45241

Amateur Radio

http://www.cq-amateur-radio.com

COMMUNICATIONS & TECHNOLOGY

FEBRUARY 2008

CQ

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  Scott Redd, KØDQ,
  Former Director, National
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On the Cover: Fred Serota, K3BHX, of Blue Bell, Pennsylvania. Details on page 106.

KENWOOD

Listen to the Future

AIRWAVE SUPERIORITY

Never before has a compact HT offered as many features, and such high powered performance as the TH-F6A. Arm yourself with one today and gain your own airwave superiority.

- Triband (144/220/440 MHz)
- Receives 2 frequencies simultaneously even on the same band
- 0.1~1300MHz high-frequency range RX (B band)[1]
- FM/FM-W/FM-N/AM plus SSB/CW receive
- Bar antenna for receiving AM broadcasts
- Special weather channel RX mode
- 435 memory channels, multiple scan functions
- 7.4V 1550mAh lithium-ion battery (std.) for high output[2] and extended operation
- 16-key pad plus multi-scroll key for easy operation
- Built-in charging circuitry for battery recharge while the unit operates from a DC supply
- Tough construction: meets MIL-STD 810 C/D/E standards for resistance to vibration, shock, humidity and light rain
- Large frequency display for single-band use
- Automatic simplex checker
- Wireless remote control function
- Battery indicator • Internal VOX • MCP software

[1]Note that certain frequencies are unavailable. [2]5W output

TH-F6A

TRIBANDER

KENWOOD U.S.A. CORPORATION
Communications Sector Headquarters
3970 Johns Creek Court, Suite 100, Suwanee, GA 30024
Customer Support/Distribution
P.O. Box 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745
Customer Support: (310) 639-4200 Fax: (310) 537-8235

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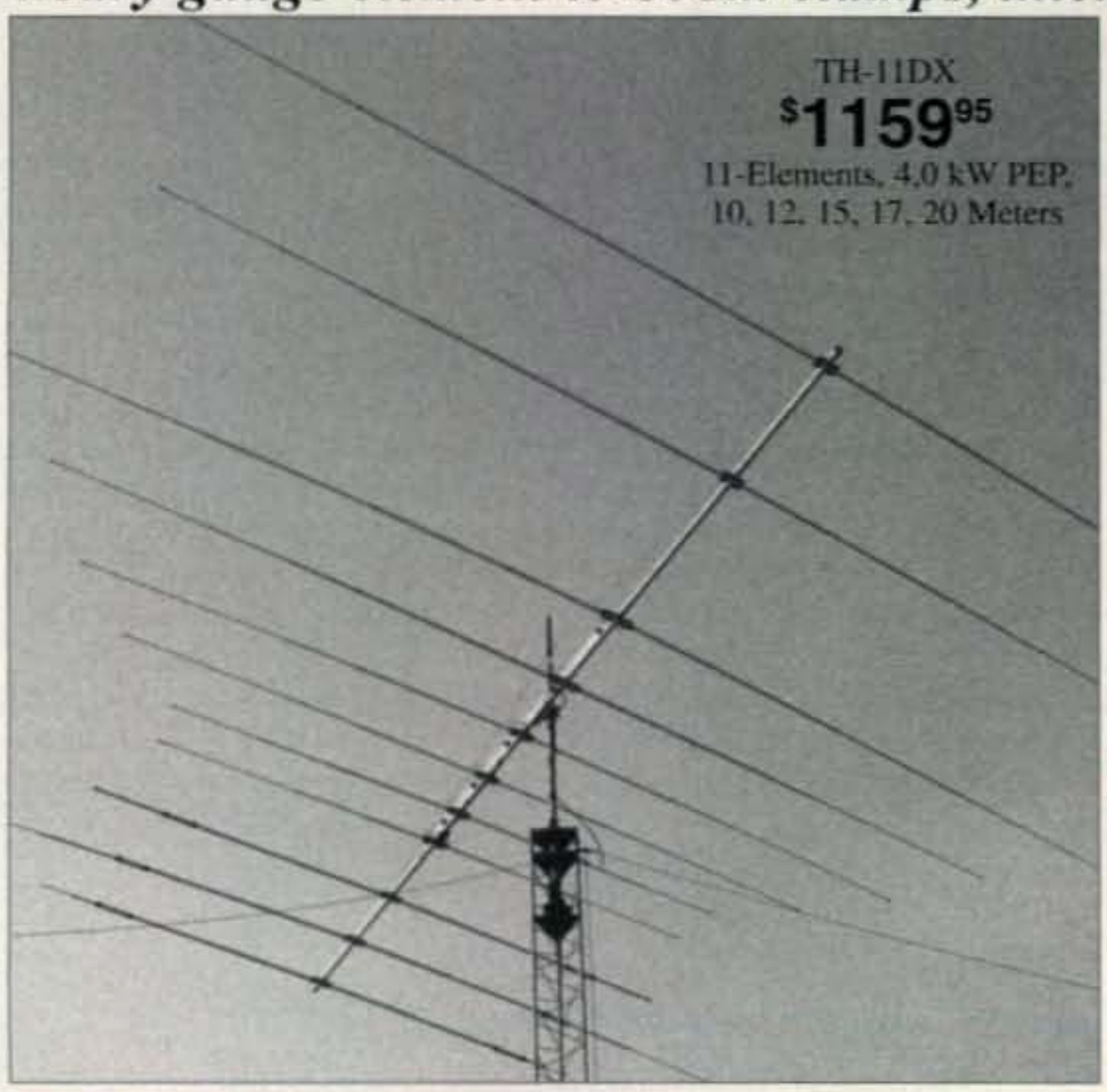
JQA-1205 091-A
ISO9001 Registered

hy-gain® HF BEAMS...

. . . are stronger, lighter, have less wind surface and last years longer.
Why? Hy-Gain uses durable tooled components -- massive boom-to-mast bracket, heavy gauge element-to-boom clamps, thick-wall swaged tubing -- virtually no failures!



TH-11DX, $1159.95. 11-element, 4.0 kW PEP, 10,12,15,17,20M

The choice of top DXers.

With 11-elements, excellent gain and 5-bands, the super rugged TH-11DX is *the "Big Daddy" of all HF beams!*

Handles 2000 Watts continuous, 4000 Watts PEP.

Every part is selected for durability and ruggedness for years of trouble-free service.

Features a low loss log-periodic driven array on all bands with monoband reflectors, BN-4000 high power balun, corrosion resistant wire boom support, hot dipped galvanized and stainless steel parts.

Stainless steel hardware and clamps are used on all electrical connections.

TH-7DX, $869.95. 7-element, 1.5 kW PEP, 10,15,20 Meters

7-Elements gives you the *highest average gain* of any Hy-Gain tri-bander!

Dual driven for broadband operation without compromising gain. SWR less than 2:1 on *all* bands.

Uniquely combining monoband and trapped parasitic elements give you an excellent F/B ratio.

Includes *Hy-Gain's* diecast aluminum, rugged boom-to-mast clamp, heavy gauge element-to-boom brackets, BN-86 balun. For high power, upgrade to BN-4000.

TH-5MK2, $759.95. 5-element, 1.5 kW PEP, 10,15,20 Meters

The broadband *five element* TH5-MK2 gives you outstanding gain.

Separate air dielectric *Hy-Q* traps let you adjust for maximum F/B ratio on each band.

Also standard is *Hy-Gain's* exclusive *BetaMATCH™*, stainless steel hardware and compression clamps and BN-86 balun.

TH-3MK4, $469.95. 3-element, 1.5 kW PEP, 10,15,20 Meters

The super popular TH-3MK4 gives you the *most gain for your money* in a full-power, full-size durable Hy-Gain tri-bander!

You get an impressive average gain and a whopping average front-to-back ratio. Handles a full 1500 Watts PEP. 95 MPH wind survival.

Fits on average size lot with room to spare -- turning radius is just 15.3 feet. Four piece boom is ideal for DXpeditions. Rotates with CD-45II or HAM-IV rotator.

Features *Hy-Gain BetaMatch™* for DC ground, full power *Hy-Q™* traps, rugged boom-to-mast bracket and mounts on standard 2"O.D. mast. Stainless steel hardware. BN-86 balun recommended.

TH-2MK3, $369.95. 2-element, 1.5 kW PEP, 10,15,20 Meters

The 2-element TH-2MK3 is Hy-Gain's *most economical* full power (1.5kW PEP) full size tri-bander.

For just $339.95 you can greatly increase your effective radiated power and hear far better!

Ruggedly constructed, top-performing, compact 6 foot boom, tight 14.3 foot turning radius. Installs almost anywhere. Rotate with CD-45II or HAM-IV. BN-86 balun recommened.

EXP-14, $599.95. 4-element, 1.5 kW PEP, 10,15,20 Meters

Revolutionary 4-element compact tri-bander *lets you add 40 or 30 Meters!* Has 14 foot boom and tight 17.25 feet turning radius. Fits on roof tri-pod, mast or medium duty tower.

Hy-Gain's *patented* broadbanding *Para Sleeve* gives you less than 2:1 VSWR. 1.5kW PEP.

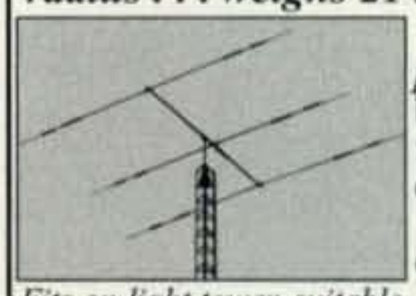
BetaMATCH™ provides DC ground to eliminate static. Includes BN-86 balun. Easily assembled.

***Truly** competitive against giant tri-banders at half the cost!*

QK-710, $179.95. 30/40 Meter option kit for EXP-14.

Compact 3-element 10, 15, 20 Meter Tri-Bander

For limited space . . . Installs anywhere . . . 14.75 ft turning radius . . . weighs 21 lbs . . . Rotate with CD-45II, HAM-IV



Fits on light tower, suitable guyed TV pole, roof tri-pod

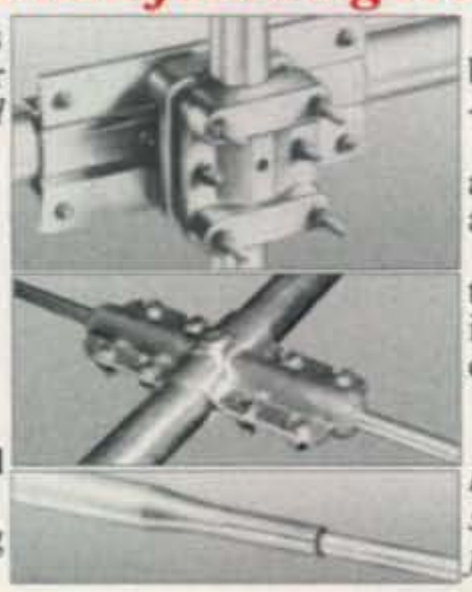
TH-3JRS, $359.95. Hy-Gain's *most popular* 3-element 10, 15, 20 Meter tri-bander fits on most lots! Same top performance as the full power TH3MK4 in a compact 600 watt PEP design.

Excellent gain and F/B ratio let *you* compete with the "big guns".

Tooled manufacturing gives you *Hy-Gain* durability with 80 MPH wind survival.

Model No.	No. of elements	avg gain dBd	avg F/B dB	MaxPwr watts PEP	Bands Covered	Wind sq.ft. area	Wind (mph) Survival	boom feet	Longest Elem. (ft)	Turning radius(ft)	Weight (lbs.)	Mast dia O.D.(in.)	Recom. Rotator	Sugg. Retail
TH-11DX	11	*For Gain and F/B ratio--See...* • www.hy-gain.com • Hy-Gain catalog • Call toll-free 800-973-6572		4000	10,12,15,17,20	12.5	100	24	37	22	88	1.9-2.5	T2X	$1159.95
TH-7DX	**7**			**1500**	**10, 15, 20**	**9.4**	**100**	**24**	**31**	**20**	**75**	**1.5-2.5**	**HAM-IV**	**$869.95**
TH-5MK2	5			1500	10, 15, 20	7.4	100	19	31.5	18.42	57	1.5-2.5	HAM-IV	$759.95
TH-3MK4	**3**			**1500**	**10, 15, 20**	**4.6**	**95**	**14**	**27.42**	**15.33**	**35**	**1.9-2.5**	**CD-45II**	**$469.95**
TH-3JRS	3			600	10, 15, 20	3.35	80	12	27.25	14.75	21	1.25-2.0	CD-45II	$359.95
TH-2MK3	**2**			**1500**	**10, 15, 20**	**3.25**	**80**	**6**	**27.3**	**14.25**	**20**	**1.9-2.5**	**CD-45II**	**$369.95**
EXP-14	4			1500	10,15,20 (opt. 30/40)	7.5	100	14	31.5	17.25	45	1.9-2.5	HAM IV	$599.95

Tooled Manufacturing . . . Highest Quality Materials



1. Hy-Gain's famous super strong *tooled* die cast *Boom-to-Mast Clamp*

2. *Tooled* *Boom-to-Element Clamp*

3. Thick-wall *swaged* aluminum tubing

***Tooled** manufacturing* is the difference between Hy-Gain antennas and the others -- they just don't have it (it's expensive!).

Die-cast aluminum boom-to-mast bracket and element-to-boom compression clamps are made with specially *tooled* machinery.

Hy-Gain antennas feature *tooled* swaged tubing that is easily and securedly clamped in place. All tubing is deburred and cleaned for smooth and easy assembly.

Durable precision injection molded parts.

***Hy-Gain** antennas are stronger, lighter, have less wind surface area, better wind survival, need no adjustments, look professional and last years longer.*

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and Nearest Dealer . . . 800-973-6572
Call your dealer for your best price!

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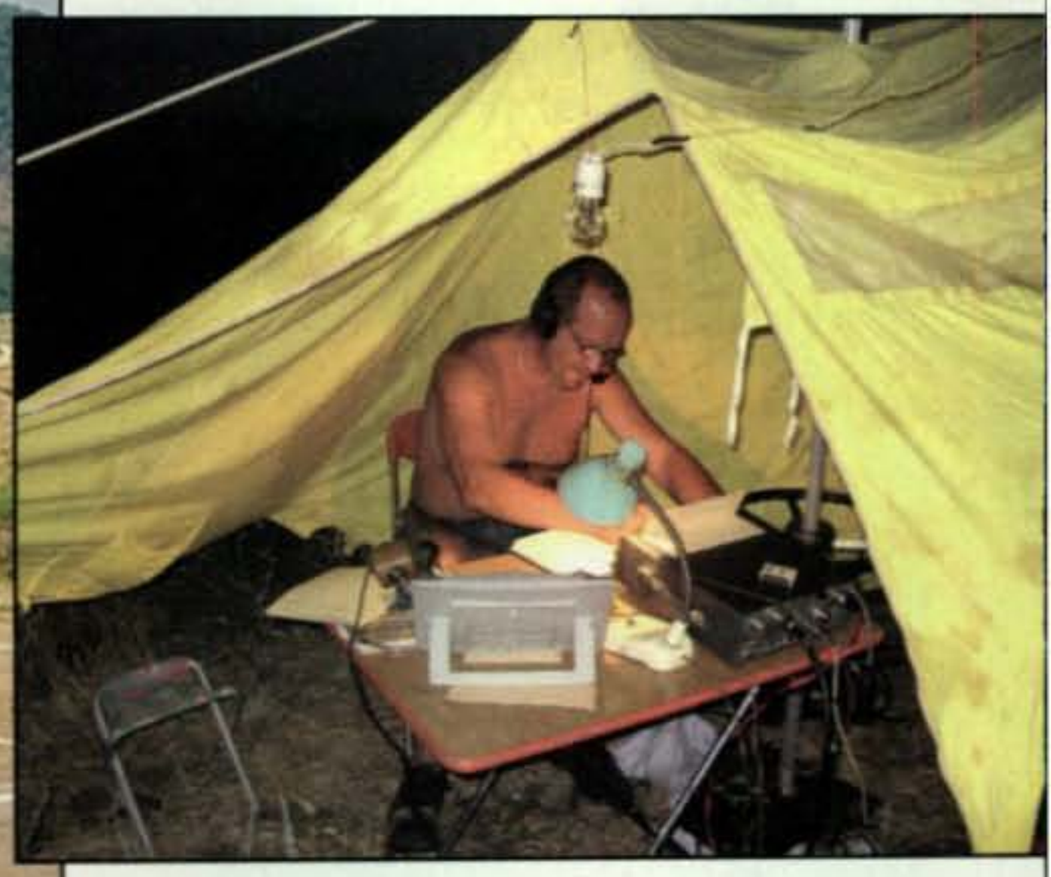

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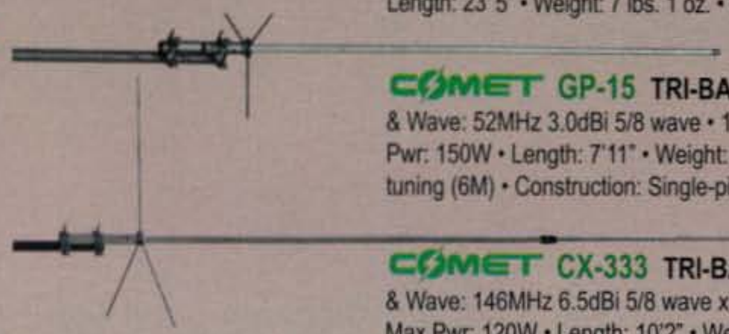
departments

Life is a JOURNEY
Enjoy the ride!

COMET and Maldol Antennas

Base Antennas

COMET NEW CHA-250B BROADBAND HF/6M GROUND-PLANE ANTENNA
A newly designed broadband vertical with NO GROUND RADIALS. EXTREMELY easy to assemble, requires no tuning or adjustments and VSWRis under 1.5:1 from 3.5-57MHz! • TX: 3.5MHz – 57MHz • RX: 2.0 – 90MHz • VSWR is 1.5:1 or less, continuous • Max Power: 250W SSB/125W FM• Impedance: 50 Ohm • Length: 23' 5" • Weight: 7 lbs. 1 oz. • Conn: SO-239 • Mast Req'd: 1" – 2" dia. • Max wind speed: 67MPH

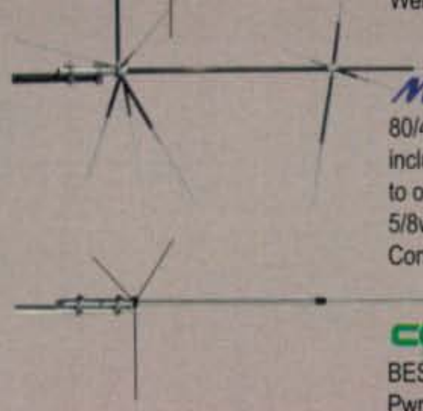


COMET GP-15 TRI-BAND 52/146/446MHZ BASE REPEATER ANTENNA Gain & Wave: 52MHz 3.0dBi 5/8 wave • 146MHz 6.2dBi 5/8 wave x 2 • 446MHz 8.6dBi 5/8 wave x 4 • Max Pwr: 150W • Length: 7'11" • Weight: 3lbs. 1oz. • Conn: Gold-plated SO-239• 2MHz band-width after tuning (6M) • Construction: Single-piece fiberglass

COMET CX-333 TRI-BAND 146/220/446MHZ BASE REPEATER ANTENNA Gain & Wave: 146MHz 6.5dBi 5/8 wave x 2 • 220MHz 7.8dBi 5/8 wave x 3• 446MHz 9.0dBi 5/8 wave x 5 • Max Pwr: 120W • Length: 10'2" • Weight: 3lbs. 1oz.• Conn: Gold-plated SO-239 • Construction: Fiberglass, 2 Sections

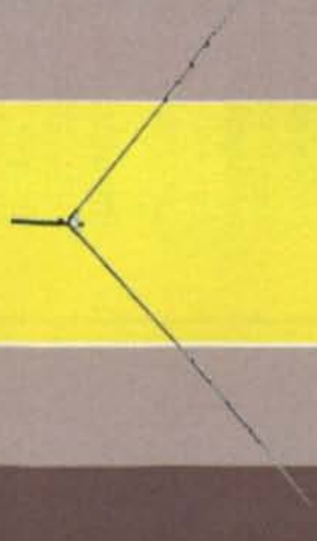
COMET GP-3 DUAL-BAND 146/446MHZ BASE REPEATER ANTENNA Gain & Wave: 146MHz 4.5dBi 6/8 wave • 446MHz 7.2dBi 5/8 wave x 3 • Max Pwr: 200W • Length: 5'11"• Weight: 2lbs. 9ozs. • Conn: Gold-plated SO-239 • Construction: Single-piece fiberglass

COMET GP-6 DUAL-BAND 146/446MHZ BASE REPEATER ANTENNA Gain & Wave: 146MHz 6.5dBi 5/8 wave x 2 • 446MHz 9.0dBi 5/8 wave x 5 • Max Pwr: 200W • Length: 10'2"• Weight: 3lbs. 8ozs. • Conn: Gold-plated SO-239 • Construction: Fiberglass, 2 Sections

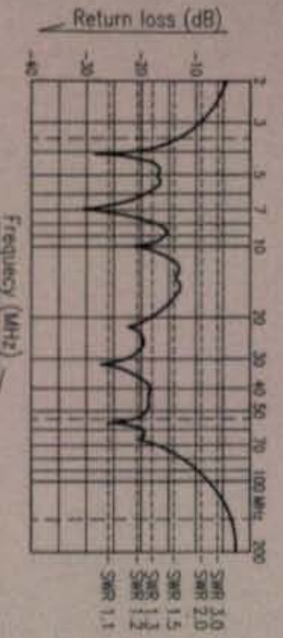


Maldol HVU-8 ULTRA-COMPACT 8 BAND HF/VHF/UHF VERTICAL ANTENNA
80/40/20/15/10/6/2M/70cm Only 1/2 the traditional size and weight of vertical HF antennas, and it includes 2M/70cm! Unique radial system rotates for balcony installations, the radials can all be rotated to one side. • HF and 6M: 1/4 wave-length • Gain 2M: 1/2 wave-length, 2.15dBi • Gain 70cm: Two 5/8waves in phase, 5.5dBi • Impedance: 50 Ohm • Max Power: HF 200W SSB • 6M–70cm: 150W FM• Conn: SO-239 • Height: Only 8'6" • Weight: 5lbs. 7ozs.

COMET GP-9 / GP-9N DUAL-BAND 146/446MHZ BASE REPEATER ANTENNA
BEST SELLER!• Gain & Wave: 146MHz 8.5dBi 5/8 wave x 3 • 446MHz 11.9dBi 5/8 wave x 8 • Max Pwr: 200W• Length: 16' 9"" • Weight: 5lbs. 11ozs. • Conn: GP-9 Gold-plated SO-239 • GP-9N Gold-plated N-type female • Construction: Fiberglass, 3 Sections



COMET NEW H-422 QUAD-BAND HF DIPOLE Compact 40/20/15/10M "V" or Horizontal Dipole • Max power: 1kW SSB • Length "V" Dipole: 24' 3" • Horizontal Dipole: 33' 10" • Shipping length: 79" • Weight: 11 lbs 14 ozs • Wind Load: 3.02 sq feet • Required mast size: 1.5" - 2.5" diameter • CBL-2000 2kW Balun included • Simple installation, band tuning and profile change



CHA-250B VSWR graph

"One person can effortlessly raise the antenna at night when no one can spot it, and take it down before daybreak. This antenna is also a great choice for portable operations, such as quick and easy mini-DXpedition to a campground or a nice tropical island! In short, the Comet CHA-250B is simple to assemble, painless to elevate and is easy on the eyes, while at the same time getting you on 6 meters thru 80 meters without the requirement of an antenna tuner and ground radials. You'll even be able to work some DX while you're at it!" – Dan Dankert N6PEQ

For a complete catalog, call or visit your local dealer.
Or contact NCG Company. 15036 Sierra Bonita Lane, Chino, CA 91710
909-393-6133 • 800-962-2611 • FAX 909-393-6136 • www.natcommgroup.com

New LF Ham Band Okd

For the first time since the dawn of radio regulation nearly a century ago, hams will soon have a home above 200 meters. Acting at the 2007 World Radio Conference (WRC-07), the International Telecommunication Union, or ITU, approved a worldwide (secondary) amateur radio allocation at 135.7–137.8 kHz with a power limit of one watt effective radiated power (ERP). The FCC will have to act on implementing this change before the band becomes available to amateurs in the U.S. For more details, see this month's "Washington Readout" on page 62.

The WRC delegates also agreed to tentatively consider a ham allocation around 500 kHz at their next meeting in 2011. Several countries, including the U.S., already permit limited operation here under experimental licenses, and in mid-November, according to *Newsline*, WE2XGR/1 in Massachusetts contacted GI4DPE in Northern Ireland for the first 500-kHz transatlantic amateur QSO. For more on the 500-kHz experiments, see <www.500kc.com>.

"St. Bart" (FJ) to be New DXCC Entity

At press time, the ARRL announced the approval of the Caribbean island of St. Barthelemy (FJ) as a separate entity for DXCC award credit. Up until now, the island (and surrounding smaller islands) have been considered part of St. Martin (FS) for DXCC purposes, according to the *Daily DX*. Both are overseas territories of France. Last February 21, the French government gave St. Barthelemy a new status as an "overseas collective," leading the U.S. State Department in mid-December to add the island to its list of "Dependencies and Areas of Special Sovereignty." This listing made St. Bart eligible to be designated as a separate DXCC entity. The ARRL action OKs contacts with FJ as of December 14, 2007 for DXCC credit.

Contacts with St. Bart made on or after February 21, 2007 will count for CQ DX Award credit. For purposes of the CQ DX Field Award, the island is in Grid Field FK.

FCC In-Fighting Goes Public

Two FCC Commissioners, Michael Copps and Jonathan Adelstein, have publicly taken Commission Chairman Kevin Martin to task for what they termed "callous disregard" of Congress and the American people regarding the issue of media ownership. In a joint statement issued a week before the Commission's December 18th open meeting, the two blasted the inclusion of the media ownership issue on the agenda, calling the draft decision they'd be considering a "mish-mash of half-baked ideas." They also criticized Martin for circulating that draft two weeks before the public comment period had ended, and said the issue requires "taking meaningful action on minority and female ownership and broadcast localism." Copps and Adelstein concluded their unusual public statement by discussing efforts "to try to get our processes back on track" and said "we hope that either we can turn this around internally, or that Congress can save the FCC from itself."

Introducing FDMDV

No, it has nothing to do with Field Day, except possible use there, nor is it an unusual Roman numeral. According to *Newsline,* FDMDV stands for Frequency Division Multiplex Digital Voice and is a new HF digital voice mode that its developers claim occupies only 1100 Hz of bandwidth, roughly one-third the size of an analog SSB voice signal. To find out more, visit <http://n1su.com/fdmdv>.

Gen. Tom Miller, K4IC, SK

Lt. General Thomas Miller, USMC (Ret.), K4IC, passed away November 27th at age 84 after a battle with cancer. Miller, who retired from active duty in 1979 as the Marine Corps' Deputy Chief of Staff for Aviation, was responsible for introducing the short takeoff and vertical landing (STOVL) jet to Marine Corps aviation. He was also a decorated fighter pilot who saw action in World War II, Korea and Vietnam. An active ham for more than 50 years, Miller was also a very close friend of astronaut and Senator John Glenn. Glenn was always a good friend of amateur radio during his Senate career, due in large part to his friendship with K4IC, who always kept Glenn appraised of issues of importance to the ham community.

Peter Dahl Co. Shuts Down

The Peter W. Dahl Company, a supplier of custom-made transformers to amateurs and others for more than 40 years, closed its doors on December 31, 2007. The *ARRL Letter* reported that owner Peter Dahl, KØBIT, is suffering from Parkinson's Disease. Dahl's transformers were favorites of hams who enjoy restoring old equipment, as he had more than 4000 different designs on file and could often produce a direct replacement for original equipment components that were no longer available elsewhere.

"Beyond the Impossible"

The South African Amateur Radio Development Trust has announced one winner and five runners-up in its "Into Space with Amateur Radio" essay competition for high school students. The topic for all essays was "The Future of Space in Support of Mankind." Winner Katlego Zabala is 16. He wrote about the possibilities of space colonization, power generation, and the potential for discovering new minerals on other planets that could be used for medical breakthroughs. However, the greatest benefit to mankind of space exploration, wrote Zabala, would be "conquering the unknown."

"I believe that if one wants to discover the limits," he wrote, "one must go beyond the impossible."

Zabala won a laptop computer. The five runners-up will be receiving 40-meter receiver kits. Only two of the six young people currently are hams—brothers Jan and Rieks Kampman, ZU6JLK and ZU6HK, respectively.

RSGB to Move its HQ, Museum

The Radio Society of Great Britain (RSGB) is moving its headquarters from Potters Bar, a London suburb, about 40 miles north to Bedford, which is located halfway between Cambridge and Northampton. According to the society's website, the move to a modern office building will help it keep pace with "modern IT technology and business practice." There will be no space at the Bedford facility for the RSGB museum, and it says talks are currently under way to move the museum, as well as the society's training activities and it headquarters station, GB3RS, to Bletchley Park, which was the United Kingdom's main codebreaking center during World War II and which already houses a communications-focused museum. Bletchley is not far from Bedford. RSGB hopes to complete the move by this March.

Additional and updated news is available on the Ham Radio News page of the CQ website at <http://www.cq-amateur-radio.com>. For breaking news stories, plus info on additional items of interest, sign up for CQ's free online newsletter service. Just click on "CQ Newsletter" on the home page of our website.

Introducing the Yaesu FT-950 transceiver for DX enthusiasts
Superb receiver performance
Direct lineage from the legendary FT DX 9000 and FT-2000

HF/50 MHz 100 W Transceiver
FT-950

- Triple-conversion super-heterodyne receiver architecture, using 69.450 MHz 1st IF
- Eight narrow, band-pass filters in the RF stage eliminate out of band interference and protect the powerful 1st IF
- 1st IF 3 kHz Roofing filter included
- High-speed Direct Digital Synthesizer (DDS) and high-spec Digital PLL for outstanding Local Oscillator performance
- Original YAESU IF DSP advanced design, provides comfortable and effective reception. IF SHIFT / IF WIDTH / CONTOUR / NOTCH / DNR
- DSP enhancement of Transmit SSB/AM signal quality with Parametric Microphone Equalizer and Speech Processor
- Built-in high stability TCXO (±0.5 ppm after 1 minute@77° F)
- Built-in automatic antenna tuner ATU, with 100 memories
- Powerful CW operating capabilities for CW enthusiasts
- Five Voice Message memories, with the optional DVS-6 unit
- Large Multi-color VFD (Vacuum Fluorescent Display)
- Optional Data Management Unit (DMU-2000) permits display of various operating conditions, transceiver status and station logging.
- Optional RF μ -Tune Units for 160 m, 80/40 m and 30/20 m Bands

Optional, YAESU Exclusive, Fully-Automatic μ -Tuning Preselector System!

Fully automatic, Ultra-sharp, External μ -Tuning Preselector (optional) features a 1.1" (28 mm) Coil for High Q

On the lower Amateur bands, strong signal voltages impinge on a receiver and create noise and intermod that can cover up the weak signals you're trying to pull through. YAESU engineers developed the μ (Mu) Tuning system for the FT DX 9000/FT-2000, and it is now available as an option for the FT-950. Three modules are available (MTU-160, MTU-80/40, MTU-30/20); these may be connected externally with no internal modification required! When μ -Tuning is engaged, the VRF system is bypassed, but the fixed Bandpass Filters are still in the received signal path.

Optional External Data Management Unit (DMU-2000) Provides Many Display Capabilities

Enjoy the ultimate in operating ease by adding the DMU-2000! Enjoy the same displays available with the FT DX 9000 and FT-2000: Band Scope, Audio Scope, X-Y Oscilloscope, World Clock, Rotator Control, Extensive Transceiver Status Displays, and Station Logging Capability. These extensive functions are displayed on your user-supplied computer monitor.

Shown with after-market keyer paddle, keyboard, and monitor (not supplied)

DMU-2000
Data Management Unit (option)

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 some 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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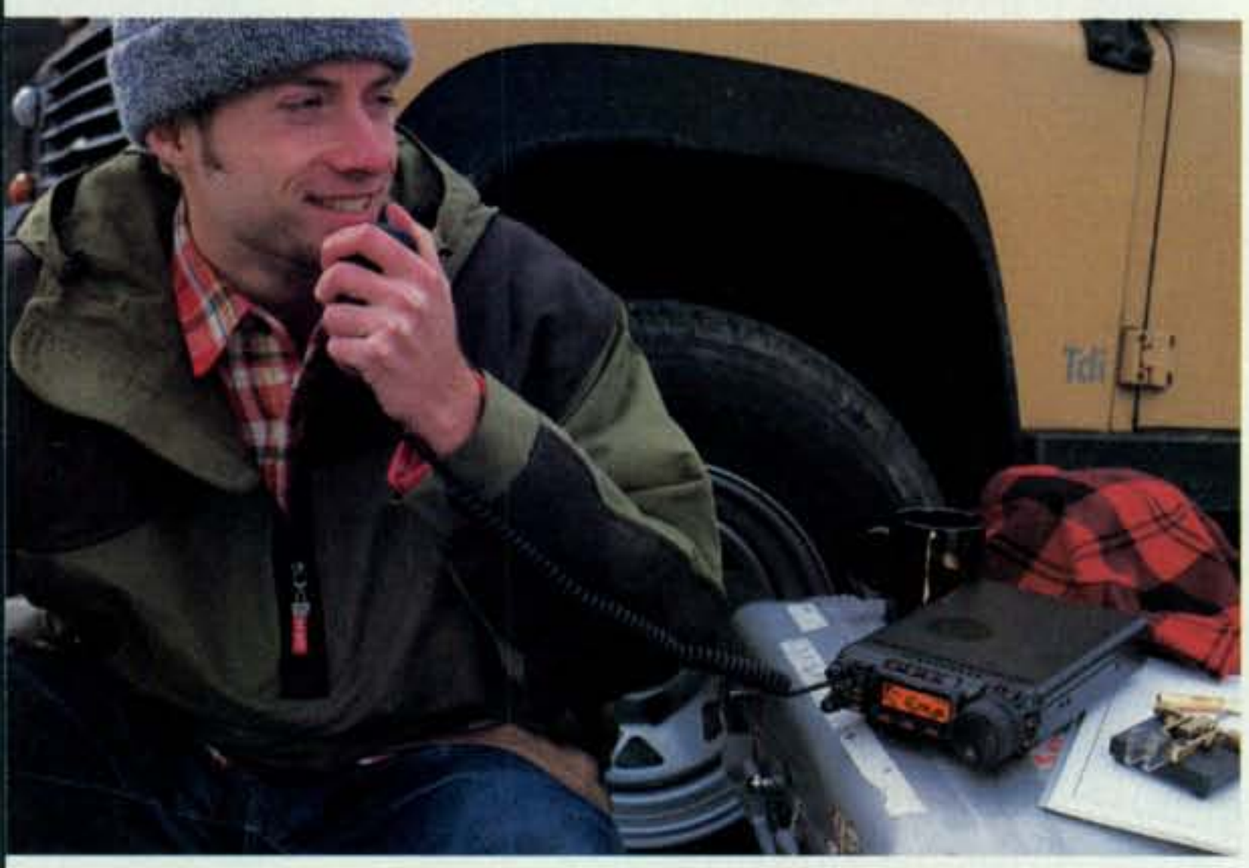

HF/VHF/UHF Portable Operation Just Got a Lot More Powerful!

FT-897D

TCXO DSP 60 m Band

HF/50/144/430 MHz
100 W All Mode Transceiver
(144 MHz 50 W/430 MHz 20 W)

HF/VHF/UHF Multimode Mobile Transceiver, now Including Built-in DSP

FT-857D

DSP 60 m Band

HF/50/144/430 MHz
100 W All Mode Transceiver
(144 MHz 50 W/430 MHz 20 W)

Automatic Matching for FT-897/857 Series Transceivers

FC-40
Automatic-Matching 200-Memory Antenna Tuner
(160 m ~ 6 m Band)

WATERPROOF

Mobile Auto-Resonating 7~430 MHz for FT-897/857 Series Transceivers

ATAS-120A
Active Tuning Antenna System
(no separate tuner required)

VHF/UHF Base RadialKit ATBK-100 for ATAS-120A.

