they came, peeling back whatever reception impediments had previously clogged the standard broadcast band. At 1220 kHz, for example, the boys (having consulted *White's Radio Log*) expected they might hear flamethrower WGAR Cleveland, Ohio. Instead of this flamethrower, however, quirky 5-kW daytime outlet WSLM Salem, Indiana, shot through. Suddenly, the spectrum had come alive with lower mid-western and southern stations seldom heard in eastern-upstate New York.

With Chippy at the variable capacitor, Nick—listening closely though the sleeping bags' unzipped portals—positioned the Boy Scout flashlight to shine on the *White's* listings. "W-C-B-C, or maybe W-C-P-C just under the 10," Chippy excitedly called out and waited for Nick's pronouncement of where it was located. "Here it is! WCPC, Houston, Mississippi!" Nick confirmed and then urged Chippy to be quiet so he could copy enough of WCPC's programming to craft a reception report.

Montgomery, Alabama's 50,000 daytimer WBAM 740 was another of the boys' catches that early evening. They heard an ID and the traditional tune "Dixie" as WBAM signed-off at local sunset. Like most of their fantastic finds, it was a highly directional daytime-only facility designed to thwart any hint of northern coverage.

We Got That Station In The Old Picture!

By 6 p.m., their run of southern luck had run out. Replacing these rarities was the more expected clear channel traffic for which the classic Class 1 and 1-A sky-wave reception was typically dependable. Among the old faithful was the station in Chippy's black and white snapshot,

WMAQ. Although he didn't particularly enjoy its country music format, Chippy repeatedly tuned to the Chicago signal and asked for the flashlight and the old WMAQ tower photo. "Just think," he'd say, "we're up here getting invisible radio waves through all of the air between Belfry Mountain and the Illinois place in this picture!"

No Contest At All

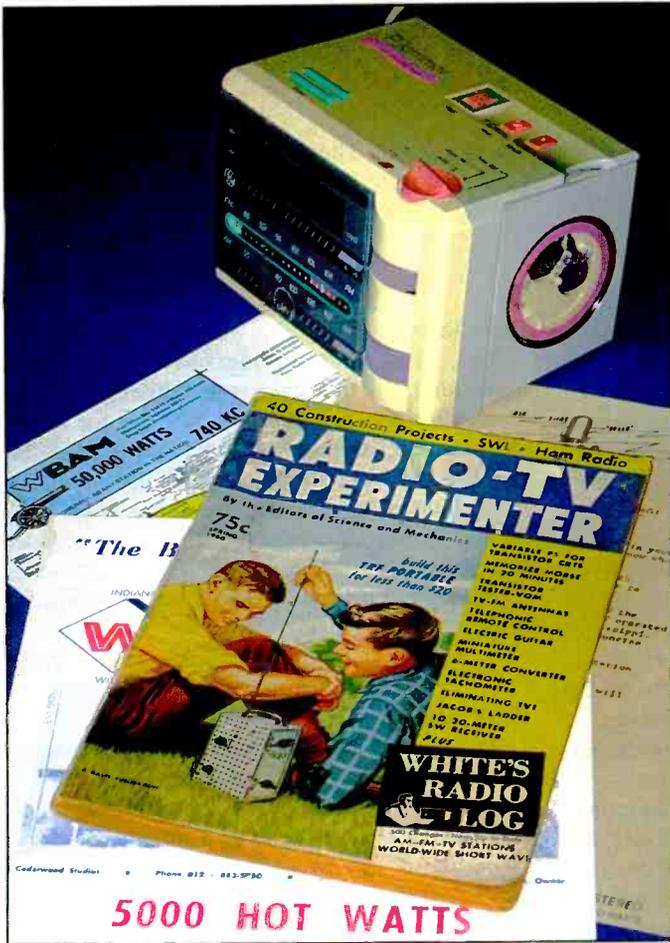
Even for a couple of true radio buffs in a novel location for reception, the DXpedition was getting old and mighty cold by 10 that January night. Besides, both 9-volt batteries and the peanut butter were running low. The boys voted to hike back to Nick's place where it'd be warmer and they could write up rough drafts of their reception report letters. They had to bang on Nick's flashlight to coax it into illuminating their cautious trek down the tower's steel stairs. Not far from where the mountain trail met the road, a couple in a red Ford F-150 pickup offered them a lift back to Lincoln Pond.