REAL PERFORMANCE, REALLY PORTABLE

FT-817ND

HF/50/144/430 MHz
5 W All Mode Transceiver
(AM 1.5 W)

60 m Band

ATAS-25
Manually-Tuned Portable Antenna

YAESU
Choice of the World's top DX'ers℠

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The radio... YAESU

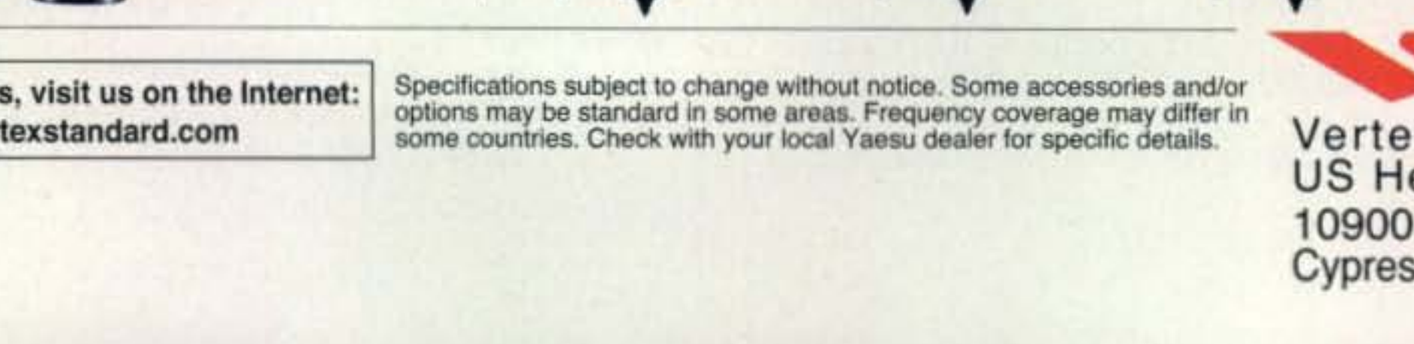
Choice of the World's top DX'ers

Loaded with Leading-edge Performance Capabilities. . .
The First Triumph in the 2nd Generation of the FT DX 9000 Lineage:
The Powerful FT-2000!

HF/50 MHz Transceiver
FT-2000
100 W Version (Internal Power Supply)

DMU-2000
Data Management Unit

Photograph shows 100-Watt version. Computer display and keyboard are after-market items, not supplied with the FT-2000.



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a CQ editorial

zero bias – CQ

BY RICH MOSESON,* W2VU

More Than Ever

At a meeting of my town's Local Emergency Planning Council in late November, our outgoing emergency management director—an about-to-retire police captain—pulled me aside. Technically, I'm the town's RACES1 Coordinator, but in truth, there hasn't been much to coordinate recently, a fate that has also befallen our town's near-dormant CERT2 organization. The two of us had been planning to meet in the fall to discuss how we could make ham radio a more active part of the town's emergency response program, but we never managed to get together. Now, he was encouraging me to schedule a meeting with his successor as soon as he got settled in.

"We're going to be needing you guys more than ever," he said, noting that at the town's 911 dispatch center, "we don't even have real phones anymore. You click a mouse on a screen," he explained, to make or answer a call, adding, "the more complex this stuff gets, the more likely it is to fail."

When that happens—as emergency responders in the Pacific Northwest were reminded just a week or so later (see this issue's "Public Service" column)—they need to rely on good old analog radio to get critical messages through. More often than not, nowadays, there are hams behind the microphones or keyboards connected to those good old analog radios because most government agencies get rid of their "obsolete" analog gear when they "upgrade" to "modern" digital systems. Yet, as Dr. Eric Haseltine, AB3DI, former Associate Director of National Intelligence for Science and Technology, succinctly put it in a recent *CQ* interview (to be featured in an upcoming issue), "... when you get right down to it, everything is analog." Even when you're putting digital signals onto a radio wave, the radio wave itself is still analog and always will be.

Yet, there is a big push in some segments of the amateur radio emergency communications community to put more of our "eggs" in the digital "basket," with increasing use of digital or hybrid systems, such as Winlink or Echolink. There is nothing wrong with this as long as they become additional tools we can use in emergencies and do not replace or supplant good old analog radio. Curiously, much of this push comes from served agencies that want to make our radio systems more like the systems that their people are familiar with using every day ... the very systems we'd be filling in for because they have failed.

This desire to be able to provide served agencies with "plug-and-play" replacement systems is also one of the driving forces behind efforts to open up more space on the HF ham bands for automatically controlled data networks such as Winlink. And it is this effort that underlies some of the strongest objections to the now-withdrawn ARRL petition to the FCC for "regulation by bandwidth" as well as the new HF band plan announced recently by Region 2 of the International Amateur Radio Union (IARU), covering North and South America, which was the topic of our editorial last month. The feedback to that editorial has been very interesting, by the way. First of all, virtually all of the comments we've received have been positive. In fact, the only two people I heard from who were critical of the editorial were ARRL President Joel Harrison, W5ZN, and IARU Vice President Tim Ellam, VE6SH. Their letters are too long to reprint here in full (and W5ZN released much of what he wrote as a public statement), but we will provide a summary of their major points, as well as our responses.

The main point made by both Joel and Tim was that the Region 2 bandplan was not an ARRL initiative and was based on the Region 1 bandplan adopted for Europe, Africa, and the Middle East in 2005, and which itself was the basis for the ARRL's ill-fated FCC proposal. Any similarity between the League's FCC proposal and the Region 2 bandplan, they say, reflects their common source document. Harrison emphasized that the Region 2 bandplan "is not a vehicle for achieving what has not yet been achieved through FCC rulemaking," and added that "the ARRL will not be pursuing rulemaking until some degree of consensus can be achieved in the amateur community." We're happy to hear that.

Their other major point was that the IARU is an independent organization that is not controlled by the ARRL or any other member society, although Harrison freely admits that the ARRL is "the largest and indeed, the most influential amateur radio organization in the world." Ellam says that "To suggest that the ARRL always has had a 'tremendous amount of influence' over IARU policy is misleading as it ignores the fact that all member societies have an equal vote under the present constitution." He also notes that the IARU was founded in Paris in 1925 and that "(w)hile the ARRL is presently the IARU's international secretariat, it only holds that position by agreement with the member societies." What he omits is that the Paris meeting was organized by then ARRL President Hiram Percy Maxim, who became the first president of IARU, and that the secretariat agreement has been in place since 1925.

Further, Ellam challenges our assertion that "former ARRL officers have always served as IARU President," noting that while current president W4RA is indeed a former League president, "the last former ARRL president to hold the position of IARU president was the late Bob Denniston, WØDX (who served as IARU President) from 1966 to 1974, over 30 years ago." Tim is correct, to an extent. WØDX was succeeded as IARU President by Noel Eaton, VE3CJ, the organization's first non-US president. However, through most of his eight-year term, Eaton served concurrently as ARRL International Affairs Vice President. VE3CJ was succeeded as IARU President in 1982 by Dick Baldwin, W1RU, who had just retired as ARRL General Manager and who had served as IARU Secretary from 1976 to 1982. Baldwin held the IARU's top post for the next 17 years and was succeeded in 1999 by current IARU President (and former ARRL President) Larry Price, W4RA. We will let these facts speak for themselves.

As to the question of which plan for regulation by bandwidth is chicken or egg, that really is less important than the fact that the ARRL—knowing there was no consensus for the concept among its members—decided to vote yes rather than seeking additional time to try to build a consensus before taking final action.

Some writers called for a new organization to replace the ARRL as the representative of U.S. hams. We don't need that. What we do need is an ARRL that is responsive and responsible to its members and that is honest and open in its decision-making. League President W5ZN said in a follow-up letter to us that he has "no quarrel with (CQ's) desire for transparency in the ARRL's decision-making." We applaud that and look forward seeing it become a reality in the future as it has often been in the past. Because, with all of the threats to the future of our service, both current and over the horizon, "we're going to be needing you guys" —both ARRL and IARU—"more than ever."

———-

Notes

1. Radio Amateur Civil Emergency Service
2. Community Emergency Response Team

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Wind load capacity (inside tower)	20 square feet
Wind Load (w/ mast adapter)	**10 square feet**
Turning Power	1000 in.-lbs.
Brake Power	**9000** in.-lbs.
Brake Construction	Electric Wedge
Bearing Assembly	**Triple race/138 ball brngs**
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	**8**
Shipping Weight	31 lbs.
Effective Moment (in tower)	**3400 ft.-lbs.**

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CD-45II Rotator Specifications	
Wind load capacity (inside tower)	8.5 square feet
Wind Load (w/ mast adapter)	**5.0 square feet**
Turning Power	600 in.-lbs.
Brake Power	**800 in.-lbs.**
Brake Construction	Disc Brake
Bearing Assembly	**Dual race/48 ball brings**
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	**8**
Shipping Weight	22 lbs.
Effective Moment (in tower)	**1200 ft.-lbs.**

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For medium antenna arrays up to 15 square feet wind load area. Similar to the HAM IV, but includes *DCU-1 Pathfinder* digital control unit with gas plasma display. Provides automatic operation of brake and rotor, compatible with many logging/contest programs, 6 presets for beam headings, 1 degree accuracy, auto 8-second brake delay, 360 degree choice for center location, *more!*

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AR-40 Rotator Specifications	
Wind load capacity (inside tower)	3.0 square feet
Wind Load (w/ mast adapter)	**1.5 square feet**
Turning Power	350 in.-lbs.
Brake Power	**450 in.-lbs.**
Brake Construction	Disc Brake
Bearing Assembly	**Dual race/12 ball bearings**
Mounting Hardware	Clamp plate/steel bolts
Control Cable Conductors	**5**
Shipping Weight	14 lbs.
Effective Moment (in tower)	**300 ft.-lbs.**

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HDR-300A Rotator Specifications	
Wind load capacity (inside tower)	25 square feet
Wind Load (w/ mast adapter)	**not applicable**
Turning Power	5000 in.-lbs.
Brake Power	**7500 in.-lbs.**
Brake Construction	solenoid operated locking
Bearing Assembly	**bronze sleeve w/rollers**
Mounting Hardware	stainless steel bolts
Control Cable Conductors	**7**
Shipping Weight	61 lbs.
Effective Moment (in tower)	**5000 ft.-lbs.**

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announcements

Dayton Hamvention® Nominations for 2008 Awards – The Dayton Hamvention® is accepting nominations for its 2008 awards for Amateur of the Year, Special Achievement, and Technical Excellence. The deadline for nominations is Februiary 18. Documentation that informs the Awards Committee of a candidate's accomplishments may include magazine articles, newsletters, newspaper clippings, and videos (the materials become the property of the Hamvention® and will not be returned). For additional details on the awards and a nomination form go to the Dayton Hamvention® website, or nominations are accepted via U.S. mail to Dayton Hamvention® Awards, P.O. Box 964, Dayton, OH 45401.

FAR Scholarships 2008–2009 – The Foundation for Amateur Radio, Inc., a non-profit organization, plans to administer 55 scholarships for the academic year 2008–2009 to assist licensed radio amateurs. The Foundation, composed of over 75 local area amateur radio clubs, funds three of these scholarships. Eleven are funded with income from grants. The remaining 41 are administered by the Foundation without cost to the donors. Licensed radio amateurs may compete for these awards if they plan to pursue a full-time course of studies beyond high school and are enrolled in or have been accepted for enrollment at an accredited university, college or technical school. Awards range from $500 to $3000 with preference given in some cases to residents of specified geographical areas or the pursuit of certain study programs. More information and an application may be requested by letter or QSL card postmarked prior to March 30, 2008. Send name, call, and address to: FAR Scholarships, P.O. Box 831, Riverdale, MD 20738. Applications are also available on: <http://www.amateurradio-far.org/>.

The following Special Event stations are scheduled for February:

W7G, the celebration of George Washington's birthday from the town of George, Washington; 0000Z Feb. 21 to 0000Z Feb. 23 on 14.250, 18.135, 7.225, and 3.880 MHz. Operators will be W7BJN, N7AU, and W7LEA. QSL via W7BJN.

NI8G, from the celebration of Thomas Edison's birthday and in memory of Tom O'Connor, NI8G; Ohio; Thomas Edison Memorial Radio Club; 1000–1600 EST Feb. 9 and 1000–1600 EST Feb. 10 on 7.265, 14.265, 21.265 MHz. For QSL send QSl and SASE to Jack Hubbard, NI8N, 13113 River Road, Milan, OH 44846.

The following hamfests, etc., are slated for February:

Feb. 1–2, **Capital City Hamfest & MIssissippi ARRL State Convention**, Mississippi Trade Mart, Jackson, MS. Contact Lew King, W5LEW, e-mail <hamfest@msham.org>; <www.msham.org>. (Exams)

Feb. 2, **Charleston Hamfest & Computer Show, ARRL South Carolina State Convention**, Exchange Park Fairgrounds, Ladson, SC. Contact Jenny Myers, WA4NGV, e-mail <brycemyers@aol.com>, phone 843-747-2324; <www.wa4usn.org>. (Talk-in 146.790–, 145.250– tone 123.0; exams 1 PM)

Feb. 2, **Hiawatha Amateur Radio Swap & Shop**, Negaunee Township Hall, Negaunee, MI. Contact Robert Serfas, N8PKN, e-mail <n8pkn@aol.com>, phone 906-225-6773; <www.qsl.net/k8lod/>. (Talk-in 147.27 100 Hz tone)

Feb. 3, **Caribbean Amateur Radio Group Hamfest**, Paco Abreu Community Center, Arecibo, Puerto Rico. Contact frequency is 146.52 MHz or e-mail: <serafinmrtnz@yahoo.com>.

Feb. 8–10, **Orlando HamCation℠ & Computer Show**, Central Florida Fairgrounds, Orlando, FL. Contact Mort & Roberta Cohen, e-mail <hamcation08@aol.com>, phone 4-7-814-0434; general e-mail <hamcation@oarc.org>; <www.hamcation.com>. (Talk-in 146.760 [–600], 147.015 [+600] 103.5 tone; exams Saturday preregistration only) ***See us at the CQ Booth.***

Feb. 10, **Mansfield*Mid Winter Hamfest**, Richland County Fairgrounds, Mansfield, OH. Contact Dean Wrassa, KB8MG, e-mail <hamfest@iarc.ws>, phone 419-589-2415; <www.iarc.ws>. (Talk-in 146.94, 71.9 tone; exams)

Feb. 15–16, **Yuma Hamfest & Electronics Expo**, Yuma County Fairgrounds, Yuma, AZ. For details go to <www.yumahamexpo.com>. (Talk-in 146.840–, PL 88.5; exams)

Feb. 16, **Cabin Fever Reliever Hamfest**, St. Cloud Armory, St. Cloud, MN. Contact Art Carlson, WAØNJR, e-mail <wa0njr@hotmail.com>. (Talk-in 147.015, 100 tone)

Feb. 23, **Orange ARC & Jefferson County ARC Hamfest**, VFW Hall, Orange, TX. Contact Delores, e-mail <kc5neo@gt.rr.com>, phone 409-962-1435; <www.qsl.net/w5nd>. (Talk-in 147.180; exams)

Feb. 23, **Central Dakota ARC Hamfest**, St. Mary's Grade School, Bismarck, ND. Contact Dick Veal, KAØETO, e-mail <georgerv@bis.midco.net>, phone 701-223-7481. (Talk-in 146.34/146.94; exams)

Feb. 23, **Cabin Fever Hamfest**, Civic Auditorium, LaPorte, IN. Contact John Rozinski, N9ROH, e-mail <N9ROH@k9jsi.org>; <www.K9JSI.org>. (Talk-in 146.61–, PL 131.8)

Feb. 23, **Northern Vermont Winter Hamfest & ARRL Vermont State Convention**, Milton High School, Milton, VT. Contact W1SJ at e-mail <w1sj@arrl.net>, phone 802-879-6589; <http://www.ranv.org>. (Talk-in 145.15, bulletins 146.67; exams at noon)

Feb. 24, **Vienna Wireless Society Winterfest**, Northern Virginia Community College, Annandale, VA. Contact Dennis Voegler, WA4QMS, phone 703-534-2081; <winterfest2008@viennawireless.org>. (Talk-in 146.91; exams 9 AM to noon Sat., Feb. 23)

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RF Drive:
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Output Power:
SSB 750W PEP max.,
CW 650W, RTTY 400W
Circuit:
Class AB parallel push-pull
Cooling Method:
Forced Air Cooling
AC Power:
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AC 100/110/115/120V,
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Dimensions:
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• 55 watt VHF/50 watt UHF • Wide RX: 118-173, 230-549, 810-999 MHz (cellular blocked on US versions) • Analog/Digital Voice & Data • Callsign Squelch • CTCSS & DTCS Encode/Decode w/tone scan

IC-7800 All Mode Transceiver

• 160-6M @ 200W • Four 32 bit IF-DSPs+ 24 bit AD/DA converters • Two completely independent receivers • +40dBm 3rd order intercept point

IC-756PROIII All Mode Transceiver

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• HF + 6m operation • +40dBm ultra high intercept point • IF DSP, user defined filters • 200W output power full duty cycle • Digital voice recorder

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IC-2200H 2M Mobile Transceiver

• 65W Output • Optional D-STAR format digital operation & NEMA Compatible GPS interface • CTCSS/DTCS encode/decode w/tone scan • 207 Alphanumeric Memories • Weather Alert

IC-746PRO All Mode 160M-2M

• 160-2M* @ 100W • 32 bit IF-DSP+ 24 bit AD/DA converter • Selectable IF filter shapes for SSB & CW • Enhanced Rx performance

IC-2820H Dual Band FM Transceiver

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IC-T90A Triple Band Transceiver

• 6M/2M/70CM @ 5W • Wide band RX 495kHz - 999.999MHz** • 500 alphanumeric memories • Dynamic Memory Scan (DMS) • Backlit keypad & display • CTCSS/DTCS encode/decode w/tone scan • Weather Alert

IC-91AD Digital Dual Band Transceiver

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IC-V82 2M Transceiver

2M @ 7W • Optional D-STAR format digital operation features include callsign calling, up to 20 character text message, & position exchange*' • CTCSS/DTCS encode/decode w/tone scan • Also available in a sport version and a 70CM version (IC-U82)

*Except 60M Band. **Frequency coverage may vary. Refer to owner's manual for exact specs. ✦Rebates and instant savings expire 3/31/08. Free offers are for a limited time only. Check with HRO for details or restrictions on any offers or promotions. ✦✦Rebates and instant savings expire 3/31/08. *' AA Alkaline batteries not included, radio comes with a AA alkaline battery tray. *' For shock and vibration. *' When connected to an external GPS.

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In a wide-ranging interview, Admiral Scott Redd, KØDQ, talks exclusively with CQ about ham radio's link to his career, contesting from South America and the Middle East, amateur radio in Iraq, and ham radio's ongoing importance to our national security.

CQ Interviews:

Vice Admiral John Scott Redd (Ret.), KØDQ
Former Director
National Counterterrorism Center

BY RICH MOSESON,* W2VU

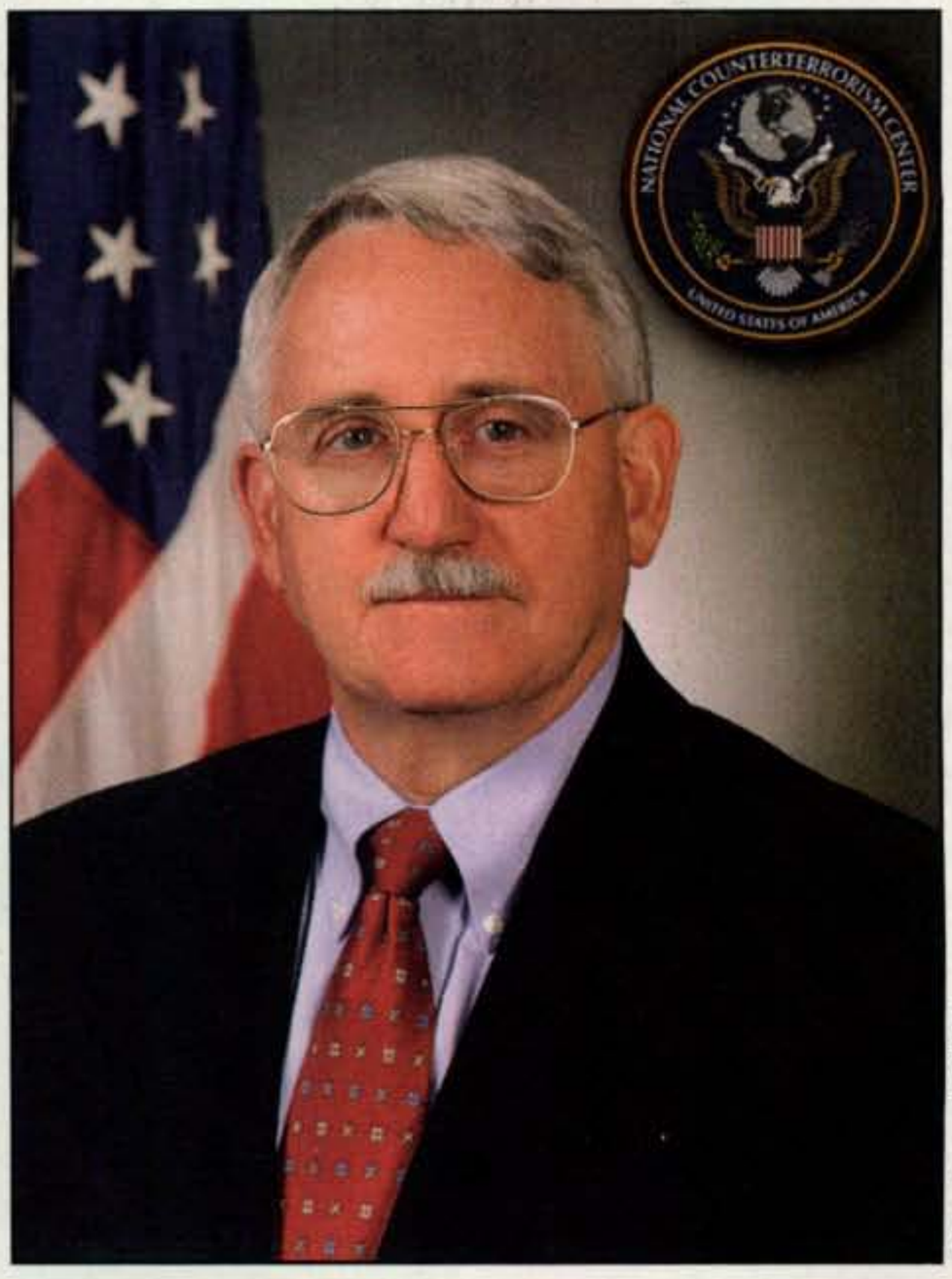
Note: This interview was conducted two weeks before Admiral Redd announced his resignation, for medical reasons, as Director of the National Counterterrorism Center.
—W2VU

The last paragraph of retired Vice Admiral Scott Redd's official biography is one that's guaranteed to get the attention of nearly any ham: After noting that Redd is past president of the Naval Academy Class of 1966 and that he has served on the advisory boards of several non-profit organizations, the paragraph ends by saying, "An avid amateur radio operator, VADM Redd has won seven world championships." In fact, said Scott, the only major contest he hasn't won is the CQ World-Wide DX CW Contest … but more on that later.

"Ham radio has been and remains both a major and a very positive influence in both my professional life and my personal life," said Redd, adding, "I used the knowledge gained in ham radio in virtually every job I've had." Those jobs have included a variety of top military assignments, followed by several high-level civilian positions in the federal government, most recently as the chief architect of America's war on terror, as the first Senate-confirmed Director of the National Counterterrorism Center.

As is the case with so many of us, Scott says it was getting into ham radio in his youth that got him pointed toward his eventual career, but in his case it was not so much the technology as the operating experience and some of the people he contacted on the air from his hometown of Sidney, Iowa. He recalls discovering ham radio through Boy Scouts and building a crystal radio, but not having a local ham mentor, or "Elmer."

"I … didn't really have an Elmer," Redd noted, "but we used to go to Omaha, which was the nearest big city, and believe it or not—I'm not blowing smoke at this—I used to buy *CQ*. I can remember buying *CQ* magazine in about 1954 on the newsstand outside of one of the big department stores there. I'd take it home and just devour it.



Courtesy NCTC

"Morse code was no problem. Got my license, my Novice license," Redd continued. "I guess I was 10 years old when I got licensed. … again, not having an Elmer was interesting. My dad bought me a Globe Scout. World Radio, if you remember them … was in Council Bluffs.

"I had my license about two months, I think, before I actually made a contact, and the reason was I didn't realize that there was a difference between the outside and the center conductor, so I just had an antenna out there and I wrapped it around the outside of the coax connector on the back of the Globe Scout. And as you would understand … it didn't

*Editor, CQ
e-mail: <w2vu@cq-amateur-radio.com>

get out. So I finally had a ham from about 10 miles away come over and he said 'plug it in here' and I was off and running."

Once he actually started putting RF into the air, Scott quickly discovered the lure of DXing, recalling that he was "on 15 meters ... calling CQ one afternoon and a guy from Argentina came back, and that was magic for me. And that just kind of got me started with my primary interests, which are DXing first of all, and now contesting."

"DXing really became a passion for me," he continued. "I can remember going home from school—walking home, or running home, from school—at lunchtime, like in the 6th grade, to work Europe on 15 meters. This was back in the high sunspot cycle, the coming up of (Cycle 19). ... I made DXCC and it's funny, about a year ago, I was looking at some old stuff and I found one of my KØDQI cards and I had the very bold statement on it: 'the youngest DXCC operator in the world.' This was ... I don't know, I was age 13, so I guess it was 1956 or '57. I think it was true. Nobody ever challenged me, but that was a real passion, and by the time 1962 came around (*when Redd graduated from high school—ed.*), I had about 280 countries, a lot of (them) with 50 watts and a folded dipole, later with 400 watts and a small beam. But that's where I was and DXing was really what I was into, and that wasn't too bad a score back in those days. ... At the same time, I knew that I wanted to do something bigger."

This, Redd noted, was a direct result of his ham radio activity. "DXing, as you can imagine, was—is—almost like the internet maybe is for kids today, but for a kid in small-town Iowa, that was my window to the world, and through a variety of circumstances, it really led to dreaming about bigger things. It definitively led to going to the Naval Academy, and that's a story in and of itself."

A Landlubber Goes to Sea

It seems that Scott Redd never really planned on going to Annapolis. Growing up in Iowa, he'd never even seen the ocean, let alone sailed on it. And his ham radio contacts had him looking skyward...

"Ham radio, as I said, was sort of a window on the world. I'd talked to Barry Goldwater (*K7UGA, the Arizona Senator and 1964 Republican Presidential candidate who had been a reserve Major General in the Air Force, and one of the leading proponents of establishing the U.S. Air Force Academy—ed.*) and actually talked to the Vice Commander of the Strategic Air Command, Butch Griswold, and (to make a) long story short, I wanted to go to the Air Force Academy because I wanted to fly airplanes, the Strategic Air Command and all that sort of stuff. My Congressman called and said, 'Hey, I don't have an appointment to the Air Force Academy, would you like to go to the Naval Academy?' And I'd never seen the ocean and never gone anywhere. ... I think I'd been east of the Mississippi once, and I said 'sure.'"

Redd took to the Navy like, oh, I can't resist the pun ... like a duck to water. He was president of his class at the Naval Academy, where he majored in math and physics and was a Trident Scholar. After graduation in 1966, Redd became a Fulbright Scholar and studied in Uruguay; then as a Burke Scholar, received a Master of Science degree in Operations Analysis from the Naval Postgraduate School. Through it all, though, ham radio was never far away.

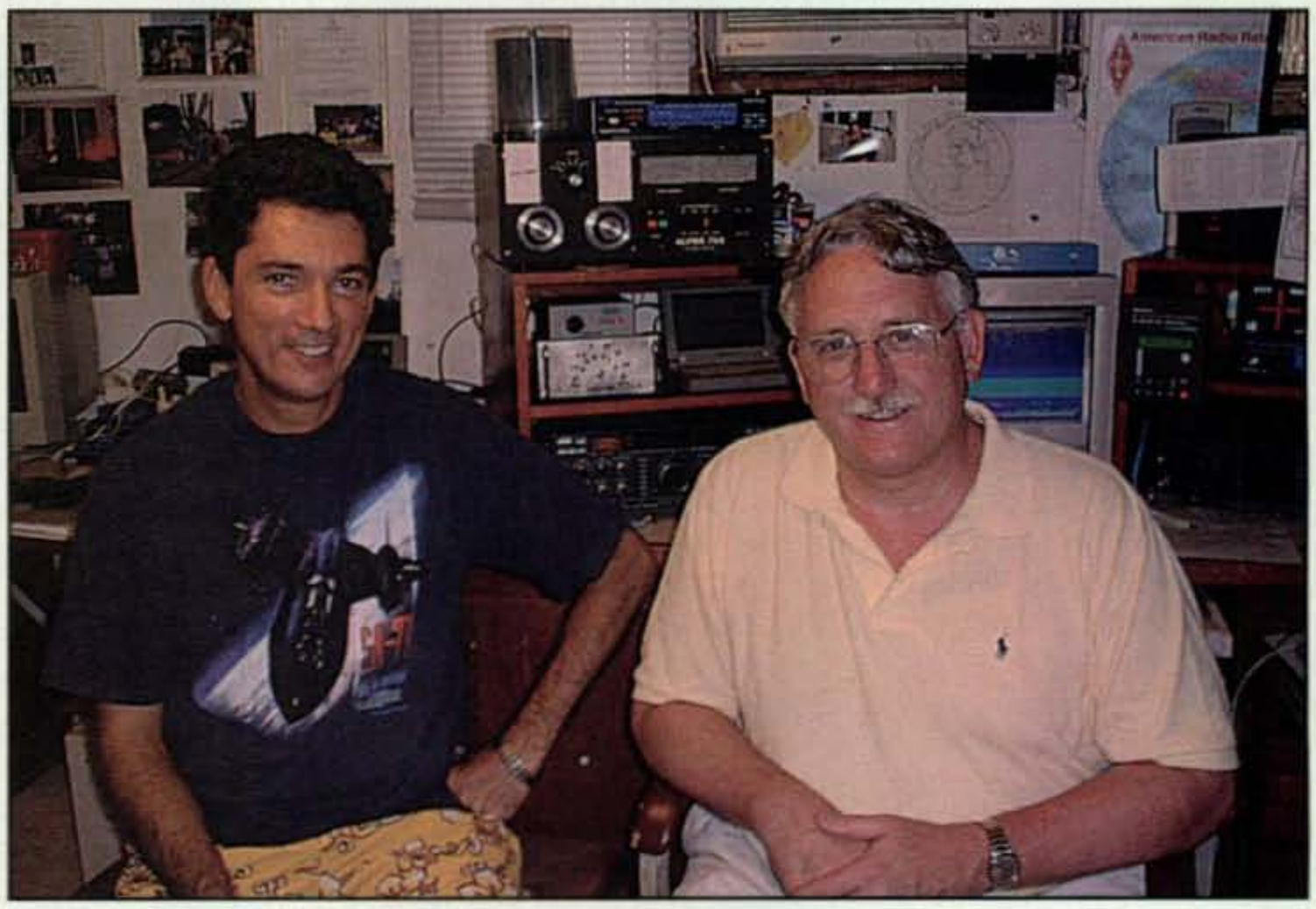
"DXing was hard to stay up with (in the Navy). You couldn't make the Honor Roll when you moved every two years, obviously, so DX contesting kind of took over."

Scott recalled that his first contest win came from Uruguay. "I spent a year as a Fulbright Scholar in Uruguay when I graduated from the Academy, '66–'67, and was CX3BBD, and actually operated (the CQ World-Wide DX Phone Contest) from CX2CO. ... We won the multi-single in, it must have been '66, from down there."

But Scott pointed out that "my highlight was probably in Mexico, '71–'73 ... actually in the '71–'72 contest year." At that point, he was a young Lieutenant with a young family, assigned to the Mexican Naval Academy in Veracruz. He brought his Drake 4 line and a couple of antennas to his new QTH and was quickly licensed as XE1IIJ and got on the air.

"In those days there were five major (contests)," Redd continued. "CQ World-Wide Phone and CW, ARRL Phone and CW, and (CQ) WPX, which was only sideband in those days, as you

KØDQ in Mexico operating as 6J9AA during the 1973 ARRL DX phone contest. He set the all-time two-weekend record in the event for a single-op, making 10,600 contacts. (Courtesy KØDQ)



Scott as P41P (right) with host Jacky Oduber, P43P, during the 2002 CQ WW WPX CW Contest in Aruba. Scott placed #1 in the world in the single-op all-band high-power (SOABHP) category. (Courtesy KØDQ)

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may recall. I won four out of five. The only one I didn't win was the CQ World-Wide CW, and those were the first four world championships ... and that became my passion."

"So anyway, I started doing single-operating but typical of the Navy, came back from Mexico, went to sea, didn't do much operating, came back ashore, finally won a U.S. championship from W3GRF in 1987, right before I made Admiral. Then basically life just got too hectic and I did very little contesting, very little operating, except when I was in Bahrain, as A92Q, and let's see, I think I was third in the world in WPX over there."

Scott described that experience in an article he posted on the CQ WPX contest website. "With a modest antenna system I entered my first CQ WPX CW as A92Q in 1995," he wrote. "I had no strategy, only a bare understanding of propagation from the Middle East, and didn't think I'd be able to finish the contest. But the Gulf was quiet that weekend and I managed a third-place worldwide finish. That was my first serious contest since Mexico as a DX station, as well as my first contest using a computer, and my appetite was whetted."

Back to our interview, Redd brought us up to the current time. "(I) finally retired from the military in '98, went in the private sector ... wanted to get back into contesting, ended up going down to Aruba (as P40Q and P41P, operating from the QTH of Jacky Oduber, P43P) and trying to win (the CQ WW CW). I also won WPX CW at some point for the world (*2002—ed.*), so now I've won five out of six world championships and I've been trying like a son-of-a-gun to win CQ World-Wide CW. ... I've come in number two, I've come in number three, but I've never won that one. And I don't know if anybody's ever actually won all six of them—there are only a few people who come close to it—so that's still my goal, every time I get close, in CQ World-Wide CW, to win the world. I haven't gotten there yet."

"So the long and the short of it is, I'm still interested in ham radio," KØDQ added. "I'm looking forward to the chance, to the time, when I can go do it some more. I've done a little bit of operating back in Washington here, at W4RX, Jim Ahlgren ... he's a physician and he has a big mountaintop station. I've had a couple of U.S. top ten finishes from there in the last couple of years, but basically, since coming to this job, I really haven't been able to do much contesting, and in the years between government service I was going to Aruba. I was Papa-40-Queen down there for, I guess, three or four contests, and that's where I won the WPX, one year with high power and one year with low power, and just missed a world record by a scratch on low power."

A "Top Flight" Navy Career

Focusing on ham radio in our discussion, Scott somewhat glossed over the details of his military career, particularly between the time he made Admiral in 1987 and his retirement from active duty in 1998, so we'll fill in the blanks from his various official biographies. His early commands included a guided missile destroyer, a destroyer squadron, a multi-national NATO force, and a carrier battle group.

From 1994 to 1996, Redd commanded all U.S. naval forces in the Middle East, and in 1995, recommissioned the only new U.S. Navy fleet in a half century, becoming the first Commander of the Fifth Fleet since World War II. While in the Middle East, he commanded seven major operations involving Iraq, Iran, and the withdrawal of United Nations forces from Somalia. He was awarded the Order of Bahrain along with five Distinguished Service Medals from the U.S. Navy.