Nick's aunt and uncle were as pleased to see them back so soon. They filled the kids with baloney sandwiches, Saltines, and steaming tomato soup, and seemed spellbound by the boys' account of far-away stations received on the little bathroom radio. Apparently, so were the station officials who read Nick's letters. All but one of his eight QSL requests netted fruit, documentation that his science teacher accepted as proof positive that Nick and Chippy should be awarded his GE P'Jammer prize.

By the way, the aforementioned rich kid/bully produced a letter from his attorney father certifying that he had picked up the BBC on their Grundig. "Sorry," the teacher stated while handing back the sharply creased paper, "but our rules indicated contestants would obtain proof from the stations they heard... Plus, they were to be AM broadcast band stations, not international shortwave." As Chippy was given the GE, he squinted at the bully in a way that communicated, "Revenge is sweet!" Chippy and Nick had previously agreed that, if they won the radio, they'd share it a week at a time, until they graduated high school.

A Bug Is Born

Nick's tenure in E-Town, turned out to be brief. His father's Sunshine State job enabled him to buy a modest trailer in Stuart, Florida, near where his



Check out those two radio buddies on the cover of *Radio-TV Experimenter* #565. While probably electronically savvy than our tale's Chippy or Nick, they show how DXing can produce a friendship. WBAM and WCPC literature serve to carpet the GE P'Jammer AM/FM that Nick has long kept in a place of honor on a shelf in his home office.

employer promised at least several years of construction work. So during spring vacation, Nick's aunt and uncle put him on a Trailways bus headed south. When he first told Chippy he'd be moving, the kid presented him with the *Radio-TV Experimenter* magazine that had prompted their friendship. "Use it to look up some Florida stations," Chippy directed.

A couple of days later, he appeared at the bus stop and waited for Nick's aunt and uncle to finish their farewells. Then, from his tattered knapsack, Chippy produced the GE P'Jammer radio they'd won from their science teacher. "Take it," he offered in his usual monotone. "You're the real radioman in this teenaged duo. Besides," the boy reasoned, fanning out three coverless marshal arts magazines he'd grabbed from the satchel, "the old lady next door has got me plugged into a new hobby."

As the Trailways eased onto the street, Nick looked out of the window to catch a final glimpse of the community where he'd made a friend who'd gotten him interested in broadcast radio. That was also the last time he ever saw Chippy. Nick held the GE to the glass and gave the kid a respectful salute. He knew that Chippy would pretend not to notice. Twirling clumsily by a huge, bare tree, as tall as the Belfry Mountain fire tower, Chippy was making exaggerated karate chops in the still chilly Adirondack air.

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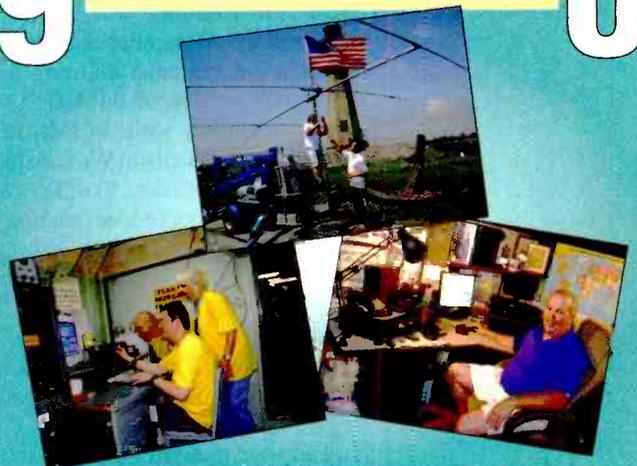


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In Appreciation Of Wireless

The following letter was sent to Peter Bertini, "The Wireless Connection" columnist:

Dear Peter:

Just a few words to let you know that I really look forward to reading your column each month. I just finished repairing two radios that were suffering from "silver migration" disease. I followed the instructions that you sent me months ago and had great success with both sets. One was a Sonora AA5, which utilized the small 3/4-inch IF cans, and the other was an Admiral AA5 that used larger cans, about 1 1/4 inch. They were slug tuned also. When I was done bridging across the IFs, I had to retune them and also peaked up the tuning capacitor. Both radios play great and track right on frequency. I have about six more sets to do. Incidentally, I used 120 pf silver micas on the Admiral and used 100 pfs on the Sonora because I ran out of 120s; there appears to be some latitude between the two different capacitors.

In my humble experience in working on radios, I have not had any problems with the older sets that use the larger IF cans that utilize the two tuning screws at the top of the can. By the way, I had a Hallicrafters S-38 radio like the one featured in your July [2008] column.

Bob Pote
Greenwood, Indiana

HDTV Antennas Continue To Enthral

The following letters were sent to Kent Britain, "The Antenna Room" columnist:

Dear Mr. Britain:

I read the September issue with a great deal of anticipation...antenna building gets me going. I built your version of the HDTV Antenna and it works extremely well. In fact, for our reception area (between Madison Wisconsin, 45 miles away, and Rockford Illinois, 30 miles away), this antenna beats any other indoor antenna we've tried.

Chuck Lind
Janesville, Wisconsin

Dear Kent:

I plan to build your EZ HDTV Yagi featured in the September issue, but I have one question regarding element spacing.

I always thought that element spacing meant "the distance between elements." However, from your description, diagrams, and pictures, I believe you mean that all elements are measured "from director 1." So director 2 is 2 inches in back of director 1, the driven element is 3.5 inches behind

director 1, etc. Therefore, all measurements are measured from D1 for a total boom length of 12 inches. Is this correct?

Joseph E. Vukelich, KØIZF
Plano, Texas

Dear Joseph:

Yes, all elements are measured from a common point. In this case, the longer reflector. Measuring between elements is okay for small antennas, but has been avoided for many years. In the '50s and '60s, all the elements had the same spacing, something that really didn't work well on high-performance antennas. Also you tend to end up with a cumulative error on really long antennas, and it's the driven element-to-element distance that's critical.

Kent

Dear Kent:

In the September edition of *Popular Communications* you described the HDTV Antenna. Can these be stacked for increased sensitivity? If so, what would be the distance?

John Kwinn
Via email

Dear John:

They can be. Use a regular two-way signal splitter as your combiner. Make sure the two lengths of coax between the driven element and the end of the F connector are very close in length. Then 10 to 12 inches should work fine for a stacking distance. But getting a single antenna several feet higher will often give you more signal.

Kent

Dear Kent:

Thank you for the article regarding HDTV antenna building. I have two questions regarding the HDTV antenna project:

1. Do the antenna elements other than the driven element need to be connected to each other or the coaxial cable in any way?

2. Is there a need for a VHF-UHF transformer? I ask because I've seen others use it in projects.

Muneer Mirza
Via email

Dear Muneer:

No, only the folded element is connected to the coax. Without going at length into impedance matching, the antenna is designed for a 72 Ohm output, so no transformer is needed. For the ham radio versions, dimensions are adjusted to give a 50 Ohm output; yours is already 72.

Kent

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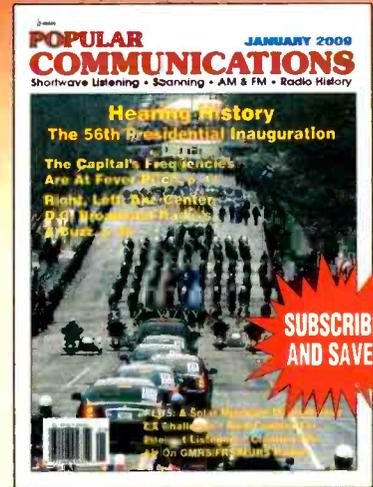
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To Scare A Mockingbird

by Bill Price, N3AVY
chrodoc@earthlink.net

“We spoke of our plans on this very same party line in whispered tones almost every day that week. Friday night was the night, and 11 o’clock was the time we’d pick up the phones.”