Again, Scott always found time for ham radio along with his military duties. "I've tried to be an ambassador for ham radio," he explained, noting that he made a point of visiting notable hams in the region when he could. "Obviously,

One of Scott's major assignments as an Admiral was commander of all U.S. Naval forces in the Middle East during the mid-1990s. (Photo courtesy NCTC)

King Hussein, when I was out in the Fifth Fleet, (on) the professional side, I was out in Bahrain ... went to see King Hussein. (At a) different time in life, I went to see the Sultan of Oman several times, (he was) A-41-Alfa-Alfa. You know, a lot of the Middle Eastern rulers out there actually were ham radio operators in their youth."

Scott (far right) and other NCTC leaders listen as President Bush speaks during a visit to the National Counterterrorism Center in August of 2006. (White House photo)

Lynne Cheney, Scott Redd, Donna Redd, and Vice President Cheney at the NCTC 2006 Christmas party. (Photo courtesy NCTC)

In 1996, Admiral Redd was reassigned to Washington, where he served as the Navy's senior advisor on strategy and policy, and as chief of staff to the Secretary of Defense's senior civilian policy advisor. His final assignment on active duty was as Director of Strategic Plans and Policy in the office of the Joint Chiefs of Staff. In this position, he was the senior advisor on strategy and policy for the entire U.S. military and was one of three military leaders (along with the Chairman and Vice Chairman of the Joint Chiefs) who regularly attended senior National Security Council meetings at the White House. While in this post, Redd also guided the development of a new National Military Strategy and supervised the military strategy portion of the Secretary of Defense's $1.5 trillion Quadrennial Defense Review. Scott retired from active duty on September 1, 1998. The only real change, though, was exchanging his Navy uniform for a suit.

Brief Stint in the Private Sector

In 1999, Scott became Chairman, President, and Chief Executive Officer of the NetSchools Corporation, which his bio describes as "a high-tech startup company in the education sector." Scott filled in the details in our interview:

"Essentially (NetSchools) was a systems approach or comprehensive approach to education and using technology in education. ... The core of it was, on the one hand, every kid gets a laptop computer. Number two, you use the internet and you take the best of the best in terms of where there's teaching styles, pedagogic styles, and you were able to make that available to a much broader group of students. And number three, which was probably the most key thing to making it succeed, was that you trained the teachers in the use of technology. So that's what that was all about, and we had some pretty dramatic results in terms of raising test scores and all sorts of things. We were actually cash-flow positive before 9-11, and of course, after 9-11, a lot of the state budgets were affected and we ended up selling the company.

"One of the interesting things was, how do you put a bunch of computers in a classroom and make it work? If you can imagine having 40 students in every class taking a laptop and plugging and unplugging it into a bunch of wires, that wasn't a solution; the lower end of the RF spectrum had some problems, because it goes through walls, so we ended up using infrared ... as the wireless system, if you will, within the classroom. That's the high end of the spectrum, obviously ... and that actually became a pretty significant piece of what we did. So even in that, ham radio came in handy, and just more generally with computers. You work with contesting programs and everything else and you feel very comfortable with the computing world, too. ... This is the future of education in the country, I believe. But it's going to take a while to catch on."

Back to Government Service

After five years in the private sector, Scott returned to the federal government, this time in a civilian role as Deputy Administrator and Chief Operating Officer of the Coalition Provisional Authority in Iraq, a position in which he was able to get local and foreign hams there back on the air.

"I was there a fairly short period of time, until I got called back by the

Highway to Home

Vice Admiral Scott Redd, accompanied by his wife, Donna, their children and grandchildren, cuts the ribbon to dedicate the "Admiral Scott Redd Highway" in Sidney, Iowa on October 5, 2007. Redd was honored by the citizens of his hometown at a dedication ceremony attended by family, close personal friends, and town officials. In addition, Vice Admiral Redd spoke to an assembly of Sidney High School students about his Navy career and his current responsibilities as NCTC's Director. He expressed his thanks to the people of Sidney for the honor they bestowed upon him and challenged the students to set their personal goals as high as possible as they study and grow. *(Photo courtesy NCTC)*

LDG ELECTRONICS

NEW! AT-1000Pro

Building on the success of the AT-1000, LDG Electronics has refined and expanded its 1KW tuner. The AT-1000Pro has an Automode that automatically starts a tuning cycle when the SWR exceeds a limit you set. Other features include:

- Operates at any power level between 5 and 1,000 watts peak. RF Relay protection software prevents tuning at greater than 125 watts.
- 2 Antenna connections
- Tunes from 1.8 to 54.0 MHz (inc. 6 meters)
- Tuning time usually under 4 seconds, transmitting near a frequency with stored tuning parameters, under 0.2 seconds.
- 2000 memories.
- All cables included.

Suggested Price $599

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AT-897 for the Yaesu FT-897

If you own a Yaesu FT-897 and want a broad range automatic antenna tuner, look no further! The AT-897 Autotuner mounts on the side of your FT-897 just like the original equipment. We even added the ability to mount the "feet" on the side of the tuner so when you're transporting your rig by the handle, you can safely set it down and not worry about scratching the case. The AT-897 takes power directly from the CAT port of the FT-897 and provides a second CAT port on the back of the tuner so hooking up another CAT device couldn't be easier. **Suggested Price$199**

AT-100Pro

This desktop tuner covers all frequencies from 1.8 – 54 MHz (including 6 meters), and will automatically match your antenna in no time. It features a two-position antenna switch, allowing you to switch instantly between two antennas. The AT-100Pro requires just 1 watt for operation, but will handle up to 125 watts. All cables included. **Suggested Price $219**

AT-200Pro

The AT-200 features LDG's new "3-D memory system" allowing up to eight antenna settings to be stored for each frequency. Handles up to 250 watts SSB or CW on 1.8 – 30 MHz, and 100 watts on 54 MH (including 6 meters). Rugged and easy-to-read LED bar graphs show power and SWR, and a function key on the front panel allows you to access data such as mode and status. All cables included. **Suggested Price $249**

radio not included

AT-7000

The AT-7000 is the ideal tuner for IC-7000 & other Icom Radios: Covers all frequencies from 1.8–54 MHz (including 6 meters), and will automatically match your antenna. Requires just 0.1W for operation, but will handle up to 125W (100 W on 6 m), making it suitable for everything from QRP (IC- 703 Plus) to a typical 100 W Icom transceiver. All cables included. **Suggested Price $169**

Z-100

Designed from the ground up to provide 100 watt power handling in a small, lightweight package. Perfect for portable as well as sitting on your desk in your shack! The Z-100 will tune with 0.1 to 125 watts (50 watts on 6 meters), making it an excellent choice for almost any radio or operating style. Backpackers and QRP operators will appreciate the latching relays. Power can be removed from the tuner once you have tuned. Additionally, when it's not tuning, it draws nearly zero amps. **Suggested Price $149**

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RCA-14 is a breakout box for the accessory jacks on most popular transceivers. It comes with cables with the right DIN plugs, and all the outputs are RCA jacks. You simply plug the RCA-14 into your radio's accessory jacks, and all your ports are right there at your fingertips; just plug and play, one function or all of them. The RCA-14 is compatible with: Icom 703, 706, 718, 746, 756, 7000 and 7800, Yaesu 817, 857, 897 and 840, Kenwood 480, 570, 2000, Ten Tec Orion and many more. ***Suggested Price $59***

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The TW-1 Talking Watt meter provides an spoken indication of power and SWR using a digitally recorded voice. It is ideal for the vision-impaired, for those of us in the "bi-focal set", or just for those times when you need to be looking somewhere else. At the press of a button, the TW-1 speaks the forward power, reverse power or SWR. Three languages are included: English, Spanish and German. It includes its own internal speaker; no external audio hookups are needed. Also available TW-2 UHF/VHF. ***Suggested Price $149***

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LDG

President, but I was basically the co-Vice President of Iraq; Jerry Bremer was the head of the Coalition Provisional Authority and I was his deputy, and it turned out that the half of the country that I took care of was the technology area, so actually I was responsible, along with electricity and gas and everything else, for about two months, for ham radio licensing, and a guy whose name escapes me right now was actually the guy who ran it. We got, as you indicated, both the local Iraqi hams back on the air and we allowed the contractors and foreigners in the area to operate."

After just two months in Iraq, Redd was called back to Washington to serve as Executive Director of the commission established as a result of the controversy over intelligence reports about weapons of mass destruction in Iraq that preceded the U.S. invasion there in 2003 (the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction). After the commission delivered its report to the President in early 2005—a report that was adopted by President Bush as his blueprint for reforming the intelligence community—Redd was named the Director of the newly formed National Counterterrorism Center (NCTC) and was confirmed by the Senate, assuming his new duties on August 1, 2005.

The NCTC has a dual mission and KØDQ had two bosses. The first mission is to serve as the federal government's primary organization for analyzing and integrating all intelligence related to terrorism. In that role, Scott reported to the Director of National Intelligence. The second mission—an extension of Scott's earlier assignments— is to conduct strategic and operational planning for all U.S. counterterrorism activities, essentially to be the chief architect of America's war on terror. In this role, Redd reported directly to the President.

The Role of Ham Radio

Admiral Redd says ham radio has played an essential role in his professional life in addition to the hobby aspects that have provided him with a break from his day-to-day responsibilities.

"It got me going; it gave me a bunch of things professionally," he explained. "I used the knowledge gained in ham radio in virtually every job I've had, from obvious things such as knowledge of HF propagation ... you know, you're on a Navy ship at sea, and you're trying to figure out how to get to the base and (I'd tell the radio op), 'try the 3 meg to Keflavik; trust me, it'll work,' and the guy says, 'the chief says no, it'll never work' ... and 10 minutes later, we're the heroes of the entire battle group because they've established comms, and it's all because as a DXer and a contester, you know what HF propagation is like.

"At the other end of the spectrum, understanding the RF spectrum is something that has entered into every aspect of my job, including the current one. I've used it in understanding radio and propagation, whether it's navigation, communication, radar, electricity in general, satellites, electronic warfare, command-and-control, all of that. ... For most of my contemporaries, all of that stuff was a black box and that was something for the techies and the geeks to worry about. And growing up with (ham radio), you're just very comfortable with it, and I've used it in things such as arms control discussions and other stuff over the years, just because I feel comfortable with it."

Redd continued, "I could take you through every job I've had. Of course, the Navy's a technological service, but not just in the Navy. Even being in Washington and the policy committee, sitting in the White House situation room with the President—everything, virtually everything that I touch and have touched in my career in government and indeed out of government, I've been better prepared to do that job because of ham radio.

"Some of it's a direct correlation ... the things we've talked about—the RF spectrum, understanding technology writ large, understanding electricity and electronics; and the other is just sort of the general thing, because ... you have an understanding of how things work and if things don't work, you look for solutions, you learn to solve problems. (It's) sort of a thing that's very difficult to quantify, and to a certain extent it's intangible, but I think you learn that in ham radio, whether it's - in my case starting out, how do you connect an antenna to a transmitter when nobody's told you how to do it - to how do you get the last decibel out of that 4-element, or 5-element or 6-element Yagi, how do you stack 'em and how do you get the phasing to line up in a two or three (Yagi) stack, that sort of stuff — working through that is a mental discipline, and I think anybody's who been through

Scott talking with veterans at NCTC's fourth "American Heroes" event last September 28. The center hosts wounded veterans from Walter Reed Army Hospital and provides a tour of NCTC as well as a job fair with recruiters from more than 20 federal agencies. (Photo courtesy NCTC)

KØDQ Awarded Distinguished Service Medal

Director of National Intelligence Mike McConnell (left) presents outgoing National Counterterroism Center Director Scott Redd (KØDQ) with the National Intelligence Distinguished Service Medal. (Photo courtesy of NCTC)

Retired Vice Admiral Scott Redd, KØDQ, has received several awards and commendations upon his retirement as Director of the National Counterterrorism Center (NCTC). In a November 9th ceremony at Bolling Air Force Base in Washington, D.C., Director of National Intelligence Mike McConnell presented Redd with the National Intelligence Distinguished Service Medal. This award recognizes "sustained, selfless service of the highest order and/or extraordinary and long-lasting contributions to the Intelligence Community and the United States by an individual in a position of great responsibility." Redd also received additional awards from the Central Intelligence Agency, the Defense Intelligence Agency, and the National Geospatial-Intelligence Agency. A statement from the Office of the Director of National Intelligence noted that Redd, as the first director of NCTC, had "vastly improved the nation's capacity to perform counterterrorism analysis and share information among departments and agencies."

amateur radio and has gotten involved in it, and particularly has either built or experimented with it, is going to be better off for it. And getting in front of a microphone—I mean, when I got on a Navy ship, I had no compunction about getting on and talking on a tactical voice circuit or … doing more than one thing at a time. I think you've got the general gist of it, I think it's just something which has a tremendous payoff, some of it's very easy to relate and quantify and the rest is a little bit more intangible, but nonetheless very real."

Ham Radio and National Security

In our December interview, Deputy Defense Secretary Gordon England, ex-W3AWO, said he believes that not being competitive in science and technology poses an even greater threat to the U.S. than does terrorism, noting that "(w)e need to expose young people to things like amateur radio to get them interested." Since Adm. Redd's job was to lead the war on terrorism, I asked whether he agreed with Secretary England, and whether he feels ham radio continues to be relevant to young people today.

Redd said he believes that both terrorism and a lack of competitiveness in science and technology are very real dangers to our country. "Which is number one, which is number two? I would say that tactically, the terrorism threat is obviously, certainly, the wolf closest to the sled, if you will; but they're both very significant strategic threats, and I think we would be wrong to not take either one of them seriously and do something about it."

Regarding the ongoing relevance of ham radio for young people today, Redd added, "Clearly, things have changed a lot since ham radio used to be one of the major means of communications, certainly for ships at sea or even if you were overseas, but I think … there are things that you gain by being in amateur

radio that you don't get other places. And I guess, first and foremost, is the RF spectrum. No matter how you look at it and whether you're talking about the high end of it or the HF side of it or wherever, it's something that just permeates everything we do. … So I think familiarity with that is one of the things you get in ham radio that you don't get elsewhere. And number two is that sense of experimentation."

Redd also referred back to comments made by Admiral Edmund Giambastiani, Jr., N4OC, recently retired Vice Chairman of the Joint Chiefs of Staff, in his October 2007 *CQ* interview, noting that even though he had worked closely with both England and Giambastiani, he hadn't realized until now that either one had been or still was a ham.

"I grew up building Heathkits. Actually most of my building was of antennas, which was the area where I probably did more experimentation. But I think I agree with what Eddie said: You experiment around, you try something and see what it does. It takes the—what's the word, not the fear, and certainly not the magic—but it takes sort of the uncertainty about technology out of it, and you say, 'OK, this is something I can work with, that I can mess around with,' if you will, and it helps you in terms of understanding it, whether you're making policy decisions or whether you're building the next generation of whatevers. So I think ham radio still has a significant role to play. Obviously, it's no secret it's a graying hobby, and it's harder to attract the youth, but I think it's certainly something that is very important for us to continue to push as an educational thing, and as something that contributes to our national security, in the broadest sense."

Christmas Morning

We wrapped up our discussion with a look at what keeps ham radio relevant to Scott Redd, even as he has held down a wide variety of top leadership posts in our national defense community, both military and civilian.

"For me, because I've been in and out of this enough, Rich, it's still, it's still magic," he said. "As a young kid growing up, Christmas morning was always exciting. You'd get up thinking, 'What's going to be under the tree?' Well, for me, it's still exciting to wake up on the morning of a major contest, and I'm going to be able to operate in it and see what's going to be. It's just, it's always been a magical thing for me."

"I think we're always looking," Scott added, "and rightly so, Rich, for how ham radio fits in the public forum in terms of worth and value, and those are all very real things; we should do that. For me, that's true, and I've used it that way and it's been of tremendous value. But it's also a heck of a lot of fun.

"I mean my two hobbies right now—probably 'cause my knees are shot—are fishing, and when I get a chance, ham radio. And to a certain extent, they're both the same thing. You throw a lure out and you never know whether you're going to catch something, and if you do, what it's going to be and how big it's going to be. You know, you call CQ on 20 meters over the North Pole and a wavering signal comes back and you don't know whether it's going to be a VU7 or whatever. There's excitement and fun, which, for me quite frankly, has never grown old. It's still magic."

Postscript

Two weeks after our interview, Scott's knees apparently caught up with him, and he announced that he would be resigning as NCTC Director effective November 10, 2007. He needed double knee replacement surgery and felt that the surgery and recovery would take him away from his responsibilities for too long a time. In a memo to staffers, he said that, together, they had "achieved great—even revolutionary—successes," and that he feels the U.S. is better prepared today than at any time in its history to wage the global war on terror.

In an e-mail to *CQ*, he added, "It was, as you can imagine, a tough decision that was months in the making. I really hate to leave, but it's the only prudent option at this point." Redd said his plans for the near future are "to rest, get reconnected with family, and prepare for and undergo surgery. Once we're through all that, I look forward to re-engaging in ham radio. I especially look forward to doing some CW DX contesting from the U.S. and overseas.—Scott, KØDQ/A92Q"

We at *CQ* wish Scott all the best in his surgery and recovery, and look forward to hearing him back on the air soon, either from home, from Aruba, or from some other exotic DX location. And we've got that CQ WW CW plaque on hold for you, Scott!

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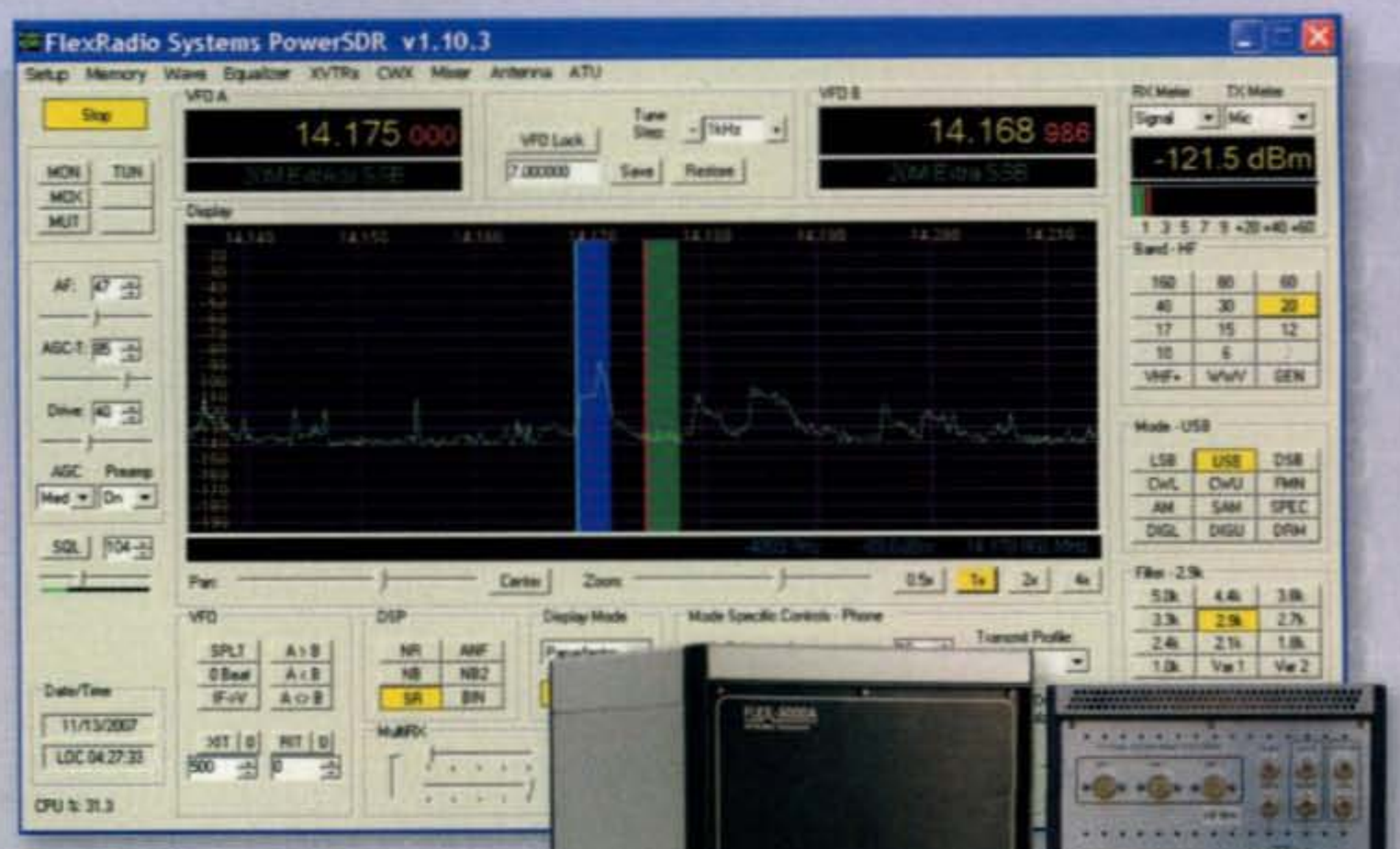

Rear View

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Rear View

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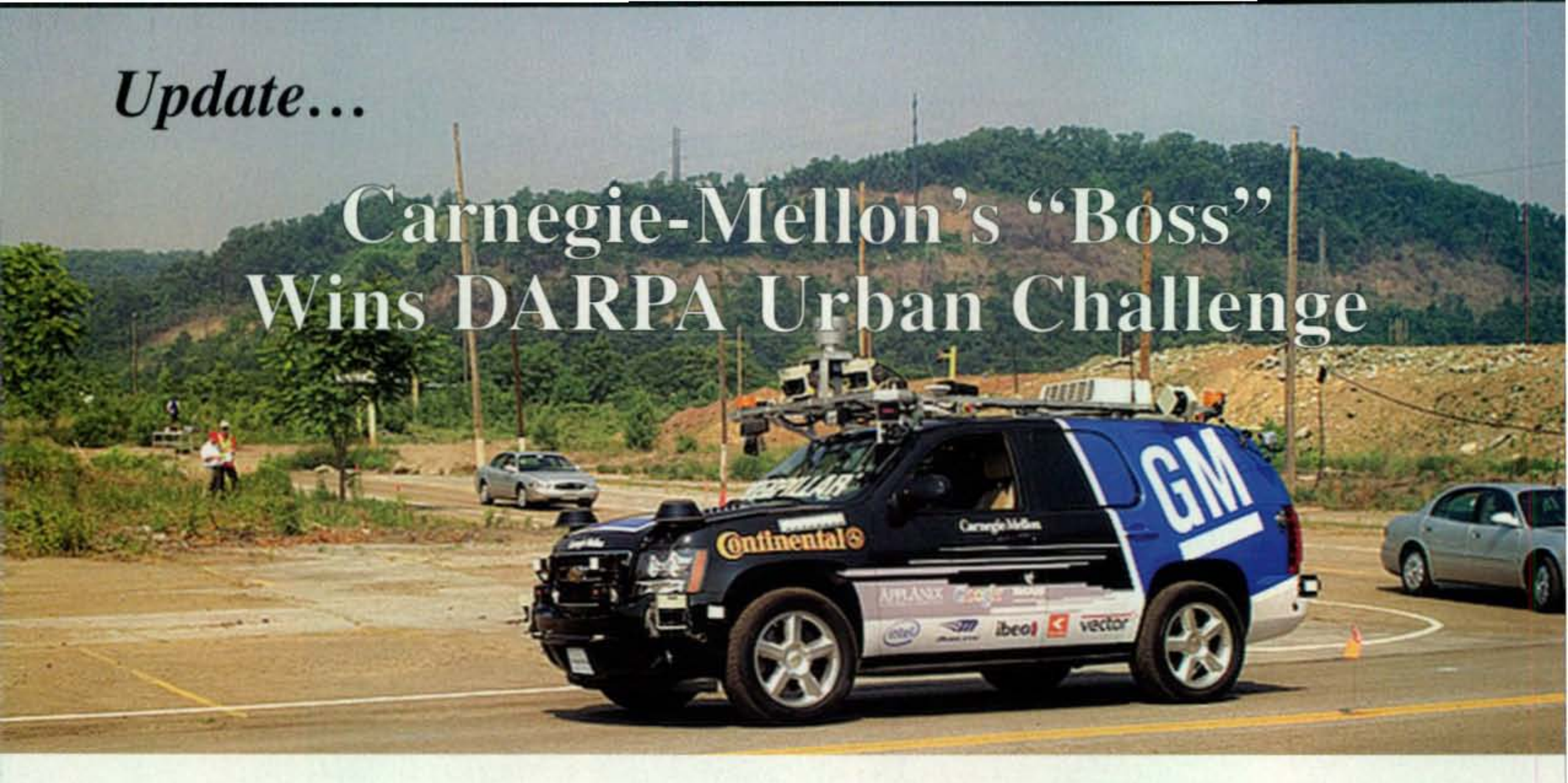
Update...

Carnegie-Mellon's "Boss" Wins DARPA Urban Challenge



Our November, 2007 interview with Dr. Tony Tether, K2TGE, Director of the Defense Advanced Research Projects Agency (DARPA), included a sidebar on DARPA's "Urban Challenge" program to encourage the development of a driverless car, which Dr. Tether discussed in response to a question from CQ Digital Editor Don Rotolo, N2IRZ. The competition was scheduled for early November, about the time most readers would be receiving their issues. The challenge is now over and we wanted to update you on the results.

A modified SUV called "Boss," developed by Carnegie Mellon University's Tartan Racing team, placed first and won not only bragging rights but a $2-million prize! Stanford University's "Junior" finished in second place, and the school took home $1 million for its work on "autonomous" vehicles. Third place, and a $500,000 prize, went to a car called "Odin," entered by Virginia Tech's "Team Victor Tango" (the only team to incorporate ICAO phonetics in its name!)

Entrants had to safely complete a 55-mile course, in traffic, on typical urban/ suburban roads while observing all California driving laws. Teams were not allowed to intervene with their vehicles once they crossed the starting line. Of the eleven original entrants approved to compete, only six finished the course (two developed what a Stanford University news release termed "fatal attractions to buildings," while the other three became "terminally confused"). The top three finishers lost no points for safety or traffic-law violations, so determination of first, second, and third place was based on elapsed time from start to finish. Carnegie Mellon's "Boss," a specially modified 2007 Chevy Tahoe, finished the course about 20 minutes faster than Stanford's "Junior," a Volkswagen Passat outfitted for robotic operation.

The DARPA Urban Challenge competition required that robotically controlled vehicles negotiate a course full of turns and traffic, constantly analyzing surrounding conditions and making "decisions" about how to respond. Here Carnegie Mellon University's "Boss" is negotiating an intersection. (Photos on this page courtesy of tartanracing.org)

And the winners are ... Tartan Racing's "Boss" crosses the finish line and takes first place (and a $2-million prize) for Carnegie Mellon University in the 2007 DARPA Urban Challenge. (Photo courtesy of DARPA)

Stanford Racing's "Junior" finished the course with the second-fastest elapsed time, earning the university second place and a $1-million check from DARPA. (Photo courtesy of DARPA)

Third place went to "Odin" from Virginia Tech's phonetically correct "Victor Tango" racing team, along with a prize of $500,000. (Photo courtesy of DARPA)

Stanford's news release explained the difficulty of the challenge: "Throughout the day, the robots drove themselves without any human intervention through a constantly trafficked maze of sinuous routes and traffic circles to complete a series of mock missions. To see the better cars merging into moving traffic, obeying right-of-way at intersections, and methodically running errands like soccer moms was to see cars displaying unprecedented capabilities to reason."

"What Junior accomplished (along with the winning vehicle, Boss, from Carnegie Mellon University, and the other vehicles) on a former Air Force base in Victorville, California was to demonstrate that robots can make decisions about routes and maneuvers, that they can follow traffic laws, and that they can perceive and understand their environment, at least as it pertains to driving."

Commenting after the event, DARPA Director Tether said the competition was "really a fantastic accomplishment," noting, "I watched these things driving and I forgot after a while that there was nobody in there."

Carnegie Mellon Professor and Tartan Racing team leader William "Red" Whittaker called the event "a phenomenal thing for robotics" and noted that "once the perception of what's possible changes, it never goes back."

DARPA's immediate goal in organizing the challenge was to promote development of driverless vehicles that could safely navigate the dangerous roads of Iraq and deliver supplies to deployed units while minimizing danger to U.S. troops. As Tether noted in his *CQ* interview, however, the technology will "absolutely" trickle down into civilian products. "Our highways are nearing capacity," he noted. "We're all taught to keep a certain number of car lengths between our vehicle and the one in front of us, but imagine if we didn't have to do that, if the cars could maintain their own safe separation distances that are much closer than what we can do on our own. We've shown it can be done."

(*Editorial note: While there was no direct connection with ham radio in this activity, robotics is a complementary technology which, like amateur radio, has the power to get young people interested and involved in careers in science and technology. It is a great irony that as technology assumes an ever-greater role in our society, it is becoming more and more difficult to attract young people to these fields and to "grow" the next generation of technological innovators. We encourage the development of any programs to achieve this goal, and believe ham radio will ultimately benefit, along with the rest of society.*)

Market Survey

Take a high-frequency radio tour with Gordo and learn what's new from the dozen HF radio manufacturers and their 2008 lineup of equipment . . .

HF Transceivers

BY GORDON WEST,* WB6NOA

Every class of U.S. ham radio license now allows access to the worldwide high- frequency (HF) bands. When the FCC eliminated all code tests a year ago, on February 23, 2007, Technician Class operators gained high-frequency privileges on the following bands:

10 meters: 28.000–28.300 MHz code and data; 28.300–28.500 MHz SSB voice

15 meters: 21.025–21.200 MHz code privileges

40 meters: 7.025–7.125 MHz code privileges

80 meters: 3.525–3.600 MHz code privileges

These high-frequency privileges, afforded to the Technician Class licensee who may never have passed a Morse code exam, have led to new 10-meter voice and code practice nets, as well as some shaky CW CQs by new operators looking for DX contacts on HF.

In addition, since the code test requirement was eliminated last February, nearly 15,000 hams have upgraded to General or Extra, seeking out the wide expanses of HF privileges available to those license classes.

With all of these new-to-HF hams in mind, let's take a tour of the various manufacturers' high-frequency offerings beginning with the least expensive and ending up with exotic HF gear, priced in the ionosphere.

Least Expensive, Under $800

MFJ, celebrating 35 years in the ham radio industry, can get you on the air on HF for under $275, *completely assembled.* Its "travel radio" series offers one HF band—choose 20, 40, or 75 meters —12 watts SSB output, VFO tuning, and a red-hot receiver. Just add 12 volts DC and start talking QRP (low power) to the world. A $50 CW module can also be installed to allow code operation on 40 or 75 meters. A more powerful 20-watt, 10-meter SSB voice transceiver is available, too. Also, for CW operation only, save about $50 with MFJ's single-band Morse code transceivers for 40 through 15 meters. Be assured, too, that MFJ has every accessory known to hamkind for these powerful and sensitive single-band radios.

If you enjoy soldering up your own low-cost HF transceiver, consider the Elecraft K1, K2, and KX1 kits. For around $300 you are on the air with a two- or four-band K1. Seasoned hams call Elecraft kit building "the lost art made simple," thanks to detailed instructions, precision board layouts, and a tech help desk that answers with a live person, not a recording!

MFJ's 9300 series "QRP Cub" transceivers give you one HF band (your choice of several) at low power and very low cost. (Photos courtesy of respective manufacturers unless otherwise noted)

Single- and multi-band QRP transceiver kits are also available in the $200 to $369 range from Wilderness Radio. Its 40-meter transceiver kit boasts receiver sensitivity at –137 dBm and puts out 2 watts of power from an ultra-stable VFO. Wilderness Radio also offers a multi-band QRP HF transceiver in which all components, controls, and connectors are mounted on a single board with no chassis wiring required. This Sierra model uses plug-in modules to cover each HF band.

You could also build your own Ramsey Electronics single-band receiver, complementing the company's QRP single-band transmitter, and enjoy separate TX/RX capability with a pair of kits priced well under $200 for *both*! Or, Ramsey offers the SX-20, a $300 kit that puts out 10 watts on the 20-meter band with a sensitive receiver in one nice, neat package.

In the $400 range, Ranger Electronics offers a 10-watt, 10-meter HF transceiver, likely modified from an original top-quality CB radio design. In fact, Ranger offers 10- and 12-meter gear in 25- to 75-watt power

The Sierra from Wilderness Radio can keep you in touch from … the wilderness.

*CQ Contributing Editor, 2414 College Dr., Costa Mesa, CA 92626
e-mail: <wb6noa@cq-amateur-radio.com>*

WB6NOA says the ICOM IC-718 is this year's "extreme value rig."

levels, giving hams good value from a CB-looking 10-meter and 12-meter transceiver. I personally have tested some of the Ranger gear, and the receivers are red hot with nice comments on my transmitted signal. They are *not* backwards compatible to the 27-MHz CB service.

The incredible ICOM IC-718 comes in at $525 and is a full-fledged 100-watt output, 100-memory-channel, high-frequency ham radio transceiver, including receiver digital signal processing (DSP). This is the lowest priced high-power HF transceiver on the market and is absolutely the most bang for the buck. I took the IC-718 to Christmas Island, and it stayed cool and rock steady during portable operation with a solid 100 watts output. It is also easily modified for MARS operation, just outside the ham bands. This rig is your extreme value for '08!

Slightly smaller in size, but priced $100 more, is the ICOM IC-703 Plus QRP transceiver. It puts out 10 watts. This rig must have a cult following because of its small size, detachable head, and the added capability of 6 meters, 2 meters, and 70 cm. If I were purchasing a QRP rig, though, I would go for the IC-706 series for $200 more and simply menu down the power output to run QRP.

Alinco's DX-70TH provides solid HF performance at a reasonable price.

Just under the $800 price tag is the Alinco DX-70-TH HF plus 6 meters mobile transceiver. The face can be remotely mounted by purchasing the very hefty $75 cable kit and the remote head mounting bracket for a few dollars more. One hundred watts and 100 memory channels have earned this veteran radio continued acclaim. Its big, bold LCD readouts on an amber display are easy to see both day and night. The larger Alinco DX-77T transceiver can still be found on dealers' shelves, but is no longer in production. The "70" works great at home with an AC power supply!

Ten-Tec offers the Argonaut V HF transceiver at just under $800, engineered around an IF digital signal processor with 20 watts output. Features include a general-coverage receiver, 20-watt SSB operation on 10– 160 meters, and it's PSK-31 ready: Plug it into your sound card without any dropping resistors in the TX line or any need for a rig-to-computer interface. The receiver on the Argonaut V is amazing—35 receive filter combinations, and the great software-defined ability to update any new parameter from the internet. Ten-Tec now includes a high-stability TCXO (temperature-compensated crystal oscillator) on the Argonaut V, as well. The return of a *legend*!

Last in the $800-and-below range are two venerable products from Yaesu. As you may know, Yaesu's parent company, Vertex Standard, is in the process of being purchased by Motorola, and Yaesu team members are confident that the ham radio product line will continue to grow.

Not new, but the envy of any QRP operator, is the tiny Yaesu FT-817ND HF transceiver with 6 meters, 2 meters, and 70 cm. It's totally portable with a battery-pack capability—about 5 watts out on HF. I use my little 817 for tracking down noise sources when I'm around the house. It's also a regular companion when aboard boats as I check out marine SSB interference. You will be surprised at how many contacts you will make on voice and CW with just 5 watts!

The Yaesu FT-857D is another great value under $800, working 100 watts out on all HF bands plus plenty of power on 6 meters, 2 meters, and 440 MHz. The smallish head is removable and should be placed high up on the dashboard for safety. The 857 also features digital signal processing, and the protruding, large dial knob is easy to maneuver.

The FT-450 is Yaesu's newest entry into the under $800 range.