MY entry into vandalism (that’s *such* an evil word) began when I read a story of a kid sneaking out at night, doing all sorts of devilish things in his neighborhood, and then sneaking back home undetected. My two best friends (I so much want to call them Flick and Schwartz) must have read the same story or one just like it because it was not a week after my “awakening” that they each, separately, told me of their nocturnal adventures.

Larry, my neighbor to the north, had the absolute luxury of an outside door on his bedroom and a porch with steps to the ground. Jerry, to the south, also had his egress pretty much “unchecked.”

Larry would go out hunting for raccoons with a slingshot and his trusty dog, Jinx. Jerry had other things in mind and took off on his bike at about 11:00 p.m. and rode almost an hour to a nearby town where he ditched the bike and hung around on a street corner, smoking cigarettes and swilling soda with the “big kids.”

Larry had a landlord that neither of us liked, and neither of us had the good sense to leave him alone so that Larry’s folks could live in peace. Larry was particularly mean, and I was particularly devious. We were made for each other.

So all we had to do was make it look as if—whatever happened—we were *not* involved. This meant we couldn’t be blatant and put food coloring in his swimming pool—something I’d wanted to do for a long time. He drove a sports car. There was no lock on the trunk. This was textbook. We would flatten his spare and one of his tires and hide the tire pump which he kept in the garage. To avoid doing too much late at night when all was quiet, we hid the pump under a pile of junk in his own garage during the day.

Now Larry and I had to meet at some time and place, but neither of us could be sure just when we could get out of the house, with parents watching late-night TV or otherwise up and about. I’d already been drooling over surplus walkie talkies, but even if I could have afforded a pair I’d have needed a bank loan to get the batteries. Also, at our age and size, we probably couldn’t have carried them for long. These were the same ones our lead toy soldiers (with lead-based paint) carried.

We’d learned that since our phones were on a party line, all we had to do was pick up the phones at the same time (we synchronized our watches)

and dial 1 to get rid of the dial tone. That way, there was no ring for our parents to hear. We spoke of our plans on this very same party line in whispered tones almost every day that week. Friday night was the night, and 11 o’clock was the time we’d pick up the phones. (DETECTIVE ALERT! This is the paragraph which Hercule Poirot would quote when exposing the perpetrator(s) to Captain Hastings and inspector Japp.)

We had about a half-mile of woods between our houses. There was a well-worn path, past our dog pen (Sport wouldn’t bark at me) and past Larry’s landlord’s dog pen. That miserable, stupid slobbering Great Dane would bark at a flea. Larry had his dog with him, so all we had to do is meet beyond our dog pen and give a wide berth to “Drooly, the Bark-Menace.”

By the time I had walked past Sport’s dog pen, my flashlight was kaput. I’d have to do it by feel and the little bit of moonlight. I was sure I could find my way. Soon, Larry heard me in the woods and shined his light on me. We made our way back to his place and to the target vehicle (how I love code words like that!).

Until that moment, some of the most frightening experiences of my life had been in a matinee showing of some horrible movie where the director would do a quick cut to a close-up of the hideous monster with a loud blast of dissonant music from the orchestra. I’d look over my shoulder all the way home and for the next month sleep with hundreds of watts of light flooding my bedroom—particularly under the bed and in the closet. That—I would learn—was child’s play.

It was not bad enough that Larry’s landlord—after overhearing our plot on the party line that week (I *told* you) hid inside the trunk of his car in the pitch dark waiting to grab my arm, but he had the *nerve* to enlist Larry’s dad to hide behind a tree and run up and growl and put a bear hug on Larry. Neither of us has ever admitted to being scared. Or wetting our pants.

Did we learn a lesson?

You bet. You’ll never catch *us* plotting on a party line again.

Note: Bill (and Larry, I believe) have been working closely with U.S. Intelligence agencies to assist in stopping terrorist activities, though they will deny it if asked.—Ed.

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