Brand new is the Yaesu FT-450 HF plus 6 meters transceiver, with its distinctive jet-black background and white, crisp LCD frequency and operating parameter display. DSP is built-in, with plenty of receiver selectivity, thanks to the 24-kHz second IF filtering and a 10-kHz roofing filter. This means you can take the rig out of your mobile and run it with ease as a base station, too. You will need an adapter on your regular 1/4-inch CW key plug, as the key input is the next size down. It's the same thing with a headphone jack, but that's actually good; take your favorite portable boom-box stereo headphone set and push in to hear the sounds of HF radio.

If you already operate Yaesu equipment, learning the keystrokes of this new compact HF radio with IF DSP will be a snap. You can even adjust transmit audio equalization, and there are plenty of filter options on receive as well. The main tuning knob is balanced in size to the diminutive real estate of the transceiver, but after a few twists, your fingers will like the tiny gnarled knob.

Mid-Range, $800 to $1500

Just above the $800 mark is the Yaesu FT-897D, which has been around for several years and offers 100 watts output on external 12 volts, or 30 watts output with its own internal battery-pack system. When I went to Christmas Island, this

was one of the radios I worked regularly on an external 14-amp-hour gel battery, needing more power out than the 30 watts from the internal battery. It worked flawlessly even when it got a little damp during our rough landing on Washington Island. The 897 also does 6 meters, 2 meters, and 440 MHz. Its reputation on the ham bands is one of the many credits this seasoned radio has earned.

Just under $900 is the ICOM IC-706 Mk II-G, an all HF plus 6 meters, 2 meters, and 70 cm rig. Dealers selling the 706 will sometimes include the remote-head mounting kit for free! This radio is both a mobile transceiver and a great base rig, running on12 volts DC.

For a couple of hundred more bucks you can get the ICOM IC-7000, which is the same size as the 706 but with five times more memory channels, a terrific color thin-film transistor display, and added transmit and receive audio selections, thanks to additional filtering in both TX and RX. If you're trading up from the 706 to the 7000, you *will* need to change the remote-head-cable kit. The connectors are different, and they need more pins on the 7000 than are found on the 706. Receiving over-the-air analog TV is a trick mod, but keep in mind that we only have about another year of analog TV before your screen ultimately will pick up nothing but wideband "snow." On the other hand, I used the TV mode with an ATV downconverter, and since ham ATV will remain non-digital for many years to come, that TV screen mod is a good one.

Around $900 is the Kenwood TS-570. Here is another veteran radio that we see continuing to garner rave reviews every year. It covers the HF bands plus 6 meters, and of course general-coverage receive. Buy it with the built-in antenna tuner, and this allows you to work HF bands and 6 meters slightly off resonance. Like all internal automatic tuners, the Kenwood TS-570 excels when it has a decent match, but even a 3:1 SWR is still within reach of the internal tuner. (I encourage you to work on your antenna so you don't need *any* additional tuning at the transceiver.) The Kenwood 570 runs cool, runs long, and is just a great-performing rig with digital signal processing to clean up background hash. For CW, the 570 offers full and semi break-in, a dedicated packet port, computer control, and an easy 100 watts when using voice compression. This is a 12-volt workhorse radio, mobile as well as base.

For a few hundred dollars more, you may wish to consider the new Kenwood TS-480. This is a high-frequency plus 6 meters HF transceiver with a full-tuning 500-kHz to 60-MHz general-coverage receiver. If 100 watts is not enough power output, you can order the 480 as a 200-watt output rig. I went for the 100 watts and the built-in automatic antenna tuner—plenty of DSP, in both receive and transmit. The front head *is* remote; you can't get this rig any other way, and this allows for a multitude of installation options, both base and mobile. Kenwood Amateur Sales Manager Phil Parton tells me the 480 has the same receive *capability* as the company's legacy, the TS-950. I have a 950 myself, and I actually think the 480 does more, especially with much more adjustable DSP in the audio frequency stage. A quad-mixer provides receiver dynamic range equivalent to the old TS-950.

Kenwood's TS-480 includes an optional voice synthesizer, a feature of particular interest to visually-impaired hams.

For the visually challenged, the optional voice synthesizer makes the Kenwood TS-480 a rig of choice. It is simple to operate, has a crisp amber background with black numbers, and just works great, like all Kenwood radios do! Also, if you do bring it in as a 200-watt output transceiver, without built-in tuner, you'll need to run twin DC power cables to handle the higher power output.

Speaking of the number "950," the new Yaesu FT-950, coming in just under $1500, will occupy a lot of space on your home operating table. I am told by FT-950 users that much of the circuitry resembles the more expensive Yaesu FT-9000 transceiver, yet carries on the proud tradition of the FT-1000 series. The receiver is triple conversion, with eight narrow bandpass filters in the RF stage to minimize out-of-band QRM. A first IF 3-kHz roofing filter is also part of the package, as well as direct digital synthesizer (DDS) and plenty of intermediate signal processing. If you are into PSK, the built-in high-stability TCXO is locked on 60 seconds after turn on. There's also a built-in automatic antenna tuner and 100+ watts output. In addition, if you are really hammered by AM broadcast stations just outside of the band, Yaesu offers a tuning preselector as an option to further cut QRM. If you need a big computer-screen-size display without the computer, get the optional data-management unit and watch a spectrum scope that will have your ham friends drooling.

ICOM is in the $1500 range with its well-proven IC-746 PRO HF plus 6- and 2-meters transceiver, along with built-in spectrum scope. Features include twin passband tuning, triple band-stacking register, 32-bit floating DSP, IF filter width and shape variables, and an easy 100 watts output. The IC-746 PRO has been in ICOM's line for several years, and it is staying because of its enhanced receiver performance and full capability for 100 watts out, continuous. I run a 746 mobile, and although it's larger than a typical HF mobile, it's easy to operate on the move.

Also around $1500 is Ten-Tec's Jupiter, well known for terrific transmit audio quality and loved by hams for Ten-Tec's engineering of superb receiver performance. Ten-Tec says the Jupiter is one of its best selling 100-watt transceivers since the original Ten-Tec Omni was introduced over 26 years ago. Ten-Tec invites you to try its videotape demo, with the $10 fee refunded if you later buy one of its transceivers. The video is a factory tour, plus a demo on the Jupiter and the Orion. This is a fun way to check out your rig ahead of time!

A Few $1500 to $2400 Transceivers

We can call these rigs medium high priced, and their terrific features speak for themselves. At just about $1500, we see that great legendary performer the Kenwood TS-2000, the 100-watt, 300-memory-channel transceiver that offers all HF ham bands, 6 meters, 2 meters, 70 cm, *and* 1.2 GHz if you order with this built-in additional band unit. The Kenwood 2000 includes a built-in 1200/9600 bps terminal node controller, tied into its built-in SkyCommand II+ system, allowing you to control the radio legally and functionally with a Kenwood D7 handheld—or for that matter, the mobile Kenwood D700. Head down to the local beach, dial up the

MFJ 2500 Watts *ContinuousCarrier™* Tuner

Silver plated Edge-Wound Roller Inductor . . .1000/500 pF Variable Capacitors . . . Antenna Switch . . . 4-Core Balun . . . true Peak Cross-Needle SWR/Wattmeter . . . Dummy Load . . . Extremely Wide Matching Range . . . Patent Pending . . .

New!

MFJ-9982

$699.95

***The** MFJ-9982 ContinuousCarrier™ antenna tuner handles 2500 Watts continuous carrier output on all modes and all HF bands into most unbalanced antennas -- even on 160 Meters where even the best antenna tuners fail!*

The MFJ-9982 gives you every feature you'll ever want in a high power tuner -- wide matching range, 1.8 to 30 MHz coverage, 6-position antenna switch, 4-core balun, dummy load, true peak/average lighted SWR/Wattmeter, 6:1 reduction drives with detailed logging scales, 3-digit turns counter, extra large knobs.

New Components, New Technologies

The *Heart and Soul* of the MFJ-9982 is its roller inductor and variable capacitors.

MFJ's high power, high-Q *continuous current AirCore™* roller inductor is no ordinary roller inductor! It's edge wound from thick .06-inch *silver-plated* solid copper strap.

It can carry huge circulating RF currents and withstand tremendous heat that'll melt or burn up ordinary roller inductors.

Self-insulating construction reduces stray capacitance -- keeps self-resonant frequencies high and out-of-the-way. Dual, *silver-plated* compression wheels give ultra low-resistance contacts. New fast-tune crank knob.

High-current, *high-capacitance* 1000 pF and 500 pF air variable capacitors have low minimum capacitance and are self-insulating.

These newly developed air variable capacitors give you *very high efficiency* on 160/80 Meters *and* MFJ's patent pending innovation gives you *extremely wide matching range* on 10/12/15 Meters at 2500 Watts -- a feat *only* the MFJ-9982 has achieved.

Hi-Voltage/Current Antenna Switch

The antenna switch is completely isolated to handle high-voltage, high impedance antennas. High-current, low impedance antennas are handled by parallel sets of high-current contacts of *two* ceramic switches.

New 4-Core Balun

Powerful balun -- Four 2½ inch cores, 12-gauge *Teflon™* wire. Run balanced lines at full 2500 Watts SSB/CW continuous, 24/7.

New Balanced Line Feed-Thru Insulator

Allows massive transmitter currents to flow directly to the antenna without passing through lossy screws or bolts.

TrueActive™ Peak Reading Circuit

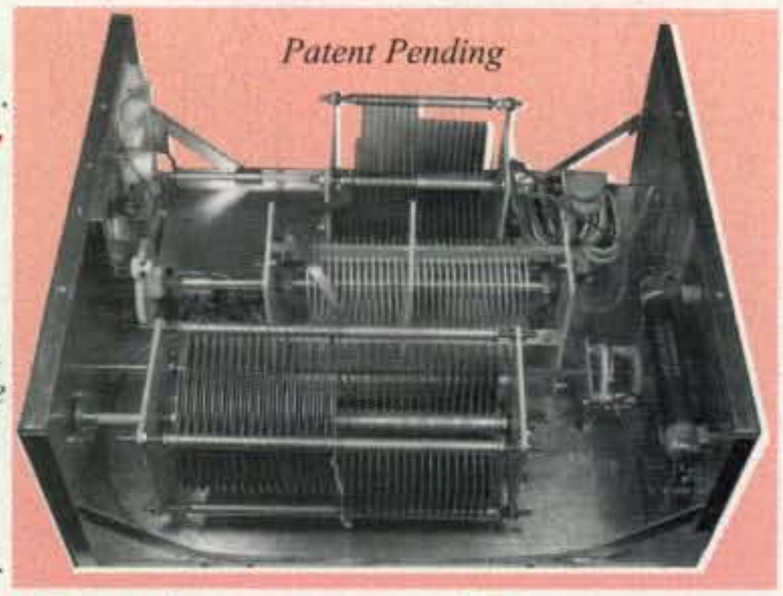
New TrueActive™ circuit reads *true* peak or average power on all modes. *Cross-Needle* meter reads SWR/forward/reflected power.

1500 Watt Dummy Load

1500 Watt air-cooled non-inductive 50 Ohm resistor. 100W/10 min., 1.5kW/10 sec.

New Cabinet maintains high Q

New roomy cabinet maintains high Q. Vent holes. Heavy gauge, .08 inch aluminum braced chassis. Vinyl cover, non-stripping PEM nuts, heavy 10-gauge and copper strap wiring throughout. 13¾Wx7Dx16¼D inches. 15 pounds.



MFJ 1500 Watt *Fully Balanced* Antenna Tuner

Fully balanced MFJ-976 handles 1500 Watts legal limit . . . Extra-wide 12-2000 Ohms matching range . . . continuous 1.8 to 30 MHz coverage including all WARC bands . . . Four separate 500 pF in two gangs gives you a total of 2000 pF capacitance . . . Heavy duty 1:1 current balun . . . more!

New!

MFJ-976

$499.95

The MFJ-976 is a 1500Watt full Legal Limit *fully balanced* antenna tuner.

You get *superb* current balance, very wide matching range (12-2000 Ohms) and *continuous* 1.8-30 MHz coverage including all WARC bands. Handles *full* 1500 Watts SSB *and* CW.

You can tune *any* balanced lines including 600 Ohm open wire line, 450/ 300 Ohm ladder lines, 300/72 Ohm twin lead -- shielded or unshielded. Also tunes random wires and coax fed antennas.

MFJ's *fully balanced* extremely wide-range T-network gives you simple, fast three knob tuning. No complicated switching between high and low impedance and switching in additional capacitance of L-networks.

Four separate 500 pF in two gangs gives you a total of 2000 pF for highly efficient low loss operation on 160 Meters.

You get excellent 10 Meter performance because of MFJ's low minimum capacitance and exclusive *Self-Resonance Killer™* high-Q *AirCore™* roller inductor with silver plated contacts.

Heavy duty 1:1 current balun gives you *superb balance* and stays cool even at 1.5kW.

True *active* peak reading lighted Cross-Needle SWR/Wattmeter lets you read SWR, *true peak* or average forward and reflected power all at a glance on 300/ 3000 Watt ranges. 12Wx6Hx15¾D inches.

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HF Transceivers

Table 1. Under $800

Make/Model	DC or AC?	RX coverage	TX bands	Power Output (watts, tested)	RX circuitry	Mem. Chs.	Remote Head	DSP?	Built-in Keyer?	Built-in Tuner?	"Street Price"
Alinco DX-70TH	DC	.15-30 MHz + 50 MHz	All HF + 6m	110	Dual conv.	100	Yes	No	No	No (ext.)	$749
Elecraft K1 (K1-2, K1-4)	DC	Ham band	Choice of 2 or 4	5	Dual	VFO	n/a	No	Yes	Option	$299/$369
Elecraft K2 Kit, DSP	DC or built-in battery	1.8-30 MHz	All HF	10	Dual	10	No	Yes	Yes	Option	$600
Elecraft KX1-CW	DC	40, 30, 20m	40, 30, 20m	CW, 4	Dual	VFO	n/a	Yes	Yes	Option	$279
ICOM IC-718	DC	30 kHz-30 MHz	All HF	100	n/a	101	No	Option	No	No (ext.)	$525
ICOM IC-703 Plus	DC	.1-65 MHz	HF + 6m	10	Dual	105	Yes	Yes	Yes	External	$679
MFJ 9xxx series	DC	Ham band	Single banders for 80, 40, 20, 10m	12	Dual	VFO	No	No	No	No	$250 each
MFJ CWxxx series	DC	Ham band	Single banders for 40, 30, 20, 15m	5	Dual	VFO	No	No	No	No	$189 each
NorCal Wilderness	DC	40m CW	40m CW	2	Single	VFO	No	No	KC 1	No	$185
Ramsey QRP-RX	DC	Single banders for 20, 30, 40m	(Rcvr only)	n/a	n/a	—	No	No	No	No	$30/kit/band; $15 case+knobs
Ramsey QRP-TX	DC	(Xmtr only)	Single banders for 20, 30, 40m.	1 CW only	n/a	—	No	No	No	No	$30/kit/band, $15/case+knobs, $10 power supply
Ramsey SX-20	DC	20m.	20m.	10	n/a	n/a	No	No	No	No	$300 kit, $370 wired/tested
Ranger RCI-2950DX	DC	24.8-24.9, 28-30 MHz	12 & 10 m.	25	Dual	10	No	No	No	No	$400
Ranger RCI-2970	DC	28-30 MHz	10m.	100	Dual	10	No	No	No	No	$550
Ranger RCI-2980	DC	10m	10m	25	Dual	10	No	No	No	No	$449
Ranger RCI-2995DX	DC	10 & 12m	10 & 12m	50	Dual	10	No	No	No	No	$550
Ranger 63FFC2	DC	28-29 MHz	10m	100	Single	VFO	No	No	No	No	$450
Ten-Tec Argonaut V	DC	.5-30 MHz	All HF	20	Dual	Software defined	No	Yes	Yes	Option	$795
Yaesu FT-817ND	DC or battery pack	.1-1000 MHz (no cellular)	All HF + 6/2m +70cm	5	Dual	208	n/a	No	Yes	External	$600
Yaesu FT-450	DC	.1-56 MHz	All HF + 6m	100	Dual	500	No	Yes	Yes	Yes (int.)	$779
Yaesu FT-857D	DC	.1-470 MHz	All HF + 6/2m +440 MHz	100	Dual	200	Yes	Yes	Yes	No	$700

Table 2. $800–$1500 Range

Make/Model	DC or AC?	RX coverage	TX bands	Power Output (watts, tested)	RX circuitry	Mem. Chs.	Remote Head	DSP?	Built-in Keyer?	Built-in Tuner?	"Street Price"
ICOM IC-7000	DC	.1-199 & 400-470 MHz	All HF + 6/2m + 70cm	100	Triple	500	Yes	Yes	Yes	No (ext.opt.)	$1299
ICOM IC-706 MkII-G	DC	.2-470 MHz	All HF + 6/2m + 70cm	135	Dual conv.	100	Yes	Yes	Yes	No (ext. opt.)	$899
Kenwood TS-570D(G)	DC	.1-30 MHz	All HF	100	Dual	100	No	Yes	Yes	Yes	$919
Kenwood TS-570S(G)	DC	.1-54 MHz	All HF + 6m	100	Dual	100	No	Yes	Yes	Yes	$1099
Kenwood TS-480SAT	DC	.5-60 MHz	All HF + 6m	100	Dual	100	Yes	Yes	Yes	Yes	$969
Kenwood TS-480HX	DC	.5-60 MHz	All HF + 6m	200	Dual	100	Yes	Yes	Yes	No (opt.)	$1080
Ten-Tec Jupiter	DC	.5-30 MHz	All HF	108	Triple	100 + computer	n/a	Yes	Yes	External	$1269
Yaesu FT-897D	DC or batteries	.1-470 MHz	All HF + 6/2m + 440 MHz	100	Dual	200 alpha	No	Yes	Yes	No	$820
Yaesu FT-950	DC	.3-56 MHz	HF + 6m	100	Triple	100 + computer	Computer	Yes	Yes	Yes	$1499

Table 3. $1500–$2400 Range

Make/Model	DC or AC?	RX coverage	TX bands	Power Output (watts, tested)	RX circuitry	Mem. Chs.	Remote Head	DSP?	Built-in Keyer?	Built-in Tuner?	"Street Price"
Elecraft K3	DC	.5-30 MHz + 6m	All HF + 6m	100	Dual	100	No	Yes	Yes	Option (ext.)	$1749
ICOM IC-746 Pro	DC	.3-60 / 108-174 MHz	All HF + 6/2m.	151	Triple conv.	100	No	Yes	Yes	Yes	$1499
Kenwood TS-2000*	DC	.1-500 MHz + 1200-1300 MHz	All HF + 6/2m + 70cm and 1.2 GHz option	HF 100	Quad	300 + computer	Yes	Yes	Yes	Yes	$1549

Table 4. Top of the Line ($2500+)

Make/Model	DC or AC?	RX coverage	TX bands	Power Output (watts, tested)	RX circuitry	Mem. Chs.	Remote Head	DSP?	Built-in Keyer?	Built-in Tuner?	"Street Price"
DZKit Sienna	DC	500 kHz - 30 MHz	All HF	10 (100 opt.)	Triple	137	No	Opt. w/int. computer	Yes	Opt.	$2699 intro.
FlexRadio SDR-5000	DC	.1-54 MHz	All HF + 6m	100	Single	Unlimited	Computer	Yes	Yes	Yes (opt. int.)	$2799
Hilberling PT-8000	AC	.1-54, 110-170 MHz	All HF + 6/2m	10/100/600	Triple	1000 + computer	Computer	Yes	Yes	Yes	Call
ICOM IC-756 Pro III	DC	.2-200 MHz	All HF + 6/2m	100	Enhanced triple	100	n/a	Yes	Yes	Yes	$3000
ICOM IC-7700	AC	.1-60 MHz	All HF + 6m	200	Dual	100 + computer	Yes	Yes	Yes	Yes	TBA
ICOM IC-7800	AC	.1-60 MHz	All HF + 6m	200	Triple+	100+	n/a	Yes	Yes	Yes	$10,000
Ten-Tec Orion II	DC	.5-30 MHz	All HF + 6m	100	Dual	100 + computer	Computer	Yes	Yes	Yes (opt. int.)	$4090
Ten-Tec Omni VII	DC	.5-30, 48-54 MHz	All HF + 6m	100	Dual	100	Yes (net ready)	Yes	Yes	Yes (opt. int.)	$2650
Yaesu FT-2000	AC	.1-54 MHz	All HF + 6m	100/200	Triple	100 + computer	Computer	Yes	Yes	Yes	$2669/$3399
Yaesu FTDX-9000D	AC	.1-60 MHz	All HF + 6m	200	Triple	100	n/a	Ultra DSP	Yes	Yes	$11,500
Yaesu FTDX-9000MP	ext. AC	.1-60 MHz	All HF + 6m	400	Triple	100	n/a	Ultra DSP	Yes	Yes	$12,000
Yaesu FTDX-9000 Contest	AC	.1-60 MHz	All HF + 6m	200	Triple	100+	n/a	Contest DSP	Yes	Yes	$5700

**Also available as a computer black box or mobile with small remote head.*

The K3 from Elecraft introduces a new concept in kit-building—no soldering.

The DZKit Sienna, on the other hand, does require soldering.

2000's twenty-meter band with your Kenwood D7 handheld, and have complete control with the same clarity as if you were sitting right there in front of the big rig. If you had a Kenwood base unit before, the same button functions apply to the 2000, so it's an easy rig to get on the air without worry of the menus putting you into La-La land!

The new Elecraft K3 transceiver is a terrific way to get to know your radio from the inside out. Elecraft introduces a new construction concept for kit builders – no soldering! All modules in the K3 have been preassembled by Elecraft, 100% tested, technically described in the installation book, *and* plug in! This way you will learn the electronics theory behind each stage of the K3 as you put it together yourself. Sure, you can get it factory assembled, but the modular "kit" gives you the ultimate thrill of lighting off a piece of gear that you put together on your own.

The K3 may be ordered as a 10-watt output all HF band transceiver, easily upgraded to 100 watts out. The K3 features two 32-bit DSPs for software-defined features, with plenty of expansion memory to grow your rig into the ultimate DX machine. Both transmit and receive equalization are featured, along with stereo audio out, which is a brain twister when you tune across a signal and you hear it come in the left ear and out the right! There is built-in PSK-31, CW, and RTTY encode *and* decode, so the K3 screen comes alive and lets you enjoy these modes without a computer. Ham-band coverage is 160–6 meters, general-coverage receive, plus capability to plug in the optional sub-receiver that has the same crystal roofing filters and passband tuning with IF DSP, just like on the main receiver board. A keyer is built-in, and there is complete control via a computer port to make this rig both a home-station DX machine and a lightweight Field Day warrior.

Top-of-the-Line, $2500+!

If your vision of kit-building requires a soldering iron, the DZ Company of Loveland, Colorado, offers what it says is "the only high-end true kit, soldering required, on the market." The DZ Sienna covers 500 kHz through 30 MHz on receive and all HF ham bands on transmit. It features 137 memories, an uncluttered front panel, DSP, 10-band graphic equalizer, triple-conversion receiver, 4-kHz roofing filter, and capabilities for computer control with the PC on the inside.

FlexRadio Systems is a pioneer in software-defined radios for the amateur service, and the new Flex-5000 is a high-frequency and 6-meter amateur radio transceiver that follows several years of the popular Flex SDR-1000. Complete computer control is available with a single FireWire (IEEE-1394) connection, and all analog-to-digital conversions are performed *internally* in the Flex 5000, so no sound card is required. Multiple models are available with the Flex 5000 series, including the "A" series with a built-in Intel™ CORE 2 duo processor, with Microsoft Windows™ XP Professional operating system, along with wireless keyboard and mouse. Or get "the works" with the "D" series, which includes the integrated

The Flex-5000 is FlexRadio's newest software defined radio (SDR) for the ham market.

Ten-Tec's Omni-VII has an Ethernet port for direct connection to a computer network, providing for remote control over the internet.

computer, 9-inch LCD display with touch screen, and 300 watts out with a large precision tuning knob for the ultimate software-defined radio experience, handling like the smoothest VFO you have ever turned. A quick glance at the rear of the Flex radios lets you see more computer connections than the three SO-239 antenna connections! There's a FlexRadio users' net that can be heard regularly on Sundays 1900 UTC on 14.329 MHz.

The ICOM IC-756 PRO III comes in under $3000 and has been one of the most popular radios for DXpedition operation over the last five years. The big PRO III color thin-film transistor display is fascinating to watch, while listening to huge signals and weak signals come in distortion free from the high-dynamic-range receiver. The PRO III uses large inductors in the bandpass filter stage where they won't become saturated as smaller coils can under extreme signal strengths. The bandpass-filter switching circuitry is one of the keys to making this transceiver ideal for DXpeditions, immune from swamping by another nearby station on an alternate band. The PRO III covers all HF bands, plus 6 meters, plus general-coverage receive and has that fascinating real-time spectrum analyzer.

The Ten-Tec Orion II has a face that any ham will love, with symmetrical large tuning knobs, big color thin-film transistor display, and rows and rows of buttons. Ten-Tec sells factory direct and is ultra-responsive to any customer inquiry about any little feature in the equipment. You get immediate attention when you log on or call in to Ten-Tec. The Orion II covers all frequency bands and has a digital AGC (automatic gain control) system where you can tailor AGC response for whichever mode you are using. Power output is 100 watts, and the Orion II receiver includes 600 built-in DSP filter settings, extraordinary dynamic range to cover weak DX signals after a next-door kilowatt works them, and roofing filters so narrow that you won't even know that kilowatt was just a few kHz away! You can buy the Orion II with or without an automatic antenna tuner. Ten-Tec also features its own four-month finance plan, because it sells direct. Again, look at the Orion II face, and one good word to define it is *dignified*.

In the $3000 range is the Yaesu FT-2000/D. It is loaded with power of the IF DSP to fight QRM and QRN, including variable IF width and shift. The multi-color front display minimizes eyestrain and offers comprehensive information readouts including "receiver configuration display," which calls out the status of each step in the receiver's RF and IF. The fluorescent display on the Yaesu 2000 provides both graphical and numerical depiction of the bandwidth and the alignment of the various rejection filters. The main tuning knob is enormous. The torque of the tuning knob shaft is adjustable. Engineers also have developed an optional additional bandpass filter unit resulting in high Q (over 300) to provide steep resonance to peak near your operating frequency.

Just a year old, the Ten-Tec Omni VII can be operated remotely with no PC required at the station end! Just place your Omni VII anywhere you have wideband internet, plug an Ethernet cable into the built-in connection, and you are on the air from another location. The Ten-Tec Omni VII has a new distributed roofing-filter technique that places filters in both the first and the second IF stages. If you choose, you can install optional Collins mechanical filters, too. The Omni VII offers high frequency plus 6 meters with general coverage plus 48 to 54 MHz. The full-function color screen contains a spectrum analyzer, and bright white letters on a black background make it pleasing to the eyes. On the air the Omni VII is pleasing to the other operators' ears because of transmit and receive equalization. For your ears, DSP noise reduction and automatic and manual notch filters pull in signals with ease. A serial-port interface is available for updates by flash ROM available via the internet. Quad band stacking registers provide for 100 memories.

Brand new from ICOM America is its HF plus 6 meters IC-7700 transceiver. The 7700 features a 7-inch wide color thin-film transistor LCD display, with spectrum scope and RTTY/PSK-31 screen reception. The IC-7700's DSP can control the manual notch-filter shape and can be set in three steps for the various receiving conditions. A built-in digital voice recorder is great for contests or Field Day. There is an RS-232 C port for PC connection, and the automatic tracking pre-selector rejects out-of-band interference from multi-multi operations or strong broadcast stations. There is also a 3-kHz roofing filter for the first IF amp to keep things out and away from your desired reception. ICOM calls the 7700 the choice of the micro-light DXpedition community and the external screen option uses XENARC monitors.

The ICOM IC-7800, a 10-grander, is a massive transceiver that will take two people to lift into place. The display shows twin color transmit/receive meters, a real-time band scope, with a receiver incorporating four 32-bit floating-point digital signal processors (two for the main receiver, one for the second receiver, and one for the band-scope display), providing digital IF filtering, digital notch filtering, digital noise blanker, and digital control of the built-in antenna tuner. This

The Hilberling PT-8000 is built in Germany and sold in the U.S. by Array Solutions.

is a high-frequency plus 6 meters transceiver, so large that it is supplied with rack-mounting handles, and contains its own built-in AC power supply. The receiver offers 110-dB dynamic range, mechanical relay bandpass filter switching, and three roofing filters, as well as plenty of scan functions, digital twin passband tuning, and 16-step variable DSP noise reduction, with settings showing up on that huge multifunction color display. I think the microphone is extra, but after spending 10 grand, what's another couple of hundred bucks for ICOM's base station mic, or going with one of the exquisite Heil microphone systems?

Yaesu, with its FTDX-9000 series, lets you work up from $5700 to $12,000! The least expensive FT-9000 Contest pumps out 200 watts and gives you two pairs of analog meters, built-in AC power supply, plus full dual receive capabilities. This is a massive, serious base-station transceiver and can be ordered as the 9000D with a large thin-film transistor data-management unit, built in, to replace the twin smaller meters on the right side of the chassis. You can also order the "MP" version as a 400-watt rig, similar to the Contest, in that a number of options can be added if you feel they will be of value to you. The Yaesu 9000 series features unmatched close-in dynamic range and flexible selectivity choices, thanks to its advanced 32-bit DSP filtering and two entirely separate receivers. Yaesu calls this 9000 series "66 pounds of love."

Our final rig would likely require 66 lbs. of $100 bills handed over to Array Solutions for its imported-from-Germany Hilberling HF/VHF transceiver, the PT-8000. It runs a cool 600 watts output (model B), covers all U.S. ham bands from 160 through 2 meters, offers two independent receivers, and takes its own transverters all the way up to X band (10 GHz). Ultra-steep front-end preselectors and bandpass filters autotrack as you jump around the bands, and three roofing filters keep adjacent QRM out of earshot. The PT-8000 IF filter is a 16-pole, 10.7-MHz, 2.4-kHz bandwidth filter with a shape factor of 1.3—amazingly steep! Of course, RX and TX DSP equalization are standard. The built-in antenna tuner features very large coils and gold-plated contact reed relays. The radio is the brainchild of Hans Hilberling, DK7LG, who takes his RF engineering experience and mixes it with ham radio products. It was standing room only at the Dayton Hamvention® unveiling last year!

What's Best for You?

Which rig is best for you? Spending thousands of dollars for the big, hefty rigs is a great investment if you have the money, a major beam and sky-high tower, and the time to play big-time ham radio and contesting. This is where those major rigs excel.

If you are into DXpeditions, the smaller, intermediately priced transceivers are a smart way to go, with added features such as steep bandpass filters, roofing filters, and all that goes into a receiver to keep out your partner on another band just 50 feet down the sand. You will need a radio that is contest-ready, yet small enough to carry ashore and work on 12-volt battery power.

If you are just getting started on HF, your dipole in the tree is working great, or that multi-band vertical or small three-element beam has just gone up, even the least expensive $500 to $800 HF transceivers will do the job nicely. The biggest transmit improvement that others will notice is going to a modest beam and audio improvements you can make by adding an aftermarket microphone, such as those offered by Heil Sound, and/or adding a variety of mic equalizer equipment on the market, such as the products available from W2IHY Technologies. Unless your next-door neighbor is running a kilowatt on HF, too, you likely can get started on high frequency without all the terrific QRM receiver refinements found in the more expensive rigs.

Look at the catalogs and go to local ham dealers to try out a new HF radio, both for print specifications and playing the rig on the air, right in front of you. Is the tuning knob to your liking? Can the color and monochrome LCD displays be seen easily? Does the rig have a carrying handle when you plan to take it to Field Day? Do you need 2-meter and 440-MHz capabilities in the same rig? Will that big base station also drive an external color display when your eyes get *really* tired after operating a 24-hour event?

Pricing is stable. Features are up, and quality kit building highlight some of the latest offerings by HF ham radio manufacturers that continue to improve how we sound and how we hear on the high-frequency airwaves. This is a great year for HF, as we move into solar Cycle 24! Let's hear you on HF!

Results of the 2007 CQ WW VHF Contest

BY JOHN LINDHOLM,* W1XX

The Contest Quahogs of Rhode Island (CQRI) convened their fall meeting at the local Grange hall to replay the CQ WW VHF Contest of July 2007. The overriding question was "How could anything top the superb contest conditions of 2006?" Well, the answer was "It didn't happen." However, comparing 2007 scores to all previous CQ WW VHF contests, which in the current format date back to 2000, does reveal that the 2007 contest produced some notable performances.

Contest Propagation Conditions

A review of some submitted feedback supports the observation by many that conditions in North America, especially on Saturday, at times rivaled those of 2006 on 6 meters. It was simply not as sustained. For example, N8CMZ offered: "For six hours Saturday afternoon, 6 meters was open from Canada to Mexico with S9+ signals continuously. It made operating QRP a lot of fun." Canadian VE2HAY concurred: "Grand openings on 50 MHz." From VE3TLT: "Six meters was partially open the entire contest. I spent most of my time on 6 because of openings to so many different places." K2DRH summarized: "While I knew that a repeat of last year's phenomenal conditions was not very likely, I was hopeful that conditions would at least be good. They were actually quite excellent! The contest started with fairly steady conditions to Florida and the Caribbean, shifting to other areas over the next few hours. One hour saw 160 QSOs with FN, EM, EL, DM and DN grids all interlaced. Three 6-meter antennas pointed in different directions sure came in handy, but unlike last year, the *E*-skip quit long before sunset."

Heightened conditions on 2 meters also existed if you were lucky enough to be in the right place, as was Texas multi-op K5QE: "Great conditions on 2 meters Sunday morning, working all over W9, W8, and northern parts of 4-land for 66 total grids, a new high for us." Meanwhile N9DG noted, "Some nice 2-meter tropo to the south/southwest, good for some 800-plus mile QSOs."

For a quick indicator of the kind of North American QSO totals propagation supported, consider this: K2DRH, a single-op in Illinois, made a total of 771 Qs and K1WHS, a multi-op in Maine, made 958 Qs. Diverse in location and both well-equipped stations to be sure, but these are numbers of near historic proportions. For K2DRH it was the 7th highest SOAB (Single-Op All-Band) score in contest history, and K1WHS is now a member of the exclusive 200K+ points club.

Nicolas, DK5DQ, summarized the rather dismal propagation in Europe: "This year I used the new club contest callsign, DA2A, during CQ WW VHF. Unfortunately, conditions were bad with no *E*-skip or tropo, resulting in poor activity. Making EU stations aware of this nice VHF contest is still a challenge."

At this point the contest director, and CQRI member, took the floor to sneak preview the scores.

Multi Madness

Confucius (and N8BJQ) says, "He who has the most Qs usually wins." How true it was in an exciting photo-finish multi-operator horse race. Here's how the top four U.S. station scores compared.

Call	Score	QSOs	Locators
K1WHS	236,953	958	211
K5QE	230,436	826	222
K8GP	226,240	798	224
K3EAR	210,045	748	209

*48 Shannock Road, South Kingstown, RI 02879
e-mail: <w1xx@cq-amateur-radio.com>

Dave, VO1AU, operated from VO1MCE, a wireless museum at Cape Race, Newfoundland, in rare grid GN36. When the Titanic *went down in April 1915, MCE, the Marconi station at Cape Race, received the distress signal and began organizing help.*

Dave, K1WHS, with "a little help from his friends" reconstructed his entire 6-meter station just in time to give this contest a first serious effort. It surely paid off, copping top U.S. multi-op honors to win his first CQ VHF plaque. Dave described his fine station: "The 6-meter antennas consisted of four 7-element Yagis on a 100-foot tower, each antenna individually rotatable. The shack is out on a rocky ridge top with all power provided by a 30-KW three-phase diesel generator." Marshall, K5QE, assisted by K5MQ, rode the big 2-meter tropo opening and an ever-present 6-meter signal to finish a close second, edging out K8GP. The Spruce Knob (WV) Grid Pirates, K8GP, came in third, followed by last year's winner and still all-time record holder K3EAR.

Analysis by CQ VHF Contest historian K9AKS "showed these to be quite respectable scores when stacked up against previous multi-op efforts. In the seven previous years of the contest, only seven other scores exceeded 200K, five of them in 2006. Those previous to 2006 were W3ZZ from West Virginia in 2003 (459K) and OK1KIM from the Czech Republic in 2005 (294K)."

More High Scores

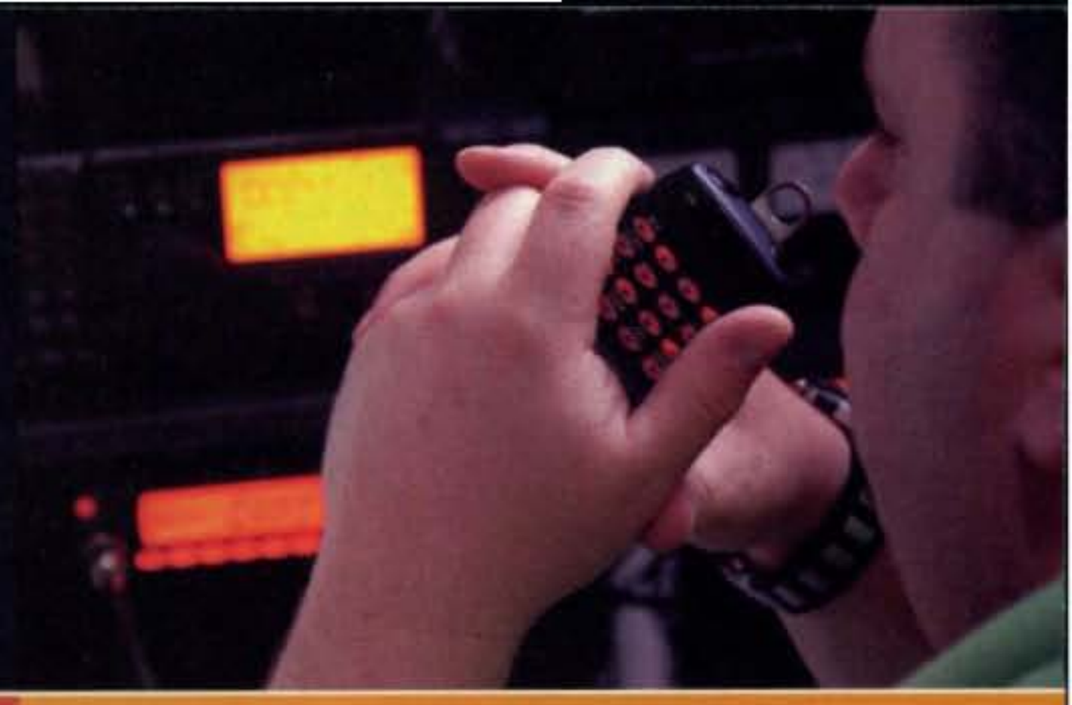
In the U.S. SOAB category, the aforementioned K2DRH pretty much owns this contest, finishing first for the fifth consecutive time. Bob worked 221 grids to go along with his top Q total for a score of 216,138. Not counting 2006, Bob's was the highest ever in that category. Top SOSB6 score and second overall U.S. high went to K1TOL in Maine at 91K. Also, not counting 2006, this was the second highest score ever in SOSB6, exceeded only by WD5K's 117K points in 2001. Nice going, Lefty! Two meters still suffers when 6 meters is open, but that didn't discourage Josh, W4WJF, from gain-

Expanded CQ WW VHF Contest Results

For a listing of the ops and grids activated by the rover stations in the 2007 contest, plus the operators of the multi stations, go to <www.cq-amateur-radio.com>, to the Contests section, to "Expanded Results of the 2007 CQ WW VHF Contest."

Accessories For Your Shack From

ALINCO



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COMPACT, LIGHTWEIGHT COMMUNICATIONS GRADE POWER SUPPLY THAT IS PACKED WITH FEATURES:

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- Fuse socket on the front-panel for easy access.

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2007 PLAQUE WINNERS*

Single Operator

USA All Band: Bob Striegl, K2DRH. Donor: Ted & Itice Goldthorpe, W4VHF & K4LVV
USA 6 Meters: Lefty Clement, K1TOL. Donor: Bill Burgess, VE3CRU
USA 2 Meters: Josh Fisher, W4WJF. Donor: Dixie Radio Pirates
USA Hilltopper: Dan Fegley, W1QK. Donor: anonymous, in memory of Edward P. Tilton, W1HDQ
World 6 Meters: Bill Brown, W4TAA/VE3. Donor: Dennis Motschenbacher, K7BV/6
Asia 2 Meters: Pranee Nertratana, E21DKD. Donor: Golden Kilowatt Council in memory of Hans D. Hollstein, HSØ/KA3TDZ

Multi-Operator

USA: Dave Olean, K1WHS. Donor: Bob Striegl, K2DRH
World: Yuri Yakovenko, UT1IC. Donor: The Badger Contesters
Asia: Pattama Pho-Im, HS2ZMU. Donor: Siam DX Group.

Rover

USA: Ted & Itice Goldthorpe, W4VHF (+ K4LVV). Donor: W3SO, Wopsononock Mountaintop Operators
World: Bill Burgess, VE3CRU. Donor: CT RI Contest Group

**Additional plaques may be offered with more sponsors. See "Plaque Program" on <http://www.cqww-vhf.com.>.*

ing 2-meter top honors for the third straight year with 10,260 points.

In the QRP category, Chris, KA1LMR, successfully defended his crown with 49K, again fending off K9AKS at 21K. There was lots of Hilltopper competition with W1QK (Dan), K1ZE (Ed), and last year's winner KFØQ (Matt) finishing nearly even, and W1QK the plaque winner at 3.2K points.

Ted, W4VHF (with K4LVV), regained the first in show rover prize, with a score of 87K from four grid locators, followed by WB8BZK and N9TTX (tops with 11 grids activated).

DX scores were not as high as usual. Dusan, OK1DC, had the highest SOAB score with nearly 20K. W4TAA/VE3, Bill, again took top SOSB6 honors at 35K points, with Victor, UR5QU, making the top EU score at 26K. Nicolas, DK5DQ (signing DA2A), continued his domination of the SOSB2 category with a fifth consecutive win with 19K points. Pranee, E21DKD, returned to the fray after a two-year hiatus with the top Asia 2-meter score and second world high at 15K. Zoran, T96C, was the top DX Hilltopper with 2,898 points, running a Yaesu FT-857D to a YU7EF-designed duoband Yagi located "in the hills." In the multi-op category, Yuri & Co., UT1IC, posted the top world score with 40,959 points to earn a plaque. Meanwhile in Canada, Bill, VE3CRU, repeated with the top world rover score at 32K.

Other top scores are highlighted in the accompanying boxes.

And Now Something a Little Different

Curt, K9AKS, further observed some other high scores that might otherwise have gone

Mike, KB7ME, operated portable all band from Winter Ridge, Oregon, in grid CN92 (elevation 7135 feet). Look for Mike to activate DN02 in the 2008 contest.

unnoticed. "Many locations do not favor scores that rank high nationally or internationally. Here is a sampling of some excellent scores from some of those locations in 2007. In the SOAB category, KG6IYN scored the highest in California since 2000, with 18K. The QSOs and grids are simply harder to find on the West Coast, although in that inaugural Y2K contest, W3SE/6 won the entire SOAB category with a 75K score. Assisted by 2-meter tropo, Mississippi's N5KDA got the highest score ever in the 5th call area in the SO2 category, with 83 QSOs and 45 grids. Also, the cornhuskers at NØUNL (University of Nebraska) deserve

TOP SCORES
WORLD

All Band

OK1DC	19,764
UT5EU	13,260
VE5UF	6,804
VO1MCE	5,346
VA2UK	3,486

6 Meters

W4TAA/VE3	35,504
UR6QU	26,775
EH6SA	20,874
T9ØT	16,366
UT7QF	14,196
VE3AP	11,880
UZ7U	9,851
EA3AKY	8,384
UY5QO	8,174
UT2II	7,004

2 Meters

DA2A	19,136
E21DKD	15,010
IW1QN/1	7,326

Hilltopper

T96C	2,898
GW8ZRE/P	1,470
G3CWI/P	1,404
HA5CQZ/P	1,352
HS7ZSX/P	1,216

Rover

VE3CRU	32,620
E2ØRUZ	4,140
HS3PMT	3,424
VE3SMA	3,362
HS8TRY	2,280

Multi-Op

UT1IC	40,959
HS2ZMU	17,822
HSØIAQ	12,348
E2ØZDS	12,292
E22ZW	11,070
UW3E	10,224
Z36W	9,315
E22JA	8,500
E21LZP	6,408
E22TH	6,200

USA

All Band

K2DRH	216,138
W1XX	65,928
K9CT	55,125
N3HBX	43,384
K4QI	37,454
NØVZJ	36,741
K1EM	35,100
N9DG	33,762
KE9I	32,107
W1RZF	31,212

6 Meters

K1TOL	91,143
W5PR	51,952
WD5K	44,526
W2MMD	32,508
K3MSB	9,225
W5WVO	8,379
N8II	8,127
K4ELV	7,772
K3FM	7,656
K7CW	6,656

2 Meters

W4WJF	10,260
N5KDA	7,380
W3ADC	6,786

Hilltopper

W1QK	3,234
K1ZE	3,162
KFØQ	2,146
K4JSI	1,860
KE5CIF	1,593
WZ4C	1,584
NE1RD	1,380

QRP

KA1LMR	49,257
K9AKS	21,837
W3EP	13,148
N8XA	9,555
K4UVA	7,497

Rover

W4VHF	87,330
WB8BZK	55,286
N9TTX	28,215
WAØVPJ	11,324
K9JK	11,305
WB3BEL	10,692
N2SLN	8,712

Multi-Op

K1WHS	236,953
K5QE	230,436
K8GP	226,240
K8EAR	210,045
W3SO	106,977

congratulations for having attained the highest multi-op score ever from a Great Plains state, with 21K. Finally, on the international scene, this contest saw the first-ever log from China, BG4QGO, a SOSB6 entry."

Hilltoppers

The Hilltopper category continues to gain momentum, finding advocates wordwide. Let's review the rules. You must meet three conditions to be in this category: (1) run QRP; (2) be portable; (3) operate a maximum of six continuous hours. Why this contest within a contest? It accommodates backpacking operations to high locations such as in the mountains of the western U.S.—often rare grid squares where bringing in equipment and provisions for a longer stay is not feasible. It also meets the objectives of those who for whatever reason want to operate away from home but can't commit to a full-time operation. These Hilltoppers tell it best.

"Operating Summits On The Air (http://www.sota.org.uk) in JN97kq at 756m asl."—*HA5CQZ.* "Operated Hilltopper portable from Bald Hill, CT, in FN31."—*K1ZE.* "Operated from atop Mt. Lemmon at 8100 feet near Tuscon, AZ"—*K7RST.* "Worked the contest from Blackwell Peak in Manning Park, British Columbia, Canada, in grid CN99oc. Operated 6 hours from an elevation of 6570 feet."—*VE7IHL.*

Dan, W1QK, has latched on to a good contest recruitment idea: "Harlan, KB1ILY, and I joined forces to operate the contest in the QRP Hilltopper category. Operating his first CQ WW VHF Contest, Harlan operated 2 meters and I was on 6. Both antennas were on the same mast. We had a blast." Result? W1QK won the W1HDQ memorial plaque for the first time and KB1ILY is hooked on VHF contesting. Good show!

Certificates go out to 19 happy amateurs who communed with nature while contesting. Might this type of contesting appeal to you as well?

The "Old Timer" Speaks

As usual, the "Old Timer" rose to add his two cents to the discussion. It has become a familiar refrain, but its truth was evident. What makes the CQ WW VHF Contest so appealing, especially in North America?

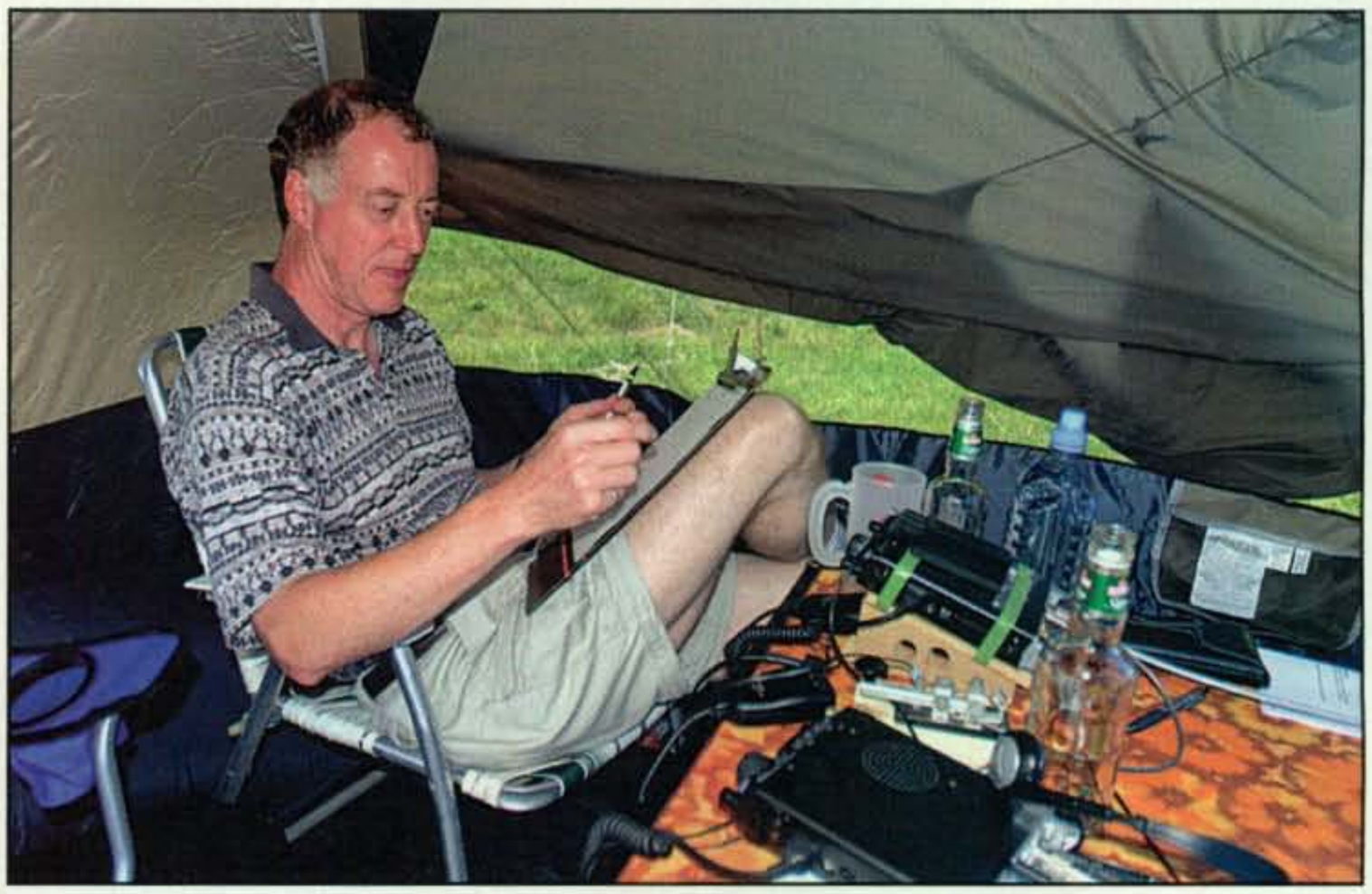
First, much credit must be given to the large presence of multi-op stations such as K1WHS, K5QE, K3EAR, K8GP, W3SO, and others who are constantly there for everyone else to work. Their full-time efforts attract the single-op stations, including the more modestly equipped ones. It's symbiotic.

Let's face it: Most stations of modest means are not equipped for bands above 2 meters. In this contest you cannot only play, you can compete. This is evidenced by 199 stations earning certificates, 44% of the total number of entries. You can study the scores from the previous years and stake out a category for your geographical area that has a high probability of producing a winning score.

The two-band format also makes operating portable or rover infinitely less taxing. For newcomers, it can be an initial step into VHF contesting that involves a future of greater band capability. For HF contesting enthusiasts, a 6-meter *E*-skip run can be much like a 20-meter run of DX stations in the CQ WW DX Contest. It can also be a contest for noncontesters. How many opoerators with no contesting aspirations get hooked because the band is open? It's a contest for everybody! CQRI heads nodded in approval.

Contest Management

Putting on a worldwide contest is a rewarding yet labor-intensive processn, as recognized by the CQRI brethren. This year's post-contest activity marked a transition in log processing with Steve, N8BJQ, administering the VHFSCAPE (VHF Scores for



Here's Keith, VE3HHT, operating in a tent on the shore of Lake Erie in grid EN92. This was a multi-op effort with Ken, VE3HLS, using two battery-powered FT-817 rigs.

Contest Adjudication—Post Entry) program. One-hundred percent of log entries submitted were screened for accuracy. Megathanks, Steve, for a job well done! John, K9JK, performed the thankless task of keying in all the paper logs. Thankfully, more stations utilized WA7BNM's CabForms, which allows for on-line post entry (see the link on <www.cqww-vhf.com>). And Curt, K9AKS, provided statistics of historical significance.

Computer-generated statistics indicated: Number of log entries 447; total number of stations active 8,123; a total of 38,644 claimed QSOs; total number of grids activated 746. This is approximately a 30% overall reduction from last year's record pace, but well ahead of previous years. Error rates were as follows: "not in log" 1.2%; dupes (claimed as valid) 0.3%; "busted calls" 1.4%; overall error rate at 3.1%, up slightly from last year—another clean year for log submissions. Bravo!

The following CQ VHF team members publicized the contest in their respective countries and followed up to ensure Cabrillo log submission: E21EIC, UT1IC, PY2ZX, GØLCS, G4DEZ, EA7KW, HI3TEJ, plus others who helped with no fanfare.

2008 CQ VHF Contest

The CQRI Contest Manager reminded all of the upcoming 2008 CQ WW VHF Contest

(Continued on page 108)

QSO LEADERS BY BAND

WORLD

Single-Op 50 MHz

W4TAA/VE3	317
UR5QU	255
EH6SA	213
UT7QF	169
T90T	166
VE3AP	165
UT5EU	156
UZ7U	143
EA3AKY	131
UY5QO	122

144 MHz

E21DKD	395
DA2A	208
HS8LUR	192
E20PFE	117
IW1QN/1	111

Multi-Op 50 MHz

UT1IC	199
Z36W	134
UW3E	122

144 MHz

HS2ZMU	469
E20ZDS	439
E22ZW	369
HSØIAQ	343
E22TH	310

USA

Single-Op 50 MHz

K2DRH	564
K1TOL	533
W1XX	386
W5PR	382
WD5K	363
KA1LMR	321
K9CT	305
W2MMD	301
KE9I	283
K1EM	263

144 MHz

K2DRH	207
W4WJF	171
W3ADC	117
KG6IYN	99
KCØTPP	85
N5KDA	82
N9DG	81
N3HBX	79
KB9TLV	72
K9CT	68

Multi-Op 50 MHz

K1WHS	793
K5QE	615
K8GP	586
K3EAR	492
W3SO	303
NØUNL	209

144 MHz

K3EAR	257
K5QE	212
K8GP	212
K1WHS	165
W3SO	165

What You've Told Us...

Our October survey asked about your Morse code activity and whether it has changed since the code test requirement was dropped last February. Three quarters of you say you currently operate Morse code on the radio; 27% of you identify yourselves as being relatively new to HF CW, and 24% say you do not operate code. For most of you (72%), your level of code activity has not changed since the new rules made HF CW available to all hams last year; 9% of you say you're operating code more often, 2% less often. Asked about your perceptions of code activity in general, 55% of you said it seems to be about the same as in the past, 16% have noticed an increase in activity, 8% say there's less than there used to be, and 20% don't know.

Among those who say they're new to code operating on HF, 23% say the people they contact on code are generally patient with them, 19% say they find plenty of people to contact at low speeds, and 15% have gotten help or advice from other hams regarding CW operating. On the other hand, 11% say they have *not* gotten help from other hams; 11% also say they have trouble finding people to contact at slow speeds, and—thankfully—none report that people they contact on CW are *impatient* with them.

We next asked experienced code operators what steps they've taken to welcome newer code ops, and 70% of them said they'd slowed down to accommodate slower operators, 37% say they've made special efforts to contact newer code ops, and 35% say they've offered advice and help to new code operators.

Finally, we asked how many of you have bought a new code key in the past year, and amazingly, one-third of you have done so. Among those who *have* bought a new key, keyer paddles are the most popular, accounting for 44% of your purchases; hand keys were next at 38%, followed by semiautomatic "bugs" at 18%.

Our free subscription winner for this month is John Dyckman, WA3KFT, of Aston, Pennsylvania.

Reader Survey February 2008

We'd like to know more about you—about who you are, where you live, what kind(s) of work you do, and of course, what kinds of amateur radio activities you enjoy. Why? To help us serve you better.

Each time we run one of these surveys, we'll ask a few different questions and ask you to indicate your answers by circling numbers on the Survey Card and returning it to us. As a bit of incentive, we'll pick one respondent each month and give that person a complimentary one-year subscription (or subscription extension) to *CQ*.

For the past several months, we've been running interviews with current and former hams at top levels of government, talking about ham radio's influence on their careers and why they feel it continues to be important for young people today. We'd like to hear your views on some of those same questions:

Please answer by circling the appropriate numbers on the reply card.

1. At approximately what age did you get your first ham license?
- Under 25 1
- 25-45 2
- 45 or older 3
- Not yet licensed 4

2. Do/Did you work in a field related to amateur radio?
- Yes, in radio communications 5
- Yes, in a related technical field 6
- Yes, in a related communications field 7
- Yes, in another related field 8
- No 9

3. To what extent has ham radio influenced your *choice* of careers?
- Tremendously 10
- Significantly 11
- Somewhat 12
- Not much 13
- Not at all 14

4. To what extent have your ham radio experiences helped you in your career?
- Tremendously 15
- Significantly 16
- Somewhat 17
- Not much 18
- Not at all 19

5. What aspect(s) of ham radio do you feel have been important to you in your career?
- "Hands-on" work with electronics 20
- Being comfortable working with technology 21
- Communication skills, either on or off the radio 22
- Understanding the RF spectrum and propagation 23
- Ham radio's "make it work" problem-solving philosophy 24
- Other 25
- None 26

6. Do you believe ham radio continues to be relevant to young people today?
- Yes 27
- No 28
- Not sure 29

7. Do you feel that sharing the ham radio experiences of highly successful people will help attract more young people to amateur radio?
- Yes 30
- No 31
- Not sure 32

Thank you for your replies. We'll be back next month with more questions.

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- Automatic digital receive
- Optional interface cables for most popular transceivers
- Built-in high grade Vocoder (AMBE)
- Built-in FEC protocol
- Compact unit. Easy to operate.
- Utilizes a uniquely designed high performance DSP engine
- Uses the established G4GUO open protocol
- ARD9800 can also be used for digital slow scan TV and data transmissions (images require optional memory board)

Be sure to check the website at www.aorusa.com for FAQs, links to user groups and more!

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Announcing:

The 2008 CQ World-Wide WPX Contest

SSB: March 29–30, 2008 CW: May 24–25, 2008
Starts: 0000 GMT Saturday Ends: 2359 GMT Sunday

I. Period of Operation: 48 hours. Single Operator stations may operate 36 of the 48 hours. *Off times must be a minimum of 60 minutes in length.* Multi-Operator stations may operate the full 48 hours.

II. Objective: The object of the contest is for amateurs around the world to contact as many amateurs in other parts of the world as possible during the contest period.

III. Bands: The 1.8, 3.5, 7, 14, 21, and 28 MHz bands may be used. No WARC bands allowed. *Observance of established band plans is strongly encouraged.*

IV. Terms of Competition (for all categories): All entrants must operate within the limits of their chosen category when performing any activity that could impact their submitted score. Only the entrant's callsign may be used to aid the entrant's score. *A different callsign must be used for each entry.* Transmitters and receivers must be located within a 500-meter diameter circle or within the property limits of the station licensee, whichever is greater. All antennas must be physically connected by wires to the transmitters and receivers used by the entrant. All high power categories must not exceed 1500 watts total output power on any band. No self-spotting of any form on DX spotting nets is permitted for any category. Self-spotting is defined as generating packet spots for your contest callsign by: (a) using your own callsign; (b) spotting your call while using another callsign; or (c) the spotting of your callsign by other stations as a result of prearranged solicitation.

Categories: Note—CATEGORY and CATEGORY-OVERLAY** names for use in the CABRILLO file header are shown in (italics).

1. Single Operator (Single Band and All Band) *(SINGLE-OP ALL HIGH or SINGLE-OP [BAND] HIGH)*

(a) One person performs all of the operating, logging, and, for the Assisted category only, spotting functions. Only one transmitted signal is allowed at any time. **Maximum power allowed is 1500 watts total output.**

(b) Low Power: *(SINGLE-OP LOW or SINGLE-OP [BAND] LOW)*: Same as 1(a) except that output power shall not exceed 100 watts. Stations in this category will compete only with other low power stations.

(c) QRP *(SINGLE-OP ALL QRP or SINGLE-OP [BAND] QRP)*: Same as 1(a) except that output power shall not exceed 5 watts. Stations in this category will compete only with other QRP stations.

(d) Assisted/with Packet *(SINGLE-OP-ASSISTED ALL HIGH or SINGLE-OP-ASSISTED ALL LOW)*: Same as 1(a) except the passive use (no self-spotting) of DX spotting nets or other forms of DX alerting is permitted. Stations in this category compete only with other Assisted stations.

****The next two categories shown below require an additional line in your Cabrillo logfile header called CATEGORY-OVERLAY. See paragraph XII(d).**

(e) Tribander/Single Element *(TB-WIRES)***: Tribander (any type) for the high bands with a single feedline from the transmitter to the antenna, and single-element low-band antennas (wires) category. During the contest an entrant shall use only one (1) tribander for 10, 15, 20 meters and single-element antennas on 40, 80, and 160 meters.

(f) Rookie *(ROOKIE)***: To enter this category you must have been licensed as a radio amateur three (3) years or less on the date of the contest.

2. Multi-Operator (All band operation only, high power only)

(a) Single-Transmitter *(MULTI-ONE)*: Only one transmitter and one band permitted during the same time period (defined as 10 minutes). *Exception:* One other band may be used during any 10-minute period if the station worked is a new multiplier. Use a separate serial number sequence for each band. Logs found in violation of the 10-minute rule will be automatically reclassified as multi-multi. Maximum power allowed is 1500 watts total output. Your log MUST show the correct serial number sent and received for each contact.

(b) Multi-Two *(MULTI-TWO)*: A maximum of two transmitted signals at any time on different bands. Both transmitters may work any and all stations. A station may be worked only once per band regardless of which transmitter is used. Use a separate serial number sequence for each band. Each of the two stations may make a maximum of 8 band changes in any clock hour (00 through 59 minutes). For example, a change from 20 meters to 40 meters and then back to 20 meters constitutes two band changes. Maximum power allowed is 1500 watts total output.

(c) Multi-Transmitter *(MULTI-MULTI)*: No limit to transmitters, but only one signal (and running station) allowed per band at any time. Use a separate serial number sequence for each band. *Note:* All transmitters and receivers must be located within a 500-meter diameter area or within property limits of the station licensee, whichever is greater. All operation must take place from the same operating site. Maximum power allowed is 1500 watts total output.

3. QRP Section: Single Operator only. **Output power must not exceed 5 watts**. You must note QRP in the header of your Cabrillo file, or in the case of non-Cabrillo logs, on the summary sheet and state the actual maximum output power used for all claimed contacts. Results will be listed in a separate QRP section and certificates will be awarded to each top-scoring QRP station in the order indicated in Section IX.

4. Low Power Section: Single Operator only**. Output power must not exceed 100 watts**. You must indicate low power in the header of your Cabrillo file, or in the case of non-Cabrillo logs, on the summary sheet and state the actual maximum output power used for all claimed contacts. Results will be listed in a separate low power section and certificates will be awarded to each top-scoring low power station in the order indicated in Section IX.

V. Exchange: RS(T) report plus a progressive contact three-digit serial number starting with 001 for the first contact. (Continue to four digits if past 999 and five if past 9999.) Your log MUST show the correct serial number sent and received for each contact.

V. Contact Points:

(a) Contacts between stations on different continents are worth three (3) points on 28, 21, and 14 MHz and six (6) points on 7, 3.5, and 1.8 MHz.

(b) Contacts between stations on the same continent, but different countries, are worth one (1) point on 28, 21, and 14 MHz and two (2) points on 7, 3.5, and 1.8 MHz. *Exception:* For North American stations only—contacts between stations within the North American boundaries (both stations must be located in North America) are worth two (2) points on 28, 21, and 14 MHz and four (4) points on 7, 3.5, and 1.8 MHz.

(c) Contacts between stations in the same country are worth 1 point regardless of band.

VI. Prefix Multipliers: The prefix multiplier is the number of valid prefixes worked. A PREFIX is counted only once regardless of the number of times the same prefix is worked.

(a) A PREFIX is the letter/numeral combination which forms the

first part of the amateur call. Examples: N8, W8, WD8, HG1, HG19, KC2, OE2, OE25, etc. Any difference in the numbering, lettering, or order of same shall constitute a separate prefix. A station operating from a DXCC country different from that indicated by its callsign is required to sign portable. The portable prefix must be an authorized prefix of the country/call area of operation. In cases of portable operation, the portable designator will then become the prefix. Example: N8BJQ operating from Wake Island would sign N8BJQ/KH9 or N8BJQ/NH9. KH6XXX operating from Ohio must use an authorized prefix for the U.S. 8th district (W8, K8, etc.). Portable designators without numbers will be assigned a zero (Ø) after the second letter of the portable designator to form the prefix. Example: PA/N8BJQ would become PAØ. All calls without numbers will be assigned a zero (Ø) after the first two letters to form the prefix. Example: XEFTJW would count as XEØ. Maritime mobile, mobile, /A, /E, /J, /P, or interim license class identifiers do not count as prefixes. You may not make up your own prefix.

(b) Special event, commemorative, and other unique prefix stations are encouraged to participate. Prefixes must be assigned by the licensing authority of the country of operation.

VII. Scoring (QSO Points):

1. Single Operator: (a) All Band score = total contact points from all bands multiplied by the number of different prefixes worked (prefix multiplier; prefixes are counted only once). (b) Single Band score = total contact points on the band entered multiplied by the number of different prefixes worked (prefix multiplier).

2. Multi Operator: Scoring is the same as Single Operator, All Band.

3. A station may be worked once on each band for QSO point credit. Prefix credit may be taken only once.

VIII. Awards: Certificates will be awarded to the highest scoring station in each category listed under Section IV . . .

1. In every participating country.

2. In each call area of the United States, Canada, Australia, Japan, and Asiatic Russia.

All scores will be published. To be eligible for an award, a single operator station must show a minimum of 12 hours of operation and multi-operator stations must show a minimum of 24 hours of operation.

A single-band log will be eligible for a single-band award only. If a log contains more than one band, it will be judged as an all-band entry unless specified otherwise.

In countries or sections where entries justify, second- and third-place awards will be made.

IX. Trophies and Donors:

Trophies are awarded for top performance in a number of categories. They are sponsored by individuals and organizations. For a current list of plaques and sponsors, or to learn how to become a sponsor, see the CQ WPX Contest website: <http://www.cqwpx.com/plaques.htm>.

A station winning a World trophy will not be considered for a sub-area award. That trophy will be awarded to the runner-up for that area if the returns justify the award. Contestants who win a category for which no trophy is sponsored may contact <k6aw@ cqwpx.com> to arrange to order one.

X. Club Competition: A trophy will be awarded each year to the club that has the highest aggregate scores from logs submitted by members. The club must be a local group and not a national organization. Participation is limited to members operating within a local geographical area (*exception:* DXpeditions specially organized for operation in the contest and manned by members). Indicate your club affiliation on the summary sheet or in the CABRILLO file. To be eligible for an award, a minimum of three logs must be received from a club.

XI. Instructions for Submission of Logs:

(a) All times must be in UTC. All breaks must be clearly marked (not required for CABRILLO logs). Single operator and multi-single logs must be submitted in chronolog-

ical order. Multi-Two logs must be submitted chronologically by band. Multi-multi logs must be submitted chronologically by band.

(b) All sent and received exchanges are to be logged. Logs without sent and received serial numbers will be reclassified as checklogs.

(c) Electronic submission of logs is the expected method for all participants. It is required for all top-scoring entrants, for anyone wishing to compete for an award, and for all who use a computer to log the contest or prepare contest logs.

(d) Instructions for CABRILLO logs—IMPORTANT CHANGES BEGINNING IN 2008: Please put only your callsign in the Subject: field of the e-mail used to send your CABRILLO log. For U.S. and Canadian stations, please also indicate your ARRL Section in the CABRILLO header, (e.g. ARRL-SECTION: OH). The CABRILLO file format is the standard. Do not rely on your logging program; use a text editor (Wordpad, Notepad, DOS Edit—no word processors) to make sure all of the CABRILLO header information is there, including the extra line in the header for CATEGORY-OVERLAY if you are entering the TB-WIRES or ROOKIE categories. Also be sure to indicate your club affiliation. For detailed instructions on filling out the CABRILLO file header, see the WPX Contest website (http://www.cqwpx.com). Failure to fill out the header correctly can result in your entry being placed in the wrong category or reclassified as a checklog. Please do not mail printed copies of CABRILLO logs, as these are of no use to anyone.

(e) E-mail is the expected method of log submission. SSB CABRILLO logs should be sent to **<ssb@cqwpx.com>** and CW CABRILLO logs should be sent to **<cw@cqwpx.com>**. All logs received via e-mail will be confirmed via e-mail. A frequently updated listing of logs received can be found on the CQ WPX website at <http://www.cqwpx.com/logs.htm>.

(f) Instructions for NON-CABRILLO logs: If you are not able to submit a CABRILLO log, you may submit the ASCII output from most of the popular logging programs such as TR, CT, NA, Writelog, and SuperDuper. You may also submit the *.BIN, *.DAT, *.QDF files from CT, TR, or NA. If your log is not in CABRILLO format, a separate summary sheet is required. Please name your files with your call and the file type. *Example:* N8BJQ submits a CABRILLO file. It should be named N8BJQ.LOG. If N8BJQ chose to submit a non-CABRILLO file such as TR's .Dat file, he should name the log file N8BJQ.DAT and the summary file should be N8BJQ.SUM. See <www.cqwpx.com> for more information on e-mail log formats. **Any logs sent on floppy disk should be on 3.5-inch diskettes and sent in a proper mailer to prevent damage**. Non-CABRILLO Logs must be checked for duplicate contacts, correct QSO points, and prefix multipliers. Duplicate contacts must be clearly marked. An alpha/numeric check list of claimed PREFIX multipliers must be submitted with your log. Each non-CABRILLO entry must be accompanied by a Summary Sheet listing all scoring information, the category of competition, and the entrant's name and mailing address in BLOCK LETTERS. Also submit a signed declaration that all contest rules and regulations for amateur radio in the country of operation have been observed.

(g) Official log and summary sheets are available from CQ Communications, Inc., 25 Newbridge Road, Hicksville, NY 11801 USA; fax (+1) 516-681-2926); or e-mail your request to CQ at <cq@cq-amateur-radio.com>. You may make your own forms as long as all required information is present.

XII. Disqualification: Violation of amateur radio regulations in the country of the contestant, or the rules of the contest, unsportsmanlike conduct, taking credit for excessive duplicate contacts, unverifiable QSOs or multipliers will be deemed sufficient cause for disqualification. An entrant whose log is judged by the WPX Contest Committee to contain an excessive number of discrepancies may be disqualified as a participant operator or station for a period of one year. If within a five-year period the operator is disqualified a second time, he or she will be ineligible for any CQ contest awards for three years.

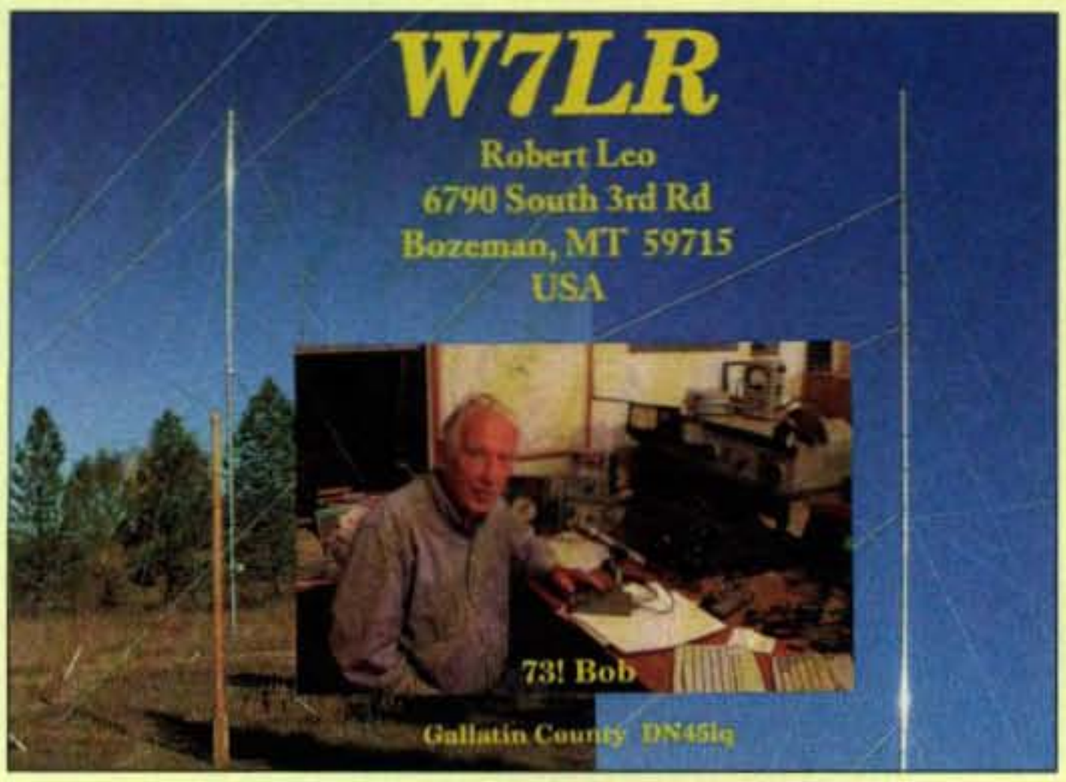
Declaration: By submitting an entry in the CQ WPX Contest you agree that you have read and understood the rules of the contest and agree to be bound by them, as well as all rules and regulations of your country which pertain to amateur radio. All actions and decisions of the WPX Contest Committee are official and final.

XIV. Deadline: All entries must be postmarked NO LATER than May 1, 2008 for the SSB section and NO LATER than July 1, 2008 for the CW section. All logs, including e-mail entries, are subject to these deadlines. Indicate SSB or CW on your envelope. Logs postmarked after the deadline may be listed in the results, but will be ineligible for any awards. Check the WPX website **<http://www.cqwpx.com>** for instructions on mailing WPX logs.

Questions pertaining to the CQ WPX Contest may be e-mailed to the WPX Contest Director, Steve Merchant, K6AW, at <k6aw@cqwpx.com>.

More Memories of Sputnik

Bob Leo, W7LR, not only remembered listening to Sputnik-1 back in 1957, but was able to dig out his log page. He shared a copy of it with us, along with one of his current QSL cards. Thanks, Bob!



Oct. 7th 1957
Menlo Park, Calif.

Log of Satellite reception, Oct. 6th 1957
R.E.Leo, W6PNW
3361 Waverley Street, Palo Alto, Calif. DA 32265

Hammarlund Super-Pro Receiver
20+ Mc.
Random length antenna wire.

7:10	PM	Estimate of when Satellite would have been heard.
7:20		First heard Satellite. Strength slightly greater than that of WWV.
7:24:05		Signal went off. Aprox. 23 "beeps" in 10 seconds.
7:27:25		Signal on again.
7:29:55		Suddenly a bit louder.
7:31		Fades out.
7:37		Can hear again, very weak.
7:40		Fades out.
8:20		Unheard. Spot check.
8:40		Unheard. Beginning a new listening cycle.
8:44:10		Heard weakly.
8:50		Fades out.
8:56		Heard again.
9:00:10		Variation momentarily in beep pattern, an extra beep.
9:02		Sudden fade.
9:04		Raspy note.
9:10		Still being heard. Note better now.
9:10:55		Peak of signal strength.
9:14		Signal below noise or off. Gradual decline of strength since 9:11.
9:17:35		Heard again but weaker than before.
9:20		Slight signal peak.
9:23		Unheard.
10:28		Unheard. Beginning a new listening cycle.
10:29		Key down for about 3 seconds, twice within about a minute.
10:29:55		Sending raspy sound.
10:30:15		Off or faded out.
10:32:52		Raspy note on again.
10:34:50		Shifts over to beep-beep.
10:38½		Fades out.
10:41:45		Beep-beep on again. Loud.
10:42:55		Very loud. Key down until next entry.
10:43:12		Has beep again.
10:45		Louder yet - S2 on meter of receiver. (Loudest previous signal S1 or less).
10:45½		Louder yet - more than S4 on meter of receiver!
10:50:15		Fades out.
10:53		End of listening cycle.

The raspy sounds did not sound like transmitter trouble, but sounded as if they came on and off deliberately. They were of a somewhat FM type as the use of the BFO gave hardly any beat note. Line surges caused enough receiver instability to prevent detection of any doppler shifts.

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Easily handles 1500 Watts continuous carrier even on 160 Meters . . . High-current edge-wound silver plated Roller Inductor . . . Two 500 pf high capacitance tuning capacitors with 6:1 vernier reduction drives . . . 3 core choke balun . . . Six position antenna switch . . . True peak reading Cross-Needle SWR/Wattmeter . . .

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Suggested Retail

- ***Handles 1500 Watts carrier***
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- ***500 pf tuning capacitors with 6:1 vernier reduction drives***
- ***3 core choke balun***
- ***6 position antenna switch***
- ***True peak reading meter***

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with 3CX1500/8877 ceramic tube

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Eimac® tube

AL-1500F

$3095

Imported tube

Suggested Retail *TrueLegalLimit*™

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Ameritron's *toughest* Amp

with Eimac® 3CX1200A7 toughest tube

AL-1200

$3450

Suggested Retail *TrueLegalLimit*™

Get ham radio's *toughest* tube with AL-1200. The *Eimac*® 3CX1200A7 has a 50 Watt control grid dissipation and the lowest history of field replacement of any modern transmitting tube that we use. 90 Watts in gives you full power out. All HF bands, all modes. 76 pounds, 17Wx18½Dx10H in.

Ameritron's *classic* Amp

with 2 graphite plate classic® 3-500G tubes

AL-82

$2645

Suggested Retail *TrueLegalLimit*™

Most linears using 3-500Gs *can't* give you 1500 Watts because their lightweight power supplies *can't* use these tubes to their full potential. AL-82 is ham radio's *only* super 3-500G amp! 100 Watts in gives you full power out. All HF bands, all modes. Hefty 76 pounds, 17Wx10Hx18½D inches.

Desktop Kilowatt

with classic 3-500G tube

AL-80B, $1399. Gives you full kilowatt SSB PEP output (85 Watts in) from a whisper quiet compact desk-top linear. 14Wx8½Hx 15½D inches. Plugs into 120 VAC outlet. Graphite plate *genuine* 3-500G tube. Nearly 70% efficiency. Weighs 48 lbs.

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500 Watt Mobile Amp

ALS-500M, $849. 500 Watts PEP/400W CW output, 1.5-22 MHz, instant bandswitching, no tuning, no warm-up. SWR, load fault, thermal overload protected. Remote on/off control. DC amp meter. Extremely quiet fan. 13.8 VDC. 9Wx3½Hx15D in., 7 lbs. **ALS-500RC, $49,** Remote Head.

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"Jeff's Walk"

VK4XJJ's Solo Trek Across Australia

BY JOHN WOOD,* WV5J

They tell us that faith can move mountains, but can it help a 66-year-old ham walk alone across a continent? In the case of Australian amateur Jeff Johnson, VK4XJJ, it did.

Jeff displayed his faith in his fellow hams and in people around the world when he left Port Augusta on the shore of Spencer Gulf (photo A) on April 5, 2007 on a walking trek across the continent of Australia to raise money for the DeafBlind Association of New South Wales (see sidebar). It took Jeff nearly five full months to accomplish his goal, but he reached his destination, Karumba, Queensland, a day ahead of schedule on Sunday, September 2. He sent word of his arrival via his primary means of communication for the entire 2500-kilometer (1500-mile) walk amateur radio.

Through amateur radio, Jeff was able to communicate with his tracking stations and other amateurs who kept up with his progress. Every day during the journey at 1730 Australian Eastern Standard Time (UTC +10), Jeff was available for contact with other hams on 7.045 MHz, which is a voice frequency in Australia. When band conditions were favorable, he was also able to keep skeds with Roger Stierli, VK4BNQ, his relay station in Gympie, Queensland, and with his brother, Bill Johnson, VK2FWGJ[1], in Newcastle.

Photo A– Jeff Johnson, VK4XJJ, takes the first step of a five-month walk across Australia to raise awareness and funds for the DeafBlind Association of New South Wales. He used ham radio to maintain contact throughout the transcontinental trek. (All photos courtesy of VK4XJJ and VK2FWGJ)

QRP Trekking

Utilizing a Yaesu FT-817ND (the FT-817 is a lightweight HF, 2-meter, and 440-MHz all-mode rig that makes an excellent backpacking radio), Jeff was able to keep fairly regular communication with brother Bill and *his* FT-817ND using the bare-bones, battery-powered rig and a dipole antenna (photo B). Lacking antenna supports, Jeff improvised along the way typically by suspending his dipole antenna—actually two lengths of wire each approximately 10 meters long—from a sign post on one end and a pile of rocks on the other. Given that band conditions were not the best during the trip relative to the current solar cycle, the Johnson brothers and their relay station were able to come up with some operating techniques to make sure the questions and answers were able to get through accurately on both ends of the QSOs.

"Roger is our 100-watt relay station when Jeff's signal or mine are too low for communication," Bill Johnson explained. "Often I could hear Jeff and recognize his voice but no intelligence. He often heard me and I could not hear him clearly. On these occasions when he copied me, he answered roger, roger, roger. If no reply, it might have been a negative response and I rephrased the question to get a positive answer." Bill noted that Roger also

*1870 Alder Branch Lane, Germantown, TN 38139
e-mail: <wv5j@netscape.net>

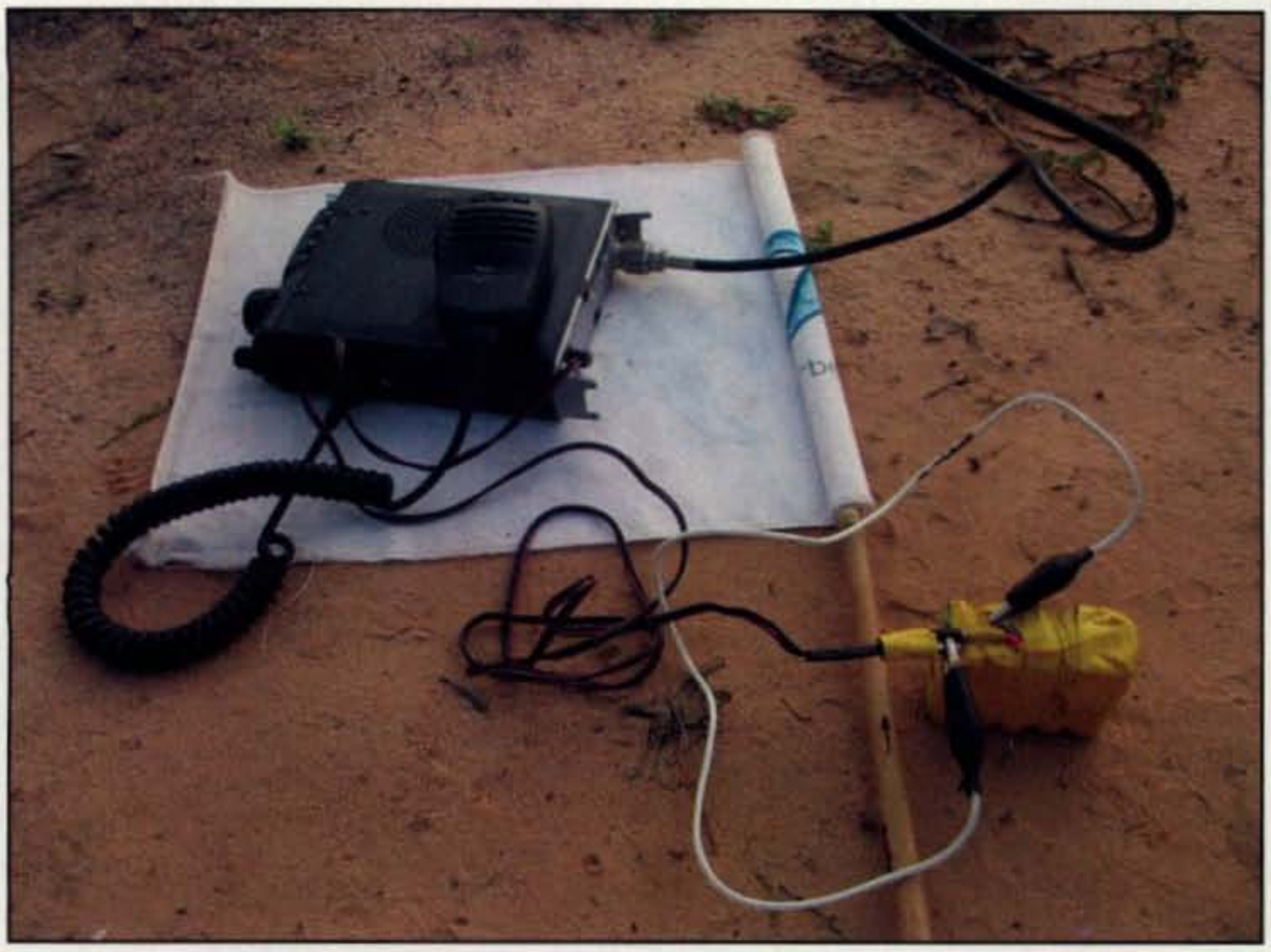


Photo B– Jeff's basic communications setup. His FT-817ND was powered from an external battery pack that was recharged daily from a solar panel.

designed Jeff's website, <http://www.JeffsWalk.com>.

With power output on the FT-817ND down to 2.5 watts when operated on internal batteries, Jeff carried enough AA cells to create a 2.5-Ah supply that served as an external power source for the radio. Energy in the rechargeable cells was replaced during Jeff's walking hours through a solar panel suspended from his neck (photo C).

Other electronic items making the journey with Jeff in his 28-kilogram (62-pound) backpack included the antenna and a 1:1 balun, an MP3 player, a UHF FRS (Family Radio Service) handheld, and a satellite phone. He also carried along essentials such as food, water, clothing, and a thermal sleeping bag (photo D). The sleeping bag helped Jeff contend with the near-freezing nights, while the satellite phone was used mostly for morning safety checks at 0700 and for reporting his noontime position.

"Jeff started out carrying eight liters of water but dropped down to two liters because motorists along the route would often offer him water," Bill said. "Some motorists would stop to say 'hello' and then produce a cup of tea and offer fruit. He would also make use of some creeks along the way to replenish his water supply."

The Grandmother Factor

How did all this come about? Speaking with *CQ* after finishing the walk, Jeff explained that he had previously completed long-distance walks (although not *this* long), and credited his brother Bill with suggesting that he use the trek to raise money and awareness for the DeafBlind Association.

Jeff said he had recently completed a 600-kilometer walk for "fun," from Queensland on the eastern coast of Australia to the town of Gladstone. "This walk took approximately one month and was undertaken on the ocean side of the many islands in this region," Jeff explained. "I skipped from island to island filling in the gaps via commercial barges or thumbing a lift with fishermen."

Jeff then heard about a group, which included a grandmother, that rode bicycles from gulf to gulf from Port Augusta in the south to Karumba in the north, and thought he might duplicate the effort walking unsupported with a backpack. "When I told Bill, he contacted the DeafBlind Association and offered me as a vehicle to raise awareness of its work," Jeff said. "His second daughter, Nicola, was deaf and blind and wheelchair bound and they appreciated the support given them by the DeafBlind Association." Jeff dedicated the 2,500-kilometer walk for the DeafBlind Association to his niece Nicola, who passed away several years ago at age 37.

Upon his arrival at Karumba, Jeff formally completed his trip by taking a step into the Gulf of Carpentaria (photos E and F) with a "small but verbal audience of locals and travelers." Of the 20 or so

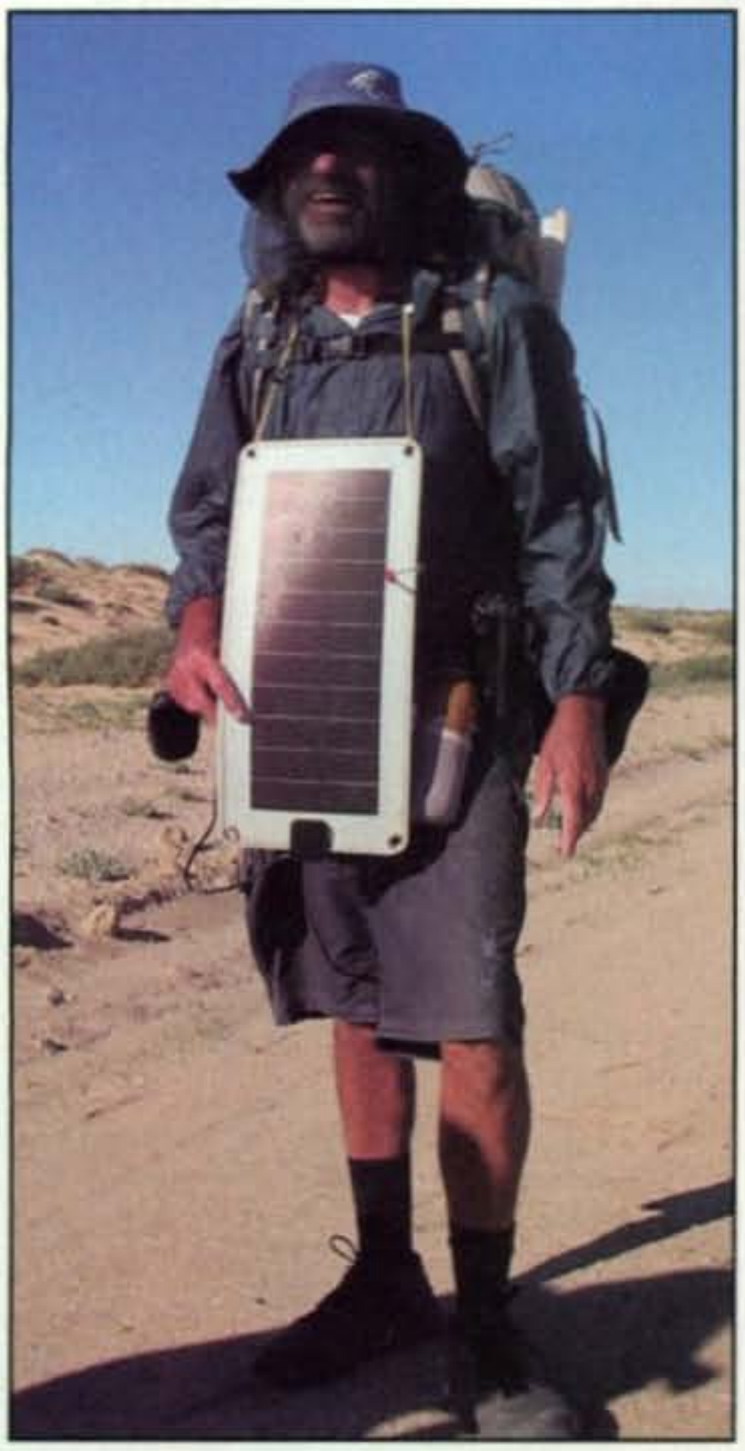


Photo C– Jeff solved the problem of where to carry the solar panel for recharging his batteries by wearing it as he walked each day!

Photo D– Items essential to the trip, including amateur radio gear, are gathered and checked prior to going into Jeff Johnson's backpack, a weight of 28 kg (62 lbs.) he carried for 2500 kilometers (1500 miles).

witnesses, 10 of the group had walked the last few kilometers with Jeff into the town.

Unexpected Excitement

Some unexpected excitement came after the walk was finished. Bill had purchased a car that would enable him and his brother to retrace the walk and thank the people along the route who generously looked after Jeff along the way. The two had rendezvoused at Normanton and were sleeping near the car when a person or persons unknown quietly took the keys from Bill's shorts and stole the vehicle.

A call to the local police initiated a search that quickly flushed out the thieves and prompted a car chase. The police halted the chase after deeming it too dangerous, but kept following the tail lights. Fearing capture, the offenders reportedly jumped out of the car while it was still moving and took off. The unguided vehicle then careened through a barbed-wire fence before coming to a halt. The police recovered the car and drove it back to Normanton.

Some cash was lost to the thieves, but most items were recovered following the chase, including the amateur radios. The car suffered some damage due to going through the barbed wire fence, but the brothers were able to drive it back home along Jeff's walking route. They also were able to collect a few more dollars at various locations where empty tins had been left to give generous Australians an opportunity to donate to the cause.

"The trip was the event of a lifetime," Jeff said after completing his walk. "When I took the first step after 10 months' preparation, I thought the rest would be a hard slog requiring a steel constitution to remain committed to

Photo E– Jeff Johnson, VK4XJJ, completes his walk across Australia with a "final step" into the Gulf of Carpentaria.

Photo F– Reunited after the 2500-kilometer trek, walker Jeff Johnson, VK4XJJ, left, and brother Bill Johnson, VK2FWGJ, pause for celebratory photo at Karumba, the end of the journey.

complete the journey. But it just got better and better. The physical challenges of the terrain and climate were minor irritations, and the interactions with the people I met along the way were such that no real effort was required to continue each day. In fact, each town I called in at and each cattle or sheep station I visited produced new friendships such that it was a string of 'hard to say' goodbyes."

"I'm indebted to Bill and Roger, VK4BNQ, who accompanied me the whole way via amateur radio on 40 meters, monitoring my safety and passing on my communications, and for keeping the website up to date in a professional manner," Jeff added, noting that his brother had gotten his basic (Foundation) amateur license this past April specifically with the walk in mind. Jeff himself has been licensed for several years but had been inactive, explaining that he had "revitalized" his license for the trip.

Jeff's plans now include making himself available as a guest speaker for amateur radio clubs around Australiá, where he can share his adventure and discuss the technical side of staying in touch using QRP. He particularly wants to thank all of those who supported his walk by donating generously to the DeafBlind Association.

Jeff's fund-raising goal in making the trek was to raise $60,000 to help with the purchase of a bus equipped with wheelchair access that would be used to transport DeafBlind persons on excursions and routine trips. While the goal was not reached initially (he raised only about 10% of his goal during the walk), Jeff is hopeful that when people become aware of what he has done on behalf of the cause, they will show their support through additional donations.

For more information about Jeff Johnson's trek or to donate to his worthy cause, visit <http://www.JeffsWalk.com>, or contact the NSW DeafBlind Association, P.O. Box 1295, Strathfield NSW 2135 Australia. Readers outside Australia should e-mail <dbansw@bigpond.com> for the best way to make donations using a credit card.

Note

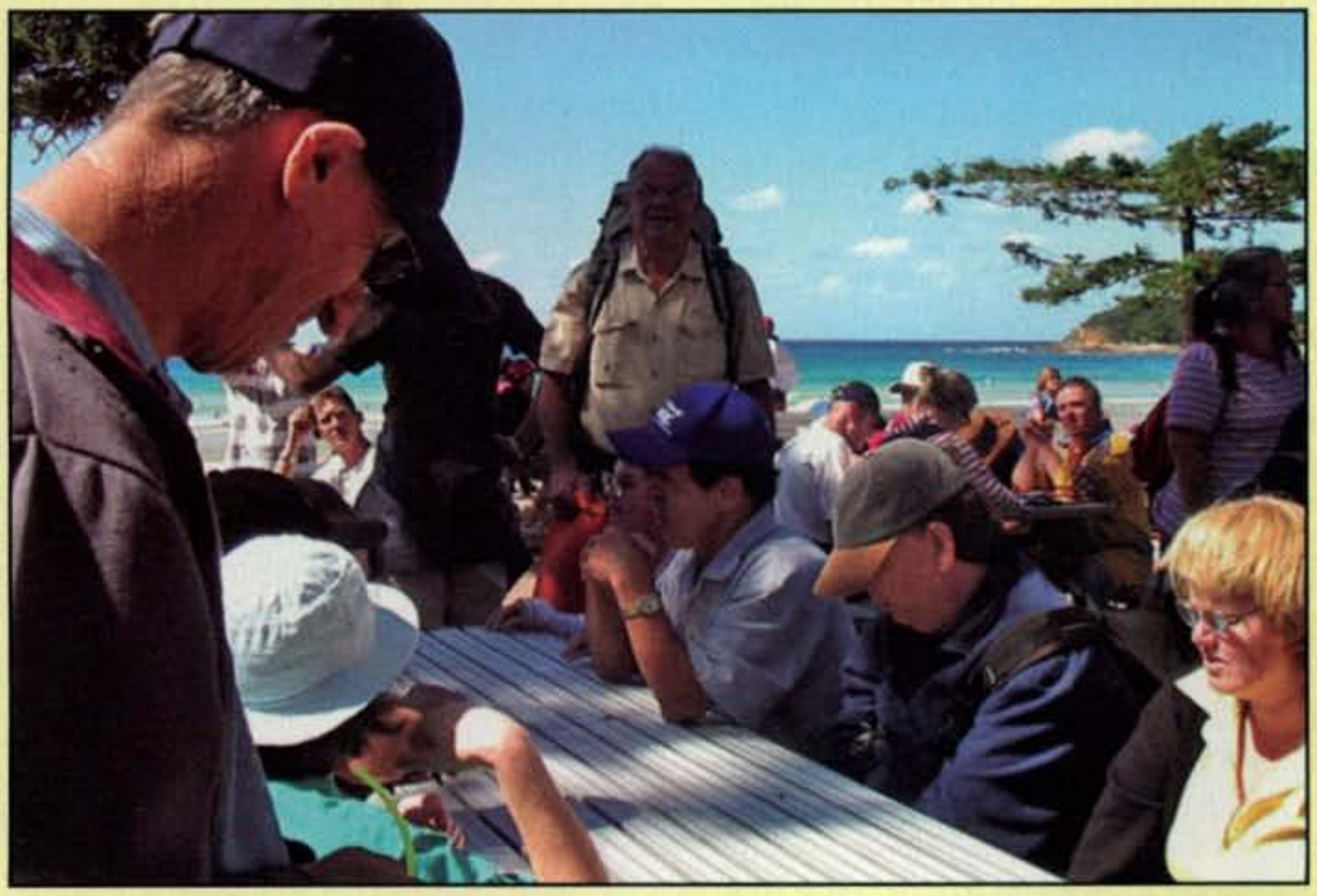
1. Bill Johnson's callsign, VK2FWGJ, while unfamiliar to many U.S. hams, is correct. Australia's "Foundation" license callsigns include an added "F" between the district number and the standard three-letter suffix. The "F" is dropped when a licensee upgrades to a higher level license. (Think back to the original "WN" and "KN" prefixes for Novices in the U.S. The "N" was dropped when the licensee was upgraded.)

The DeafBlind Association

The DeafBlind Association (NSW) Inc. provides advocacy, support, and social networking services to people who are DeafBlind (people with both vision and hearing loss) in the Australian state of New South Wales. According to the group's website, <http://www.dbansw.org.au/>, it was originally established by hearing/sighted people with the specific intent of empowering DeafBlind people. Today it is run by people who are DeafBlind and hearing/sighted people act only as associate members.

One of the organization's major activities is the Hand Over Hand Club, which has monthly social outings to destinations chosen by its members. It provides information and social interaction for its members and produces a monthly newsletter, "Rainbow News," which contains articles from members, stories about previous outings, and details about upcoming outings.

A report on the group's website says more than 30 members of the Hand Over Hand club took the opportunity to meet Jeff at Manly Beach near Sydney, on March 31st, just before he began his cross-continental journey. Jeff had his tent set up and his equipment on display so members could touch and examine it, ask questions using tactile communication, and have their photograph taken with him before the trip. Also, of course, there was an opportunity to do what, according to the locals, everyone does at Manly—eat fish and chips!



Leaders of the DeafBlind Association used this picnic lunch held at Manly, a northern beachside suburb of Sydney, to introduce Jeff Johnson, VK4XJJ, to its membership. Jeff made the 2500-kilometer trip to raise funds and awareness for the association.

Lots of us are engineers or other people for whom understanding and working with math comes easily. At least as many of us, though, couldn't balance a checkbook without a calculator (or with, in some cases). If you fall into the latter category, this article is for you...

Hams and Math

Improving an Ambivalent Relationship

BY RONALD R. THOMAS,* W8QYR

Many hams have an ambivalent relationship with mathematics. People usually take up ham radio because they enjoy using radio equipment to interact with other people. Often, understanding and using math is a real challenge for amateur radio operators without a math, engineering, or science background.

The reality of our hobby, though, is that understanding an electronic device such as a ham radio transceiver requires understanding the direct-current (DC) electricity that is used internally to power this equipment. It also requires understanding the alternating current (AC) electricity that flows at radio frequencies inside a ham radio transceiver. In addition, you have to understand the operation of the electronic components and circuits that combine to create a ham radio transceiver.

As we descend from the world of a ham radio transceiver as a piece of equipment into the world of DC, AC, electronic components, and circuits that make it all function, the words of language begin to fail us. We need the symbols of mathematics to understand what is going on and to make calculations.

The math we are talking about is nothing more than the most basic forms of high school algebra, geometry, and trigonometry. The difficulty often arises because many hams may not understand math fundamentals and do not know how to relate them to understanding electricity and electronics. However, even hams who are good at solving math problems may sometimes fail to see the point of applied mathematics.

Applying Math

In order to apply math to electricity and electronics, you must first understand math fundamentals. Let's start with algebra, which is a system in which letters are used to show relationships. At first, this can seem a little disconcerting. However, it provides great flexibility in understanding relationships and performing calculations.

For example, in DC electricity, Ohm's Law is one of the most fundamental algebraic relationships. This law states that the current through a circuit equals the voltage divided by the resistance. It also states that voltage equals current times resistance, and resistance equals voltage divided by current. Remembering those words can be a real challenge; remembering the simple algebraic equation for Ohm's Law is much simpler:

$$I = \frac{E}{R}$$

The Ohm's Law equation has three letters and one equal sign. Knowing the rules of algebra allows you to rearrange that equation to easily see the relationship among voltage, current, and resistance. The Ohm's Law algebraic equation greatly simplifies being able to remember those relationships.

The equation also allows you to perform calculations. For example, if you have a 12-volt battery and a 6-volt light bulb, you can easily calculate the value of a resistor needed to use that bulb with that battery (see first item under "Practical Examples").

You can plot data from Ohm's Law calculations on a graph to visually see information, which normally will be in some type of straight line. Direct current is relatively "direct" and the result is normally a straight line.

You can move on to other algebraic formulas that allow you to calculate the total resistance of multiple resistors connected in series or in parallel. Again, the formulas simplify remembering the relationships and performing calculations.

Things get more complicated with AC because of AC's more complex "alternating" nature. If you plot AC on a graph, you get a curved line called a *sine wave* and not the straight line of DC. In addition, you get one sine wave for current and a different one for voltage.

When AC flows through a resistor, those two curves are in sync. However, when AC flows through a capacitor or inductor, the voltage and current sine waves are no longer in sync. To understand what is occurring, you need to use *plane geometry*, which deals with objects such as right triangles, and *trigonometry*, which deals with relationships among the sides and angles of a right triangle. You can use geometry and trigonometry to make calculations and draw diagrams that visually illustrate AC's complex interactions, which are more easily understood visually.

When you combine inductors and capacitors in series or parallel, the result is an even more complex interaction that needs to be explained mathematically and visually. Also, the combination of an inductor and capacitor can be used to create a resonant circuit, which is the basis for tuning radio signals, which are AC signals alternating at a rapid rate.

Combine a resonant circuit with a transistor and you can create a circuit that oscillates. Other combinations of components result in circuits that amplify, detect, and perform other functions. The final result can be a ham transceiver. Up to the 1960s this would have been the end of the story; then came the digital/computer electronics revolution.

Digital electronics takes us back to the world of DC, only now we are using *logic gates*, and to understand what is occurring with them you need you need *Boolean Algebra* to create *truth tables*.

Don't let the name scare you. Boo-

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e-mail: <ronraythom@yahoo.com>

lean Algebra enables the logic of digital logic circuits to be more logically understood. Without Boolean Algebra, it is back to the confusion of words that seem to lack a clear meaning. (However, we'll stick with the basics in this article and leave the Boolean Algebra for another day.)

Acquiring Math Skills

There are numerous ways to acquire math skills, including borrowing a math book from the library, taking a continuing education course, or buying an instructional video course from an organization such as The Teaching Company. Fortunately, in recent years the teaching of mathematics has greatly improved. Today, books such as *Algebra for Dummies, Geometry for Dummies,* and *Trigonometry for Dummies* make it easier to learn mathematics. Unfortunately, even with improved instructional materials, learning math remains difficult for many people.

The secret to acquiring math skills is to build a strong foundation in algebra and geometry before you move on to trigonometry. Also, you must be willing to solve a lot of math problems along the way. You cannot just read a math book or listen to a math teacher; you have to do the math. Then you have to acquire a basic electronics textbook and start applying the math to some electrical and electronics problems.

Sometimes doing electrical experiments, taking measurements, and comparing the results to what you mathematically calculated may help the learning process. Also, working with a partner may help to enhance the learning experience. However you choose to do it, you can improve an ambivalent relationship with math, and increase your understanding of how ham radio equipment really works.

Math in the Ham Shack – Practical Examples

Here are some examples of situations in which you might need to use math, along with explanations of how to solve the problems. Follow along on your calculator. If you don't think you have one, check your computer and/or your cell phone!

1. An old 6-volt car radio that draws one amp of current can be operated from a 12-volt power supply, but a resistor is needed to reduce 12 volts to 6 volts. The following formula (Ohm's Law) provides the value for this resistor.

$$I = \frac{E}{R}$$

where: I = current in amps
E = voltage in volts
R = resistance in ohms

Since we need to figure out the resistance needed to drop 12 volts to 6 volts, we can rearrange the formula to put R first:

$$R = \frac{E}{I} = \frac{6 \text{ volts}}{1 \text{ amp}} = 6 \text{ ohms}$$

2. The following formula gives the wattage required for this resistor.

$$P = I^2R$$

where: P = power in watts
I = current in amps
R = resistance in ohms

$$P = (1)^2 (6) = 6 \text{ watts}$$

3. The length of a half-wave dipole antenna is determined by the following formula with an example for 7 MHz.

$$L = \frac{468}{F}$$

where: L = length in feet
F = frequency in megahertz (MHz)

$$L = \frac{468}{7} = 66.86 \text{ feet}$$

If you want to make the antenna resonant in the middle of the 40-meter phone band (7.225 MHz), you would change 7 to 7.225:

$$L = \frac{468}{7.225} = 64.77 \text{ feet}$$

(Note that as frequency goes up, antenna length goes down.)

4. A variable capacitor, when measured with an ohmmeter, shows the capacitor to be an open circuit for direct current (there is infinite resistance). However, things change when alternating current, or AC, is applied to the capacitor. Resistance to AC is called *reactance*. The following formula shows the reactance for alternating current. The reactance varies with frequency, and in the example shown the reactance is very small.

$$X_C = \frac{1}{2\pi fc}$$

where: X_C = capacitive reactance in ohms
f = frequency in cycles per second (Hz)
c = capacitance in Farads (F)
π = 3.14

in this case: f = 120 cycles
c = 8 Farads

$$X_C = \frac{1}{(2)\ (3.14)\ (120)\ (8)} = .000166 \text{ ohms}$$

5. An inductor (coil), when measured with an ohmmeter, might show the inductor to offer very little or no resistance to direct current. However, inductors are like capacitors with regard to AC. The following formula shows the inductive reactance to alternating current. The reactance varies with frequency, and in the example shown below the reactance is rather large.

$$X_L = \pi fL$$

where: X_L = inductive reactance in ohms
π = 3.14
f = frequency in cycles per second (Hz)
L = inductance in Henrys

in this case: f = 120 cycles per second
L = 8 Henrys

$$X_L = 2\pi fL = (2)\ (3.14)\ (120)\ (8) = 6029 \text{ ohms}$$

6. An inductor and a capacitor can be used to create a resonant circuit whose frequency is determined by the following formula, with an example.

$$f = \frac{1}{2\pi \sqrt{LC}}$$

where: f = frequency in cycles per second (Hz)
L = inductance in Henrys
C = capacitance in Farads
π = 3.14

in this case: L = 8 Henrys
C= 8 Farads

$$f = \frac{1}{2\pi \sqrt{LC}} = \frac{1}{(2)\ (3.14)\ \sqrt{(8)\ (8)}}$$

$$= \frac{1}{(2)\ (3.14)\ \sqrt{64}} = \frac{1}{(2)\ (3.14)\ (8)} = .0199 \text{ (cycles per sec.)}$$

public service

BY BOB JOSUWEIT,* WA3PZO

Hams Hailed as Heroes

Mother Nature delivered a one-two punch to the Pacific Northwest as hurricane-force winds and 40-foot seas pounded the coast of Washington and Oregon for two days in December. Wind gusts of more than 100 mph were reported along the Oregon coast, with the highest reading 129 mph at Bay City, the equivalent of a strong Category 3 hurricane. According to the National Weather Service, gusts hit 81 mph in Hoquiam, Washington.

In Oregon, power and phone lines were cut by falling trees. A major 115-kilovolt transmission line serving the northern Oregon coast was out of service. This affected service to over 27,000 Pacific Power customers in Clatsop County. An additional 13,000 homes were without power in other areas of Oregon. The utility company said it could be days before electricity would be fully restored. Transmission poles 100 feet tall were toppled, and large sections of power lines were on the ground. "The ground is saturated from intensive rainfall and trees are leaning into power lines and dropping to the ground," the utility company said in a statement.

Cellular phone service was limited. According to reports, even the state police had difficulty reaching some of its own members. Yet a network of over 60 amateur radio operators were able to provide communications.

"One of the problems in this is always communication," Gov. Ted Kulongoski said after a visit to Vernonia. "I'm going to tell you who the heroes were from the very beginning of this ... the ham radio operators. These people just came in and actually provided a tremendous communication link to us." "Really, it's ham radio operators who are the backbone, because we operate on power," said Clatsop County Sheriff Tom Bergin. "They are a godsend when it comes to emergencies."

These operators provided communications along the Oregon coast and farther inland they handled messages for the 911 center, the American Red Cross, and hospitals in the affected area. They relayed information about patient care and lists of supplies needed in areas cut off by water. The Oregon Office of Emergency Management said the radio operators were tireless in their efforts to keep the systems connected. "When communications went out, I couldn't get ahold of anybody," said Sgt. Mark Whisler as he worked in the emergency center's communications room on Friday. "It all fell to them."

According to the ARRL's Oregon Public Information Coordinator, Steve Sanders, KE7JSS, the District One emergency radio network worked closely with the American Red Cross as well as the major hospitals, Heartnet radio network, and district-wide emergency managers, including the Oregon Office of Emergency Management in Salem. The amateur radio operators handled requests for equipment, fuel, and other resources. In addition, they were able to handle requests from outside of the area, allowing family and friends to check on elderly residents and others in the affected area. One report indicated that a woman delivered a premature baby in Seaside, Oregon and needed advanced medical support. LifeFlight couldn't launch because of the storm, so ham op-

Chester County ARES/RACES member John serves as net control at the county's emergency management office. (Photo courtesy Al, W3HOA)

*c/o CQ magazine
e-mail: <wa3pzo@cq-amateur-radio.com>

Residents were evacuated from the hard-hit town of Vernonia, Oregon as the Nehalem River overflowed its banks. (Photo courtesy of Reo Gargovich, KE7REO)

erators tapped into the hospital Heartnet radio network and arranged for a discussion between a local doctor and a specialist at Oregon Health & Science University (OHSU) Hospital in Portland.

Phone Service—Sort Of

Clatsop County residents were able to make local calls, but they were not able to call out of the county or 911. The 911 system, provided by Qwest Communications International, which serves 37,000 people, was not working. County officials were upset when Qwest was not at various briefing meetings. "There may be a very good reason why Qwest didn't have anyone here meeting with us during our regular briefings," said Astoria Mayor Willis L. Van Dusen. "They just haven't told us yet what it is." Also, Bergin and other officials bristled when Qwest intimated that 911 was down for only a short time.

The 911 system did not work for three days. Deputies, law enforcement personnel, and other emergency-service providers put the word out that anyone who needed help was to call local fire departments within their area. The authorities relied on ham radio operators to transmit messages, including information about people in need.

Some local fire districts gave out home phone numbers of their top brass to make sure no one went without help. Qwest said the fiber-optic cables were damaged in three locations in Westport, 26 miles east of Astoria, and near Nehalem. According to officials, there was so much damage to the lines that nothing could be routed to the hub, which meant the system was useless until repairs could be made.

In Curry County, Assistant Emergency Coordinator Phil Barker, KB6NZV, contacted Dan Bissell, W7WVF, the ARRL Emergency Coordinator for Coos County, Oregon. Barker asked Bissell to pass a message to the Office of Emergency Management (OEM) from Sheriff Allen Boice and Emergency Manager Michal Brace. "Telephone/internet out of Curry County is down. Curry County's 911 center, dispatch, NAWAS, and LEDS are all down." Bissell contacted the OEM by telephone and was put in contact with Marty McKillip, KD7LA. After the message was delivered, McKillip still had questions. Bissell said he established a crude telephone patch and McKillip received his answers directly from Barker. Bissell also relayed a message to radio station KDCQ as to what to do if residents were unable to reach the 911 center.

Sally Jones, Administrator for the Columbia 911 Communications District, said, "The 911 lines that would normally be answered in Seaside and Astoria for callers in Clatsop County were diverted by the phone company to the Columbia 911 Communications Center on a temporary emergency basis. The emergency phone calls are being taken by Columbia 911 staff, who are relaying the information via Columbia County and Clatsop County Amateur Radio Emergency Service volunteers to the police, fire, and emergency medical dispatchers in Clatsop County, who then are activating Clatsop County first responders." Clatsop County's 911 service also went down in the storm, but officials there relied on ham radio operators to transmit messages, including information about people in need.

In Washington

At least 130 people were rescued from flooded areas by helicopters. Interstate

5 near Centralia was closed because of the road being covered by 10 feet of water. Residents of Seattle and its suburbs were forced to evacuate because mudslides blocked many roads. Washington Governor Chris Gregoire, who toured the region by helicopter, said, "It's hard to comprehend 5 to 10 feet under until you see those houses."

Western Washington Section Manager Jim Pace, K7CEX, told ARRL Headquarters that Pacific County ARES members manned the County Emergency Operations Center at South Bend "almost 24/7. Ham radio has been the only reliable means of communications in the county since the landline and cell phones have been out of service."

Thurston County ARES members supported ongoing flood evacuation operations in the southwest portion of the county. They staffed the County Emergency Operations Center's radio room in Olympia and manned sites at the Rochester Fire Station, various evacuation centers, as well as landing zones for the helicopter rescue teams. "They used amateur radio to coordinate resources and limited tactical traffic between sites," Pace said. "Hams were also primary operators on several county radio systems. One ham was stationed at the Rochester helicopter landing zone all day Tuesday, even though he knew his own business was in trouble from the high water and would have to be rebuilt."

Hams in the hardest hit area of Lewis County were cut off from traveling. However, when the local repeater failed, Lewis County hams got on simplex and HF frequencies to check on each other and put themselves on standby for deployment when roads became passable," he said.

Winlink Works!

Several ARES members in Oregon started to work with Winlink a few years ago and by the fall of 2005 they had several Telpac Gateways in operation around the clock. Over the course of the next 24 months additional Telpac Gateways were installed, and in October of this year the first PMBO was operational in Salem. According to Dean Davis, N7XG, Marion County ARES Emergency Coordinator said they put the new system to use and it performed well. Just a few weeks later the winter storms hit, and when Davis arrived at the OEM he said, "There were several Winlink messages for us. Over the course of the next four days the Winlink system performed perfectly. In fact, the only means of communication for several counties was the Winlink system." According to Davis, "If I had a rooftop to stand on I would tell everyone that Winlink is a perfect system for emergency services."

Chester County ARES/RACES member Carter Craigie, N3AO, speaks with a local resident during a training exercise at a local fire company. (Photo courtesy of Kay Craigie, N3KN)

East Coast Phone Outage

Chester County, PA hams were paged by the county 911 supervisor shortly before 7 AM in late November because of a phone outage in the western part of the county. Amateur radio operators were requested to staff four fire stations and the Emergency Operations Center.

According to Al Morris, W3HOA, Emergency Coordinator for Chester County ARES/RACES, he called up members who live in the requested area and they said they would be available during working hours. If that had not worked, he would have initiated a reverse 911 phone call-up on all county ARES/RACES members. Within 30 minutes of the initial call-up the EOC was staffed by two members and four additional members were on their way to specific firehouses in the affected area. All sites were staffed in less than 1 1/2 hours.

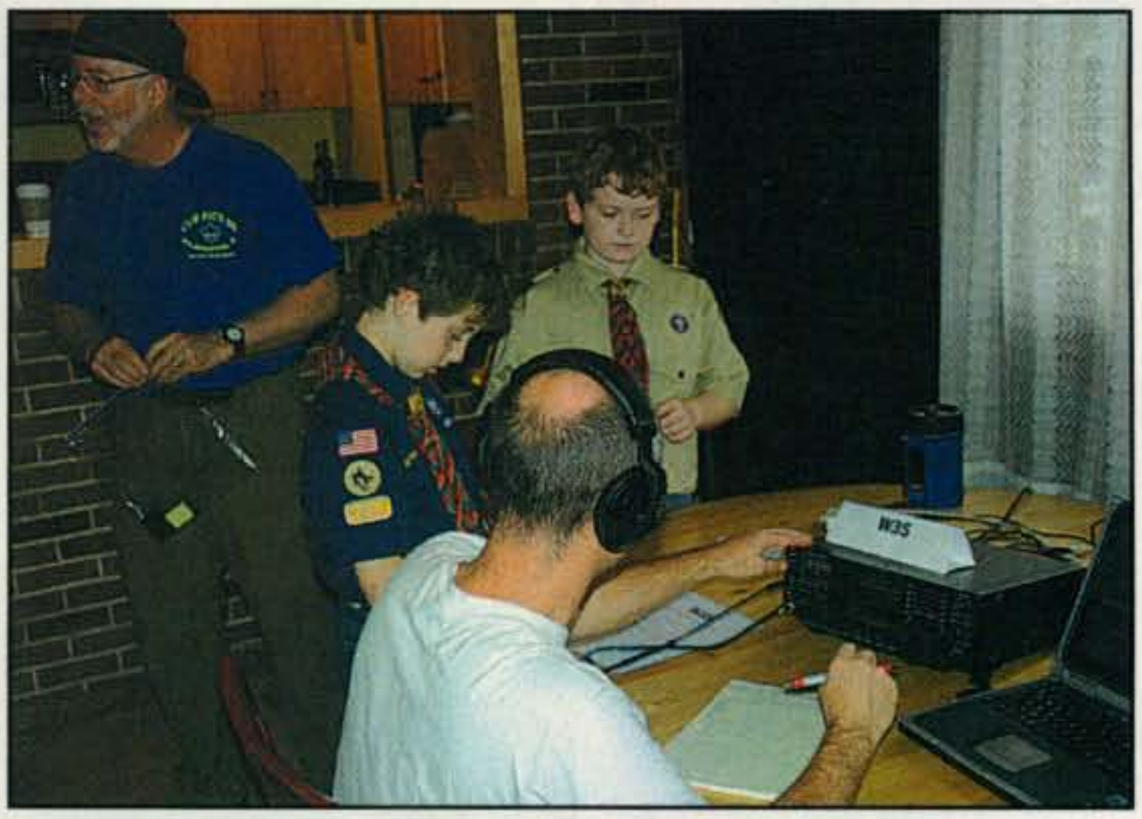
Morris said, "[the] rest of the morning was spent checking in with the officials at the firehouses, introducing ourselves, and reviewing with them what we were doing there and how we were capable of assisting them if needed." Since radio traffic was minimal, they used the opportunity to hold a "practice run of made-up emergency messages using the 911 Emergency Forms that we are to use in these situations." The activation was over in about 5 1/2 hours. Each of the stations assigned to a firehouse had an APRS tracking unit. At the County EOC their locations were projected onto a wall for easy use by the net control operator. This also made it easy for several county emergency managers to see not only the location of each operator, but also the weather at that location.

Ed Atkins, Director of the Chester County Department of Emergency Services, told the group that "Your ability to staff four fire stations and W3EOC in an hour on a Tuesday morning is one reason I count on CCAR when the worst occurs. The expertise, dedication, and continued support of the men and women of CCAR is truly an asset to the citizens of Chester County. I realize the difficulties maintaining enthusiasm for a program seldom used. I appreciate the sacrifice of the CCAR members who respond, in less than favorable conditions, to protect the citizens. And I fully understand how fortunate we are, in Chester County, to have CCAR."

JOTA

For the past 50 years Scouts from around the world have been meeting on

Nick Roscoe, N3NR, tunes in a signal so a Scout can find the hidden transmitter. (Scout photos courtesy of WA3PZO)



Scouts listen as a contact is made on 20 meters.

the air thanks to amateur radio. According to the World Organization of the Scout Movement Secretary General Eduardo Missoni, young people who get involved "will stay in Scouting and share our unique adventure only if they will live Scouting as an exciting and involving experience." He says that "in Scouting there is space and a role for everyone. Opportunities must be created at the local level; there is where the action goes on, where girls and boys are empowered to face challenges. But it is by sharing the experience globally that we feel the sense of belonging to a World Brotherhood; it is by breaking all kind of barriers that we join hands in creating a better world."

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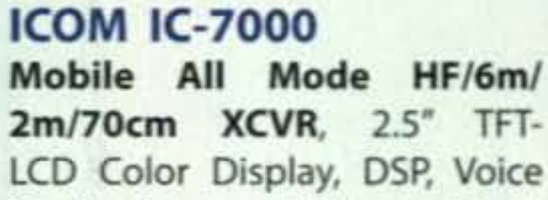

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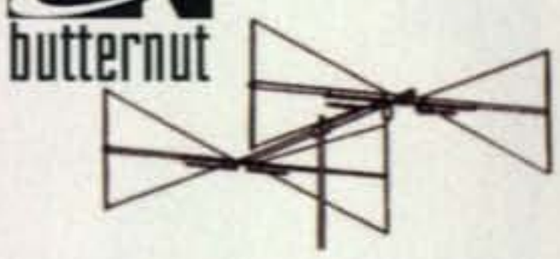

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Four element, short boom triband beam is long on performance! Rugged design with all stainless steel hardware offers broad gain, high F/B ratio, and flat match. Supplied with broadband ferrite balun rated at 3000 Watts.

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Hygain, Ham-IV	$499
Hygain, Ham-V	$849
Hygain, T2X	$569
Hygain, T2X Digital	$929
Hygain, HDR-300A	$1269
M2, OR-2800PX	$1379
Yaesu, G-450A	$249
Yaesu G-550	$299
Yaesu, G-800SA	$329
Yaesu, G-800DXA	$409
Yaesu, G-1000DXA	$499
Yaesu, G-2800DXA	$1089
Yaesu G-5500	$599

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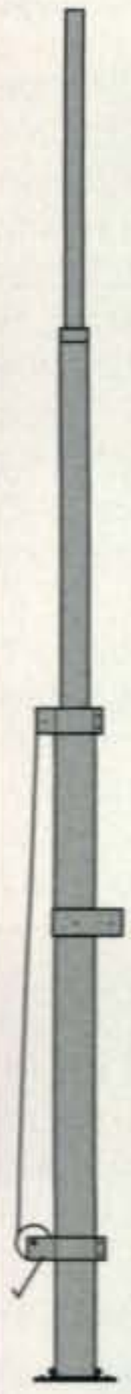

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Light Duty Aluminum Self Supporting Towers. Five models range from 30–50 feet in height, and support up to 12 sq. ft. of antenna load.

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B-26 SERIES

Medium Duty Aluminum Self Supporting Towers. Thirteen models range from 30–90 feet and support up to 34.5 sq. ft. of antenna wind load.

CALL FOR MORE INFO!

B-30 SERIES

Heavy Duty Aluminum SelfSupportingTowers. Nineteen models range from 40–100 feet, and support up to 34.5 sq. ft. of antenna wind load.

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In southeastern Pennsylvania the Cradle of Liberty Council Cub Scout Pack 260 celebrated the 50th anniversary of the annual worldwide Scouting event called the Jamboree On The Air (JOTA). It hosted over 65 Boy and Girl Scouts from Pennsylvania and Delaware at the home of Scout Leader Nick Roscoe, N3NR. Several work stations were set up around Roscoe's home. Every Scout had the chance to speak on the air to other Scouts using traditional shortwave radio. They had the opportunity to make radio contacts using IRLP, build electronic kits, participate in a hidden transmitter hunt game, and see a demonstration of amateur radio emergency communications.

The electronic kits, when held near a heat source such as a light bulb, sent a series of dashes during a given period of time. The number of dashes plus a constant number equalled the actual temperature. The hidden transmitter used a low-power AM signal so the transmitter hunters could point a small transistor radio towards the transmitter and eventually find it. Roscoe said this method worked a lot better than having the Scouts walk around with a directional beam antenna that has points on the end. By using the transistor radios there were no antennas that could strike another Scout in the head. Several local radio clubs and organizations help staff the various work stations. The cost of the kits and supplies used was covered by the clubs and a few businesses.

A Scout member watches closely as his temperature kit is heated. It worked!

Volunteer Group of the Year

The Marine Corps Marathon (MCM), held in the Washington, D.C. area, recognized the Amateur Radio Service as its volunteer group of the year for its 30 years of service and support for the annual event. According to Marathon officials, the hams have provided essential, mission-critical communications to the medical staff on race day. "The ham radio operators play a vital role in medical operations of the race," said Rick Nealis, Director of the Marine Corps Marathon. "The knowledge and expertise of their dedicated volunteers enables the MCM to provide all participants the highest level of emergency care and I am deeply appreciative of the hams' continued support."

Initially, ham radio served as a simple means of communications at both aid stations and mile markers. In the early 1990s, this support expanded to include digital communications with the aid stations and tracking of the pace car and the end car. Eventually, the aid station support evolved to automated digital communications, which includes 115 ham radio operators located at mile markers, water points, aid stations, two finish-area medical locations, and as shadows to the division commanders.

The award also recognized Rick Bunn, N4ACX, and Tom Azlin, N4ZPT, for their contributions. Both have served in coordinating roles for several years.

Until Next Time...

No telephones. No cell service. But amateur radio was there. Amateur radio operators used their skill and communications expertise to get the message through when all else failed. According to Sander, "This was just the poster child storm for what we do."

This month we would like to thank KE7JSS, N7XG, W3HOA, N3NR, and the ARRL for providing information.

73, Bob, WA3PZO

MFJ *Speech Intelligibility* Enhancer

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"What did you say?" ***Can you hear but . . . just can't always understand everything people are saying?***

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First, drastically increase the speech energy above 500 Hz, where 83% of the speech intelligibility is concentrated.

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The MFJ-616 splits the audio speech band into four overlapping octave ranges centered at 300, 600, 1200 and 2400 Hz. You can boost or cut each range by nearly 20 dB.

A balance control and separate 2½ Watt amplifiers let you equalize perceived loudness to each ear so both ears help.

By boosting high and cutting low frequencies and adjusting the balanced control, speech that you can barely understand become highly understandable!

Even if you *don't* have high frequency hearing loss, you'll dramatically improve your ability to understand speech. You'll get an edge in contesting and DXing and enjoy ragchewing more.

Here's what *QST* for April, 2001 said . . . *"I expected a subtle effect at best, but I was astonished . . . The result was remarkably clean, understandable speech without hissing, ringing or other strange effects . . . made a dramatic improvement . . ."*

Immuned to RFI. Has phone jack, on/off speaker switch, 2 inputs, bypass switch. 10Wx2½Hx6D". Needs 12 VDC.

MFJ-1316, $21.95. For 110 VAC operation. Provides 12 VDC/1.5 Amps.

MFJ-72, $69.80. *All-in-one MFJ-616 Accessory Pack.* Includes MFJ-392 headphones, two MFJ-281 speakers and MFJ-1316 power supply. ***Save $7!***

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Order from MFJ and try it -- No obligation. If not delighted, return it within 30 days for refund less shipping.

MFJ Contest Voice Keyer

Transformer-coupled -- No RFI, hum or feedback . . . 75 seconds total, 5-messages . . . Records received audio . . .

MFJ-434B
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Let this *new* microprocessor controlled MFJ *Contest Voice Keyer*™ call CQ, send your call and do contest exchanges for you in your own natural voice!

Store frequently used phrases like "CQ Contest this is AA5MT", "You're 59" . . . "Qth is Mississippi" . . . Contest by pressing a few buttons and save your voice.

Record and playback 5 natural sounding messages in a total of 75 seconds. Uses *eeprom* -- no battery backup needed. Use your mic or its built-in mic for recording.

You can repeat messages continuously and vary the repeat delay from 3 to 500 seconds. Makes a great voice beacon and calling CQ is *so* easy.

You can also record and play back off-the-air signals -- great help if you didn't get it right the first time! No more "*Please repeat*".

A playing message can be halted by the *Stop Button*, your microphone's PTT/VOX, remote control or computer.

Has jack for remote or computer control (using CT, NA or other program). Lets you select, play and cancel messages.

Your mic's audio characteristics do not change when your MFJ-434B is installed.

All audio lines are RF filtered to eliminate RFI, audio feedback and distortion. An audio isolation transformer totally eliminates hum and distortion caused by ground loops.

New! **It's** easy to use -- just plug in your 8 pin round or modular mic plug, set the internal jumpers for your transceiver and plug in the appropriate (included) cable for your rig.

Built-in speaker-amplifier. Speaker/phone jack. Use 9 Volt battery, 9-15 VDC or 110 VAC with optional MFJ-1312D, $15.95. 6½Wx2½Hx6½D in.

MFJ-73, $34.95. MFJ-434B Remote Control with cable.

60 dB Null *wipes out* noise and interference

MFJ-1026
$199.95

Wipe out noise and interference *before* it gets into your receiver with a 60 dB null!

Eliminate all types of noise -- severe power line noise from arcing transformers and insulators, fluorescent lamps, light dimmers, touch controlled lamps, computers, TV birdies, lightning crashes from distant thunderstorms, electric drills, motors, industrial processes . . .

It's *more effective* than a noise blanker! Interference much stronger than your desired signal can be completely removed without affecting your signal.

It works on *all modes* -- SSB, AM, CW, FM -- and frequences from BCB to lower VHF.

You can null out strong QRM on top of weak rare DX and then work him! You can null out a strong local ham or AM broadcast station to prevent your receiver from overloading.

Use the MFJ-1026 as an *adjustable phasing network.* You can combine two antennas to give you various directional patterns. Null out a strong interfering signal or peak a weak signal at a push of a button.

Easy-to-use! Plugs between transmitting antenna and transceiver. To null, adjust amplitude and phase controls for minimum S-meter reading or lowest noise. To peak, push reverse button. Use built-in active antenna or an external one. MFJ's exclusive *Constant Amplitude Phase Control*™ makes nulling easy.

RF sense T/R switch automatically bypasses your transceiver when you transmit. Adjustable delay time. Uses 12 VDC or 110 VAC with MFJ-1312D, $15.95. 6½x1½x6¼ in.

MFJ-1025, $179.95. Like

MFJ-1026 less built-in active antenna, use external noise antenna.

MFJ *tunable* Super DSP filter

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Only MFJ gives you *tunable* and *programmable* "brick wall" DSP filters.

You can continuously *tune* low pass, high pass, notch and bandpass filters and continuously *vary* bandwidth to pinpoint and eliminate interference.

Only MFJ gives you 5 factory pre-set and 10 programmable pre-set filters you can customize. **Automatic** notch filter searches for and eliminates multiple heterodynes. Advanced adaptive noise reduction silences background noise and QRM.

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BY FREDERICK O. MAIA,* W5YI

FCC's Universal Licensing System: What You Need to Know

The paperless ULS supports electronic filing of wireless applications, licensing information ... and provides public viewing and on-line access to this information over the internet using a World Wide Web browser.

Both international and FCC regulations require radio amateurs to be licensed before operating on the ham bands. Licensing is the primary responsibility of the FCC's Wireless Telecommunications Bureau (WTB). While the FCC headquarters is in Washington, DC, its licensing facility is located in Gettysburg, PA. It handles the licensing of all radio services, not just amateur radio.

After an amateur radio applicant successfully completes the required exam, the Volunteer Examiner Coordinator collects the NCVEC Form 605 license application from the VE team. After screening and resolving all discrepancies, the VEC forwards the information electronically (over the internet) to the FCC in Gettysburg for processing and issuing the license.

The system used to keep track of all licensees, including license class changes and issuing callsigns, is called the Universal Licensing System, or ULS. Not only do VECs input information into ULS, but licensees may also update their addresses, request duplicate licenses or "vanity callsigns," and renew their licenses using their personal computers.

In a nutshell, the ULS is an integrated database and automated processing system that facilitates electronic filing of applications and electronic access to licensing information. Up until 1999, the FCC had eleven different licensee databases, basically one for each radio service. Also, most application filing was accomplished by mailing a piece of paper to Gettysburg, which was hand-keyed by FCC personnel. It frequently took weeks (or months) to get a ham ticket processed and back from the FCC.

Today, electronic filing reduces the time involved for the public to file applications and greatly improves the speed of processing radio licenses and callsigns. Licenses are now granted as quickly as the information can be submitted to the Commission from a PC. You can even print out your own license almost immediately. Such is the magic age of electronic data processing!

Under ULS, licensees may access their FCC records electronically at any time. Automated processing of electronically filed applications occurs nightly on each business day beginning at approximately 11 PM Eastern time. When the nightly processing run is completed, ULS generates a file listing the day's licensing activity and processing results. This file is used by the various online databases to update their records. Applications filed on weekends and holidays are given a receipt date for, and are processed on, the next business day.

ULS provides numerous benefits, including fast and easy electronic filing, improved data accuracy through automated checking of applications, and enhanced electronic access to licensing information by the public.

*1020 Byron Lane, Arlington, TX 76012
e-mail: <w5yi@cq-amateur-radio.com>

Background of ULS

The Wireless Telecommunications Bureau (WTB) began work on the ULS for all its radio services in the mid-1990s. In early 1998, the FCC issued a massive (nearly 400 pages) Notice of Proposed Rulemaking (NPRM) in Docket WT 98-20 proposing the Universal Licensing System in all wireless services, including the amateur service. One of the Commission's objectives was to eliminate the submission of paper documents to the FCC and for applicants and licensees themselves to be able to file applications and update other information electronically. The NPRM also required the submission of a Taxpayer Identification Number (TIN) to the FCC by applicants as required by the Debt Collection Improvement Act of 1996.

On September 17, 1998, the FCC "...adopted rules that consolidate, revise, and streamline its license application procedures for radio services licensed by the Wireless Telecommunications Bureau (WTB)." Eliminated were nearly 200 duplicate and inconsistent rules in various rule parts, and over 40 existing wireless application forms were replaced with just five new forms, FCC Forms 601 through 605. The goal was for all wireless radio services to use the same set of forms.

The eleven databases were consolidated into a single licensee database, and the integrated wireless radio license processing system became operational on August 12, 1999. It covered nearly all radio service licensees, including amateur radio operators (but not broadcast stations).

The venerable FCC (amateur radio application) Form 610 which had been used for decades was replaced by the multi-radio-service FCC Form 605. FCC Forms 610-A and 610-B were also eliminated when the FCC amended the reciprocal, Club, and Military Recreation Station licensing rules.

The 610-A had been used by foreign amateur radio operators to obtain an alien amateur reciprocal permit. Reciprocal operation—including two other two international reciprocal operating arrangements (the European Conference of Postal and Telecommunications Administrations, CEPT radio amateur license, and the Inter-American

Convention on an International Amateur Radio Permit, IARP) would now be authorized by rule. As a result, foreign operators no longer receive a paper alien reciprocal permit, nor are they limited to a one-year term. The amended reciprocal licensing rules are now covered in Part 97 rule Sections 97.5 and 97.107.

Club Station Call Sign Administrators (CSCSA) were established to issue Club and Military Recreation station callsigns. (Both the W5YI-VEC and ARRL-VEC were appointed.) This new procedure eliminated the need for the old FCC Form 610-B, which was used to license ham clubs. See Section 97.5(b)(2).

The Amateur Radio application Form 610 was replaced by an FCC Form 605 which is used by Ship, Amateur, GMRS, and Commercial Radio operators. A separate "schedule" applying to a specific service is attached to Form 605 much in the same manner that the income tax Form 1040 has various schedules that apply to certain people. The amateur service uses Schedule "D" for all license applications, including vanity callsigns.

However, since FCC Form 605 and its schedule "D" do not provide for various license classes and VE exams, the VECs were permitted to make up their own form. This authorization is embodied in the new Part 1.913(f) Rules, which state: "(f) *Applications for Amateur licenses.* Each candidate for an amateur radio operator license which requires the applicant to pass one or more examination elements must present the administering Volunteer Examiners (VE) with all information required by the rules prior to the examination. The VEs may collect the information required by these rules in any manner of their choosing, including creating their own forms. ..."

The VECs agreed to use an internally created single-sheet form they called the "NCVEC Form 605." It contains all the information needed to be collected by the new ULS and VEC System. It was designed to be very similar to the FCC Form 610 to minimize confusion caused by the transition from Form 610 to the new Form 605.

The NCVEC Form 605 may also be used to renew amateur licenses, to update addresses, or to request a new sequential callsign. It is important to know that this is an internal VEC form and may not be sent to the FCC. The NCVEC Form 605 must be presented to a VE or forwarded to a VEC for handling. The FCC will still accept the manual filing of paper documents, but you must use its version of the Form 605 and its associated Schedule "D."

Providing Social Security Numbers

One of the first steps in getting ULS going was for the FCC to register the Taxpayer Identification Number (TIN) and associated callsigns of all applicants and licensees in all radio services. It was a monumental job. For individual ham operators, the TIN is their Social Security Number (SSN). Some ham clubs are incorporated and use their Employers Identification Number (EIN) instead.

The collection of TINs is a federal requirement imposed on all U.S. government agencies by the Debt Collection Improvement Act of 1996, not just the FCC. This information is sent to the Treasury Deptartment and used to identify entities who have outstanding debts owed to the federal government and to assist in collection. The FCC runs every application it receives against a so-called "red light" database of delinquent entities to which "federal benefits" are denied until payment arrangements are made.

There has been considerable controversy within the amateur community

about the legality of U.S. Government agencies requiring the submission of an SSN in order to obtain a ham ticket. Section 7(a)(1) of the Privacy Act of 1974 (Public Law 93-579, December 31, 1974) provides: "That it shall be unlawful for any Federal, State, or local government agency to deny to any individual any right, benefit, or privilege provided by law because of such individual's refusal to disclose his social security account number." But the next section (Sec. 7(a)(2) adds "...the provisions of paragraph (1) of this subsection shall not apply with respect to—(A) any disclosure which is required by Federal statute." Congress later passed the Debt Collection Improvement Act of 1996 and it was signed into law as Public Law 104-134.

The primary purpose of the Debt Collection Improvement Act of 1996 is to maximize collections of delinquent debts owed to the government at minimum cost. This measure marked the beginning of federal efforts to collect delinquent debts, which totaled over $100 billion.

Registering Your Social Security Number

Applicants and licensees are required to register their TIN with the Commission. The FCC pointed out that the DCIA requires collection of applicant and licensee TINs when they "do business" with a federal agency as a condition to receiving governmental benefits, regardless of whether any fees are collected. The DCIA defines a person "doing business with a Federal Agency" as "an applicant for, or recipient of, a Federal license, permit, right-of-way, grant, or benefit payment administered by the agency...."

As of December 3, 2001, every applicant for an FCC benefit had to have an FCC Registration Number. The FRN is the 10-digit identification number assigned by CORES (the COmmission REgstration System) to all entities (individuals, organizations, and corporations) that transact business with the FCC. It must be provided any time an FCC application is filed in ULS. The FRN is generated when an applicant is registered in CORES and there are three ways to register.

1. To register in CORES electronically, point your web browser to <http://www.fcc.gov/wtb/uls> and choose the "REGISTER" link at the top of the page. You do not need to hold an FCC license in order to register with the ULS. Just fill in the blanks. It asks for your TIN, name,

Hams Get New LF Band at WRC-2007

The 2007 World Radio Conference concluded in Geneva, Switzerland on Friday, November 16 with somewhat mixed results as far as amateur radio is concerned. The big news was that a new amateur band at 136 kHz was authorized. However, there were also some disappointments.

World Radio Conferences are held roughly every four years under the auspices of the United Nations' International Telecommunication Union. The purpose of these ITU conferences is to review and update the Radio Regulations—the international treaty governing the use of the radio spectrum. WRCs have been called the "spectrum olympics," since they are the ultimate international recurring team activity.

WRCs are of monumental importance to the amateur radio community, as these meetings constitute the first step towards amending the frequencies that make up the worldwide ham bands. There can be no doubt that our frequencies are ham radio's most valuable asset; without them we have nothing.

The U.S. Delegation consisted of more than 150 government officials and representatives from various high-tech companies and telecom industry organizations. Amateur radio interests were represented by the International Amateur Radio Union, which has official non-voting observer status at World Radio Conferences. The IARU is an international confederation of national amateur radio societies from around the word. It has been the watchdog and spokesman for the world amateur radio community since 1925.

Most of the WRC-07 agenda had little to do with ham radio. Two items that did were Agenda Item No. 1.13, which deals with HF allocations between 4 and 10 MHz (except 7000 to 7200 kHz, which was resolved at the last WRC in 2003), and item 1.15, which proposed a new worldwide amateur low-frequency allocation at 136 kHz.

According to a report filed by IARU Secretary and ARRL CEO David Sumner, K1ZZ, the three biggest amateur radio achievements of WRC-07 were the approval of the new low-frequency ham band, the maintenance of the 7.200 to 7.300 MHz segment of the 40-meter allocation in our hemisphere, and the future possibility of a 15-kHz allocation around 500 kHz.

The new worldwide secondary allocation at 135.7–137.8 kHz has a maximum radiated power limit of 1 watt effective radiated power. This marks the first time that the Amateur Service has had an allocation below the medium-wave broadcasting band. Amateurs must wait, of course, until their own governments authorize the new allocation and there is no guarantee that all countries will implement the new band. History has shown that the FCC rulemaking process can take a couple of years or more, so in the United States access to the new band is not imminent.

The controversy at 7.200–7.300 MHz in ITU Region 2 (the Americas) had to do with the fact that in most of the world (all except the Americas, ITU Region 2) HF broadcasting (HFBC) is allocated to this segment. Some administrations wanted 7200–7300 kHz in our hemisphere re-allocated to HFBC. Also, European (CEPT) interests wanted changes to allow for an increase of 350 kHz in HFBC with a footnote for administrations to allow the Amateur Service to use 5.260–5.410 MHz on a secondary basis with a radiated power limit of 250 watts.

There was no support for additional HFBC spectrum, and ultimately CEPT agreed to the majority view for "no change" between 4 and 10 MHz, effectively ending chances for a worldwide 5-MHz amateur allocation at this conference. Furthermore, the ITU nations had little interest in taking up HF issues at the next WRC, so a 5-MHz allocation is not on the drawing board. (Note that this has no effect on the existing U.S. 60-meter band, which has five channels at 5 MHz. However, it means that there will not be a worldwide ham allocation on these frequencies anytime soon.)

A bright spot was the inclusion of a tentative agenda item for the upcoming 2011 WRC "to consider an allocation of about 15 kHz in parts of the 415–526.5 kHz band to the Amateur Service on a secondary basis, taking into account the need to protect existing services." For most of the 20th century, 500 kHz was the international maritime Morse Code distress frequency. In 1999 it was vacated by the maritime service, which had moved all emergency communications to satellites.

—Fred, W5YI

address, telephone/fax number, and e-mail address. All applicants must provide a U.S. mailing address; the FCC will not accept foreign addresses. The telephone number, fax number, and e-mail address fields are optional, and any information that is provided in these fields will not be made available to the public.

The address and contact information you have entered in CORES registration will not be automatically associated with your license. Once you have registered in CORES, you must return to ULS and associate any existing callsigns you have with your new FRN. You will find a link to do this at the bottom of the online CORES registration form.

In order to access ULS and file applications in the future, you will need your password. Passwords are either automatically assigned by the CORES registration system or by the applicant during the registration process. Your password should be between 6 and 15 characters (letters and/or numbers) and is case-sensitive.

You must also select a "Personal Security Question" from a drop-down list that allows the user the ability to change his or her password without contacting FCC Support staff. You can choose from question such as "your mother's maiden name," "your favorite pet's name," and "city of your birth."

Your FRN and CORES password are very important since they are the keys that unlock the Universal Licensing System. You can't file an application or license modification in ULS without them.

Applicants who had their FRN and password assigned by CORES are notified of this information by letter. If you know your FRN, but don't know or have lost your password, contact WTB Technical Support by telephone at (877) 480-3201 and they will assist you.

2. You may register manually by using a paper TIN Registration form, FCC Form 606. This can be obtained from the FCC's fax-on-demand system by calling (202) 418-0177 from the handset of a fax machine or by calling the FCC's Forms Distribution Center at (800) 418-3676. The FCC Form 606 should be mailed to: FCC, Information Technology Division, 1270 Fairfield Road, Gettysburg, PA 17325-7245. If you register your TIN manually, you must call ULS Technical Support at (877) 480-3201 to obtain a password before you can file applications electronically in ULS.

3. The third way is to have a Volunteer Examiner Coordinator (VEC) automatically obtain your FRN for you as part of the electronic application filing process. All applicants provide their SSN to the VEC System when they are examined, or when a VEC files a license renewal or modification on their behalf. The ULS program registers their licensing information and SSN in CORES and a FRN is automatically generated.

Since 2001, most radio amateurs have been automatically registered (and an FRN generated) when a license application is electronically filed by a VEC. Thus, if you have previously filed an application with the Commission through a VE team or VEC, you have been assigned an FRN and password. The fact is, nearly all licensed amateurs already have an FRN. You can determine what it is by going to any of the online amateur service databases such as <www.qrz.com>.

If you do not wish to provide your SSN to a VE or VEC, then you only have one choice. You must pre-register with CORES and get your own FRN before you can be examined or get your license renewed. You then simply use your FRN in place of your Social Security Number on the application form. Applicants who refuse to provide their SSNs to the FCC cannot be examined for a new or upgraded license, nor can their licenses be modified or renewed. In other words, no SSN, no ham license.

FCC rules require that you keep your CORES listing updated by going online to <http://www.fcc.gov/> and clicking on the CORES link on the top left-hand side of the page. Then click on the "Update" link on the next page. You will need both your FRN and ULS password to amend your CORES record.

What is the Status of My License or Application?

You can quickly determine the status of your application through the ULS Application Search or ULS License Search. These search engines require that you input either your callsign, name, or FRN to access your record. Both search engines can be accessed from the ULS home page at: <http://www.fcc.gov/wtb/uls>. It generally takes 24 hours for new information to show up in ULS.

Another very handy FCC website is the ULS Licensing Support Center located at <http://esupport.fcc.gov>. This "one-site-does all" interface assists you in registering FRNs, resetting passwords, searching for ULS application status and license data, associating FRNs with callsigns, and more.

Admittedly, it can be confusing, especially for a newly licensed amateur, to navigate the Universal Licensing System. There are several precise steps that you must carefully follow to change addresses, renew licenses, and apply for Vanity (user selected) callsigns. An easy way is to have your VEC do it for you. Also, you always can get assistance frm the FCC's Technical Support "hotline" by phone at (877) 480-3201, Mon.-Fri., 8 AM to 6 PM ET except federal holidays. 73, Fred, W5YI

Hamming from the Shadows – Part IV

BY DAVE INGRAM,* K4TWJ

Previous columns on "Hamming from the Shadows" (Part I in the September 2006 issue of *CQ*, Part II in October 2006, and Part III in September 2007) brought a surprisingly large response in the form of notes, letters, e-mails, and photos. Apparently, many more amateurs than we realize are living in areas that heavily restrict the use of amateur radio.

Interestingly, our communications work during situations such as hurricanes, wildfires, and tornadoes is widely recognized and appreciated, but staying prepared for emergencies is not always considered necessary by those outside of the ranks of amateur radio operators. Why such strict stipulations? Home-owners associations and/or condominium managers cite television or telephone interference or concern over amateur radio antennas deviating from an area's predefined landscape. Some simply say those are the rules and residents either abide by them or face eviction. After a diplomatic explanation, some realize the benefits of having a ham in the neighborhood and allow the operation—until the first sign of problems. That is when your knowledge of various antenna types and methods for radiating a good signal while minimizing near-in RFI, or "hamming from the shadows,"becomes paramount.

A friendly word to the fortunate warrants mention at this point. If you presently live in a location where you can have big rigs and antennas, feel fortunate and enjoy the privilege, but be aware of the world's ever-increasing population and consequent requirements of more and more people living in small and regimented areas.

Whether due to family growth, new jobs in different areas, downsizing after retirement, or many other circumstances, people move. Depending on where you move, that perhaps is when the new-style subdivisions with CC&Rs galore hit you head-on. Do yourself a favor and plan a strategy for camouflaging or hiding antennas and maintaining a low profile right now. Set up alternate antennas, use them, and compare them with your present antennas before their use becomes mandatory.

More notes and ideas will be included as we continue this discussion. Now let's look at how some hams are turning difficult situations into good times.

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Photo 1– This first-class undercover antenna system devised by Bob Rumsey, KZ5R, almost qualifies for a neighborhood beautification award. The 17-foot SteppIR vertical is installed in the clear area between rows of adjacent homes and complemented with a full set of buried radials and disguised as a flagpole. Note the ultra-clear skyline without trees for supporting wire antennas and closely spaced homes that promote RFI problems. (Photos 1 through 5 courtesy of KZ5R)

Photo 2– An up-close view of Bob's "magic rock" that, as discussed in the text, is a decorative fiberglass enclosure sold to hide outdoor faucets, etc. Bob cut a hole in the fiberglass to pass the vertical through and added small shrubs to produce a neat, natural-looking landscape. The transmission line to the house 40 feet away is also buried.

KZ5R's Magic Rock

Bob Rumsey, KZ5R, is understandably proud of his new home in an "active adult" community of homes spaced close together and numerous

Photo 3– Bob raised the fiberglass rock, propped it up with boxes, and took the photograph to show us his work. The rock hides the SteppIR motor control, feed point, radial connection plate, a base-loading coil Bob added for 40-meter operation, and double coax relays for switching the coil in/out of the line.

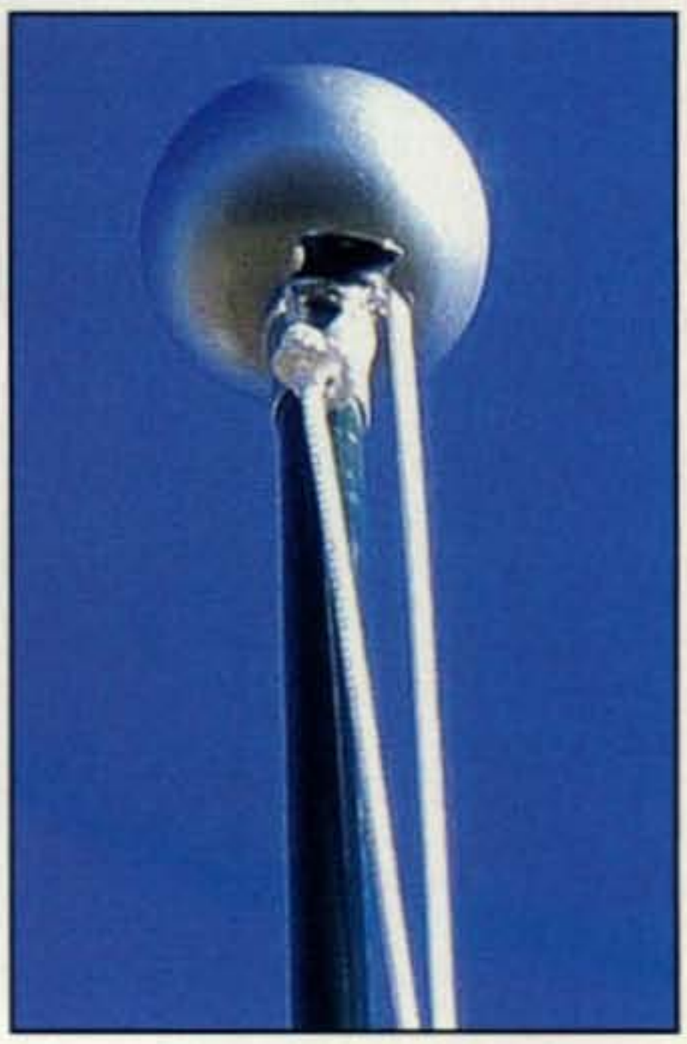

Photo 4– Top view of Bob's SteppIR vertical shows the decorative ball he press-fit on the top plus the pulley for the rope he attached to the pole with plastic cable ties—simple, yet effective.

CC&Rs, but reasonably understanding neighbors (photos 1–5). Everyone in Bob's neighborhood must conform to strict regulations, so he used his ingenuity to develop one of the most clever and stealthy setups we have seen.

Like many new housing areas, Bob's community was cleared of all grass and trees before construction began, and all utility lines were installed underground for a nice, clean look. In addition to eliminating any natural supports for wire antennas, the unshaded area ensured everyone's homes and vehicles would bake in summer heat, experience the full brunt of winter storms, and bolster area economy with big heating and cooling bills. A horizontal antenna below the roofline (so it hopefully would not be discovered) held minuscule appeal, so Bob opted for a 17-foot model SteppIR vertical covering 6, 10, 12, 15, 17, and 20 meters. To that he added a 3-inch diameter B&W base loading coil tapped for

Photo 5– KZ5R in his well-equipped and well-hidden shack. An ICOM 756 Pro transceiver and PW-1 amplifier plus Heil mic and W2IHY equalizer ensure a romping good signal on 40 through 6 meters.

Photo 6– The 6-meter halo and 6-meter/2-meter/70-cm ground plane Don Zelenka, W5AJX installed high in attic of his home. The antennas are approximately 20 feet above ground and have proved their merit by reaching 22 countries plus 270 grid squares. (Photos 6 through 8 courtesy of W5AJX) →

40-meter operation. Two coax relays were included for switching the coil in/out of the transmission line.

The finishing touch to Bob's antenna installation was a fake boulder protecting the vertical's base area from renegade lawn mowers, weed wackers, and strangers in the night. These decorative boulders are available in several shapes and sizes, come supplied with hold-down stakes, and are available at <www.dekorraproducts.com>; click on "Rock Enclosures" and browse. Bob used a #102 boulder which stands 25 inches high and weighs 8 pounds. He trimmed a few inches from the bottom for a better appearance, cut a hole to pass the Steppir vertical through the top, and used a split piece of hose from a washing-machine connection to protect the fiberglass boulder's opening.

The SteppIR vertical is located approximately 40 feet from Bob's back patio, and its coax feed line routes through an approximately 140-foot path to the shack. Bob wanted to install isolation baluns at both ends of the feed line to minimize coax radiated interference but could not find items to fill his particular needs. He turned to homebrewing them, and they worked so well that he now has a home business making the baluns. Drop Bob an e-mail at <rrumsey@att.net> for details (or for answers to questions on his setup).

In further exchanging notes with Bob, I learned his IC-756 Pro III and IC-PW1 amplifier running at 800 watts initially produced some RFI on a stereo, a pair of computer speakers, some cable TV channels, and a touch-on/off lamp. The neighbors allowed Bob to install toroids and clamp-on ferrites on speaker leads and AC power lines, and the interference was eliminated.

How are the ICOM and SteppIR working out for Bob? He is quite happy with the setup, and in less than a year of operation between travels he has made contacts all over the world. Jolly good show, Bob. You truly turned lemons into lemonade!

Photo 7– Don put his yard's privacy fence to good use in obstructing the neighbors' view of his vertical whip on the Outbacker Outpost mount/ground coupler. A quick step into the yard lets him swap whips to change bands. The red mini-windmill makes a nice decoy for inquisitive eyes. Again notice the clean skyline and exclusion of trees or utility lines in this highly restrictive community.

What's in Your . . . Backyard?

Another stifled but still enthusiastic amateur surviving in a CC&R community is Donald Zelenka, W5AJX (photos 6, 7, and 8). The restrictions on Don's area are typical of what we are noticing in many places—harsh, uncompromising, and relentless. Any changes made to the exterior of the house and its surrounding property must first be submitted in writing and approved by the neighborhood architectural committee. Tree branches must be cut to a specific distance from the ground, the front door must be stained or green in color, garbage cans can only be put out during certain hours, outdoor lighting must conform to set guidelines, grass must be cut often, and no antennas visible from the street are allowed.

Photo 8– Don's indoor setup is akin to a ray of sunshine on an otherwise rainy day. Three ICOM IC-7000s serve admirably for operating VHF, UHF, and HF on SSB and digital modes.

When Don moved in, he bought some small outdoor lights for his wife and placed them in a front flower bed to get the XYL's opinion. The association patrol spotted the lights the very first evening, and Don received a letter stating the lights must be positioned closer to the ground and that he had not asked permission before placing the lights. Heads up, friends. This is a real-life example. Home-owners associations watch new arrivals like hawks and demand they walk a line even Johnny Cash would have difficulty negotiating. Sometimes the peer pressure subsides when another new arrival moves into the neighborhood; sometimes it continues indefinitely.

Since the roof of Don's house is 22 feet above ground at the peak, he installed a Comet GP-15 for 6 meters, 2 meters, and 70 cm, plus a KB6KB 6-meter loop high inside the attic. In this case, the roof serves as a sort of wood-and-shingle radome protecting the antennas from view. Don's backyard is protected by a privacy fence, so he installed an Outbacker "Outpost" vertical antenna mount and ground-coupling tripod, and he uses a group of Hamstick-type whips for HF operations.

How "air worthy" is the setup? At last check, Don had worked China on 20 meters using the Hamstick-type/ Outpost antenna setup and an IC-7000. Further inquiries revealed he has worked around the world on 20 and 15 meters, has 22 countries and 270 grid squares confirmed on 6 meters (with those attic antennas), and also enjoys working PSK-31 on HF. Who knows? Don next may put up a 16- or 20-foot dish for moonbounce disguised as a backyard pool with radome cover. What the committee doesn't know doesn't hurt it, right?

Ideas Abound

In reflecting back on the low-profile setups of KZ5R and W5AJX, we can only say that lessons are everywhere. Just stop, look, and think. If you did move into a restrictive community with underground utilities, how would you select an antenna location to minimize RFI? Look for power meters or telephone junction boxes on pedestals. Check for cable-TV distribution boxes on concrete pads. Associated lines typically are routed between backyards of houses facing different streets so they can be serviced without digging up front yards, concrete streets, or driveways. Note the proximity of a planned antenna location to neighbors' houses and their

Photo 9– Operating the OSCAR satellites in a "now you see it" (antennas, that is), "now you don't" manner is a snap with Arrow Antennas' popular hand-positioned 2-meter/70-cm Yagis mounted on a camera tripod. Antennas are available from <www.visradio.com>.

utility pedestals while visualizing wires hidden within walls. Whenever possible, strive to install your antenna at least 25 feet from such areas. Look at roof peaks, chimneys, weather vanes, and trees (if higher than 7 feet). Would a thin wire or blue-gray insulated antenna hung with clear fishing line strung between such supports disappear against the sky? Remember the old adage: If horizontal antenna height is not available, go vertical.

Looking at the backyard and privacy fence at W5AJX, we see Don is well situated to also enjoy OSCAR satellite activities with a camera-tripod-mounted Arrow antenna. The secret is preparing and prearranging cables indoors so you just walk out, set the tripod with antenna in position, place a lawn chair with table and rig beside it, and use manual/hand tracking for simplicity. I have also heard of some amateurs having good success on OSCARs using satellite antennas pointed out apartment or condo windows—provided, of course, the satellite's path/position is line of sight with the window. Yet another idea is leaning a metal extension ladder against the house roof. Home owners are admired for maintaining a roof, right? Where's the antenna? You guessed right: It's the ladder coax fed at the bottom to produce a quarter-wave vertical.

Conclusion

We are running out of space for this month, but we must emphasize the importance of continuously maintaining a low profile to complement any and all shadows-type setups, and the most important time to avoid any problems is the first year you are in a new dwelling. Check to ensure your signal is not detectable on neighbors' TVs, toasters, stereos, garage-door openers, etc. Remember snap-on toroids designed to keep RF energy within your operating range—HF or VHF, for example, are proven viable quick fixes for all types of interference—generated by your setup or received on your setup. Keep your chin up, enjoy your life in amateur radio, and watch for more "hamming from the shadows ideas" coming in Part V next month.

73, Dave, K4TWJ

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SS-12	10	12	1⅜ x 6 x 9	3.4
SS-18	15	18	1⅜ x 6 x 9	3.6
SS-25	20	25	2⅞ x 7 x 9⅜	4.2
SS-30	25	30	3¾ x 7 x 9⅜	5.0

MODEL SS-25M

DESKTOP SWITCHING POWER SUPPLIES WITH VOLT AND AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SS-25M*	20	25	2⅞ x 7 x 9⅜	4.2
SS-30M*	25	30	3¾ x 7 x 9⅜	5.0

MODEL SRM-30

RACKMOUNT SWITCHING POWER SUPPLIES

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25	20	25	3½ x 19 x 9⅜	6.5
SRM-30	25	30	3½ x 19 x 9⅜	7.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M	20	25	3½ x 19 x 9⅜	6.5
SRM-30M	25	30	3½ x 19 x 9⅜	7.0

MODEL SRM-30M-2

2 ea SWITCHING POWER SUPPLIES ON ONE RACK PANEL

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25-2	20	25	3½ x 19 x 9⅜	10.5
SRM-30-2	25	30	3½ x 19 x 9⅜	11.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M-2	20	25	3½ x 19 x 9⅜	10.5
SRM-30M-2	25	30	3½ x 19 x 9⅜	11.0

MODEL SS-12SM/GTX

MODEL SS-10EFJ-98

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EF JOHNSON AVENGER GX-MC42
EF JOHNSON GT-ML81
EF JOHNSON GT-ML83
EF JOHNSON 9800 SERIES
GE MARC SERIES
GE MONOGRAM SERIES & MAXON SM-4000 SERIES
ICOM IC-F11020 & IC-F2020
KENWOOD TK760, 762, 840, 860, 940, 941
KENWOOD TK760H, 762H
MOTOROLA LOW POWER SM50, SM120, & GTX
MOTOROLA HIGH POWER SM50, SM120, & GTX
MOTOROLA RADIUS & GM 300
MOTOROLA RADIUS & GM 300
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SS-10MG, SS-12MG
SS-101F, SS-121F
SS-10TK
SS-12TK OR SS-18TK
SS-10SM/GTX
SS-10SM/GTX, SS-12SM/GTX, SS-18SM/GTX
SS-10RA
SS-12RA
SS-18RA
SS-10SMU, SS-12SMU, SS-18SMU
SS-10V, SS-12V, SS-18V

*ICS – Intermittent Communication Service

weekender

BY PHIL SALAS,* AD5X

Minimizing RFI in Your Home and Shack

RF energy floating around in your home can cause all sorts of problems with the RF-immunity-insensitive appliances that are common today. In addition, you can wind up with operating problems in your ham gear when RF is present on your control, DC-power, and coax cables. RF problems can occur at the typical 100-watt power levels used by most of us, and as we increase power, these problems become more prevalent.

What causes RFI in the home and shack? One problem is RF coming back into your home on the coax transmission-line shield. This is usually caused by antenna/feedline imbalance, such as feeding a balanced antenna with an unbalanced line. However, I believe that the major RF-in-the-home problem is due to the high-energy fields that can occur due to close proximity of your antenna to your home and higher power operation. Since many hams live on small city lots with antennas relatively close to the house, and 30 percent of hams use an HF amplifier at least occasionally (according to a recent ARRL poll), you can see why the RF environment may be very high. Therefore, this month we'll look at simple things I've done to minimize RFI in my home and shack. Maybe some of these ideas will help you as well.

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e-mail: <ad5x@cq-amateur-radio.com>

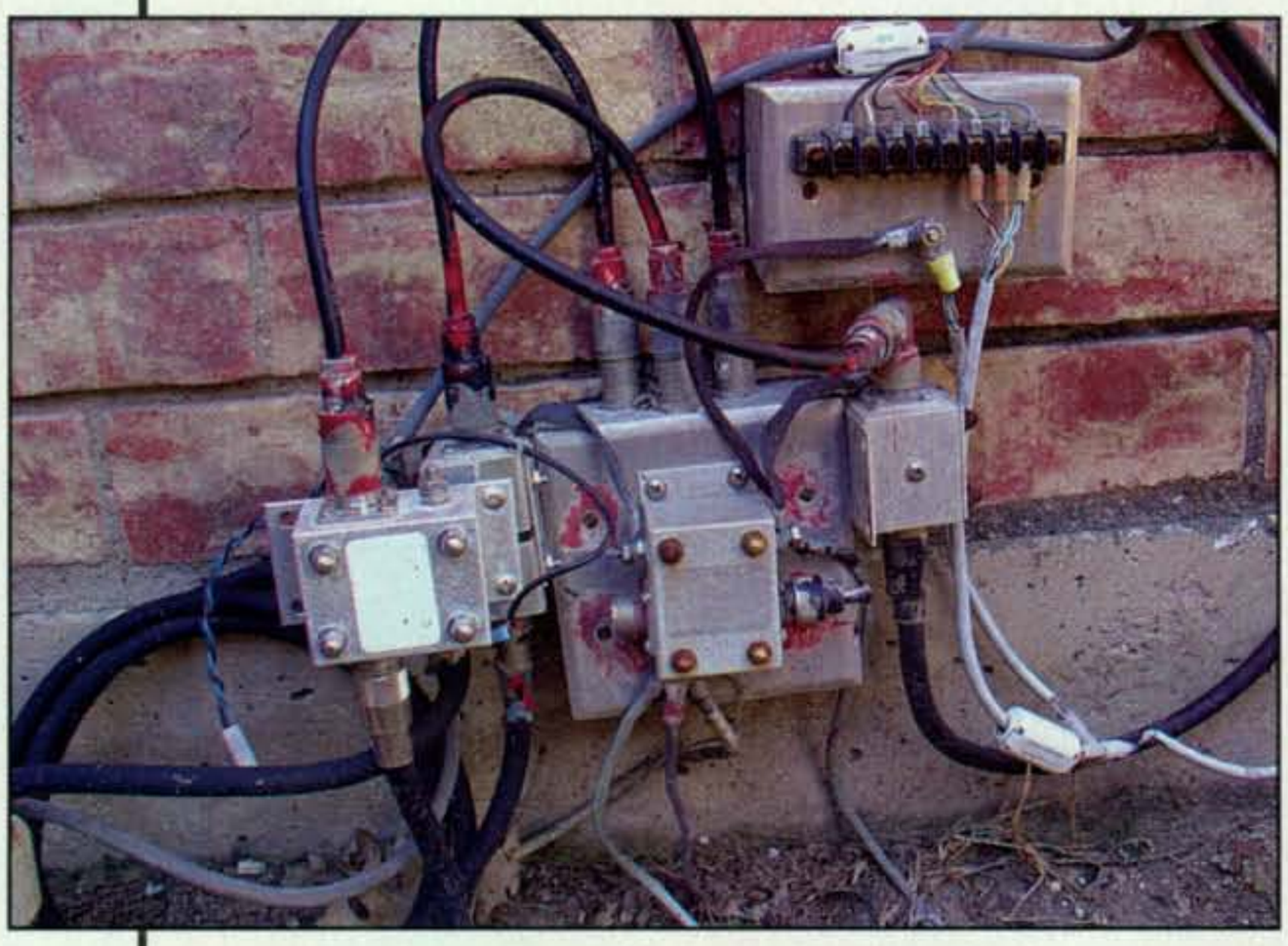

Photo A– The author's outlet box used as a coax-entry panel. On it are mounted three HF 50-MHz ICE arrestors in line with the coax feeds and one VHF-UHF ICE arrestor (center, not used). It's ugly, but it evolved over time! The box in the upper right is a homebrew DC and rotator surge suppressor. (Photos by the author)

Photo B– The modified Astron SS-25 power supply with snap-on ferrite and MFJ-1106 distribution unit.

To begin with, you should have an entry panel where your coax enters the house. This entry panel should provide AC ground, RF ground, and lightning protection for your antenna feed-throughs coming into your home. For my entry panel, I used a 4" × 4" outside outlet box with an aluminum cover; it contains my coax interfaces and lightning-suppression devices, as can be seen in photo A. Three UHF coax feedthrough connectors connect to a separate ICE 303/U 1.8–50 MHz lightning surge suppressor. In the upper-right section of the photo you can also see a homebrew lightning/transient suppressor I built for my DC and rotator control wires (an ICE 348B may be a better choice for you). There is a six-gauge copper cable connected to the aluminum box, which then connects to a buried ground-rod/radial system. This same ground is also tied to my home entry AC ground (as required by NEC code) using six-gauge copper wire.

Inside my shack I have a 4" × 4" outlet box mounted in the wall with three feed-through UHF coax connectors mounted on the aluminum face. Short coax cables connect between the inside and outside boxes. The inside outlet plate also serves as my single point ground—i.e., all individual pieces of equipment in my shack have their own ground wire connecting directly to this single point. A single-point ground system helps to eliminate RF ground loops in the shack. However, you still have those pesky coax cables and RCA cables (and more) running between all your equipment, which can still lead to RF ground loops. Therefore, I place snap-on RF chokes on all DC and control cables in my station, and RF isolators at my transceiver and amplifier outputs. I use inexpensive snap-on chokes with several different inside diameters available from All Electronics. The idea is to wrap several turns of the cables and control wires through the snap-on chokes, so different ID chokes are used to accommodate diameter differences in small wires and cables. I recommend starting with ten each of the snap-on ferrites shown in the accompanying parts list.

Description	Source	Price each
0.28" ID Snap-On ferrite	All Electronics FB-67	10/$10
0.40" ID Snap-On ferrite	All Electronics FB-62	10/$10
0.50" ID Snap-On ferrite	All Electronics FB-70	10/$10
RF Isolator	Array Solutions EB-1	$45
Lightning Arrestor	ICE 303/U	$46

All Electronics: <www.allelectronics.com>
Array Solutions: <www.arraysolutions.com>
ICE: <www.iceradioproducts.com>

Table I– Suggested parts for solving RFI problems.

The main power supply in my shack is an Astron SS-25. I modified my SS-25 to bring out an Anderson PowerPole-terminated cable which wraps through one of the snap-on ferrites. The cable then terminates in a MFJ-1106 for power distribution. Photo B shows my power supply hook-up. Photo C shows other cables with snap-on ferrites.

While the above techniques generally minimize RFI problems in the shack, how about other electronic devices in your home? I had RF getting into my telephones and intercom system when using my amplifier. Also, the problem was bi-directional, as I also had RF hash from the switching power supply inside my powered sub-woofer in my home entertainment center almost wiping out 30 meters! The answer again was to use RF snap-on ferrite chokes. I added one snap-on choke with at least two turns of cable to each telephone cable right at the telephone. Then I added snap-on chokes to the cable entering each intercom speaker in my home. Finally, I added RF snap-on chokes to the AC and coax cables on my powered sub-woofer. The result? I can now operate with my 600-watt amplifier with no problems using either my vertical antenna located about 30 feet from the house, or my rotatable dipole mounted about 10 feet above the roof. The 30-meter RF hash from my powered subwoofer is also gone.

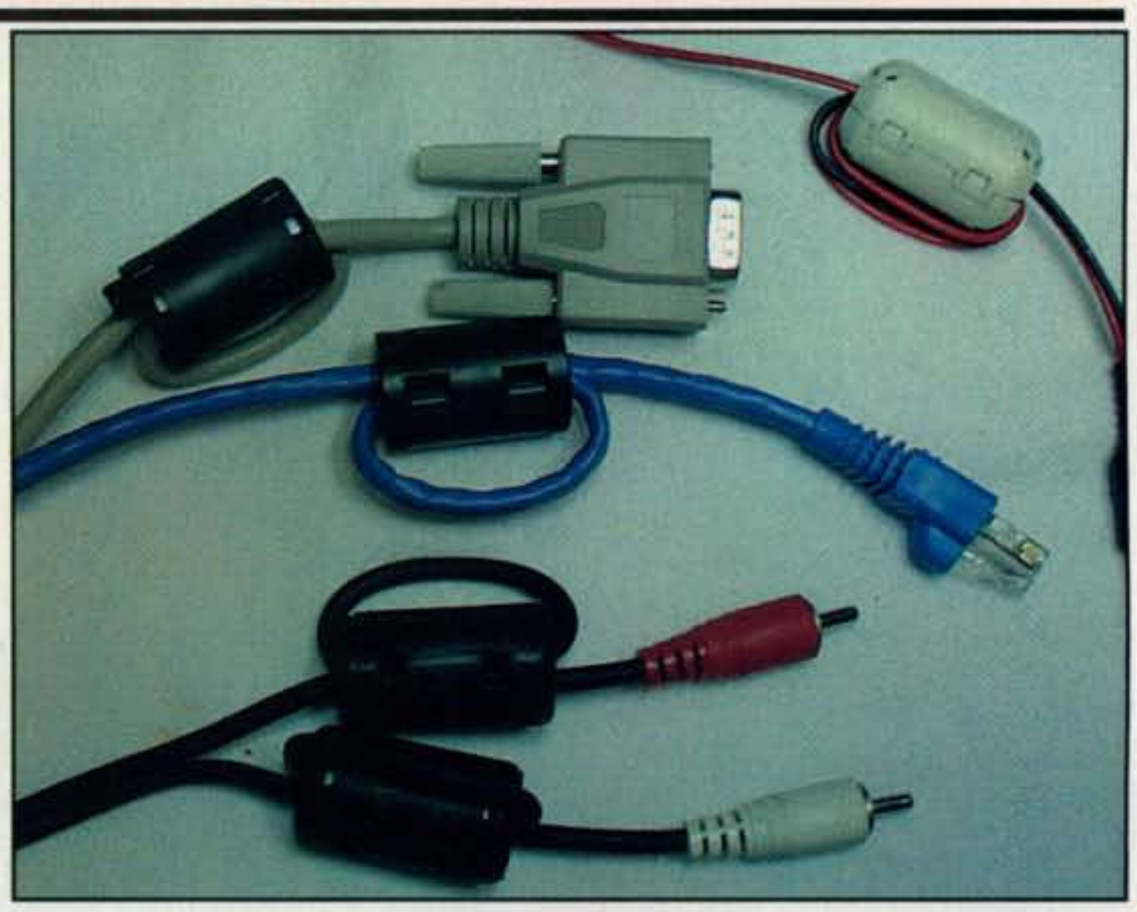

Photo C– Other cables with ferrite snap-ons. This solves a lot of RFI problems!

Will these ideas solve your RFI problems? This will vary based on power levels, the proximity of your antenna(s) to the house, and the specific electronic devices in your home. However, these ideas will almost certainly reduce your problems—hopefully to a manageable level. Until next month . . .

73, Phil, AD5X

digital connection

BY DON ROTOLO,* N2IRZ

PSK31: DigiPan Hints & Tips

The middle of the cold, cold winter is upon us here in the north, and as long as you don't have any antenna work to do, snuggling next to a warm radio is probably the best way to spend your time, even though radios used to be a lot warmer! Put a nice computer next to it, and you have an unbeatable pair, almost as good as a pair of 6146 transmitting tubes.

This month we'll be taking a closer look at DigiPan and some of the time-saving and handy things you can do with this very popular PSK31 software. If you're a regular user of DigiPan, you may know about some of this, but our friends who are newer to the mode may still be puzzled about PSK31 and how to "do this." Instead of a walk-through of how to set it up (I've written about that before, most recently in the June 2007 column) I want to take a look at some of the less obvious tips for working this mode. (*Note:* The following refers to DigiPan 2.0, which has some significant advances over earlier versions. If you're working with 1.anything, go to <www.digipan.net> and download the latest version. It's free.)

Finding a Signal

The first thing is to find a PSK31 signal. It is a quite popular mode, so this shouldn't be too difficult, but it helps to know what you're looking for, and where and how to look. My personal favorite is 40 meters: There's a watering hole around 7070 kHz where there always seems to be plenty of activity. In general, look near the upper half of the CW portion of the band.

If you're trying to find a PSK31 signal, you need to use your eyes as well as your ears. As you tune across the band at about 2 kHz per second, listen for tones rising or falling in frequency (depending on which direction you are tuning), and as those tones reach a moderate frequency (maybe 1 kHz, wherever you stop after first hearing it), pause in tuning for a split second to look at and identify the signal on the waterfall display. You can see and hear Morse code pretty easily, and birdies in the receiver (in my shack, caused by the computer) show up as fairly pure tones, represented by a single solid line. PSK31 has a warbling quality, which I compare to ultra-fast Morse code. On the screen, you see a pair of lines, separated by just a fraction of an inch (corresponding to 31 Hz), that are either very clean or a bit wobbly. Other modes are wider and have a distinct pattern to them.

Once you've decided what kind of signal it is, you can either move on (not PSK31) or tune it in carefully and see who it is. You can also turn off the speaker at this point, since hearing the signal won't add any benefit after you've found it.

Once you find a signal, tune it in by left-clicking on it with the mouse. The little diamond at the top of the waterfall window will slide over to the audio frequency where the mouse is pointing, and DigiPan will start to decode it. As an alternative, you can press the right- or left-arrow key, and DigiPan will tune over to the next signal it finds if it is strong enough.

Multi-Tasking

If you find yourself in a part of the band with multiple PSK31 signals, you can toggle into and out of multi-channel decoding mode by pressing F12. In this mode, the main signal you're decoding (and the frequency on which you'll transmit) is indicated by the diamond, and the text appears in the single-channel text box (at the upper left), while the text decoded from each of the other signals on the display appears in the multi-channel box, one line per signal, at the upper right. To change to another signal, you can also click on the line in the multi-channel box; this copies the text over to the single-channel window and moves the diamond marker.

One neat feature is the ability to double-click a callsign in the single-channel window (this does not work in the multi-channel window). This captures the callsign so it can be used with the macros and in the log.

Before we get into the macros, let's look at some of DigiPan's lesser known features, such as the alert system. While you're monitoring, DigiPan will change the color (which you select) of a line in the multi-channel window if it detects a certain text string (which you also select), such as a CQ call. You can set this in the Configure/Colors/ Multi-channel menu.

Another feature is the ability to bookmark specific signals in the multi-channel display. From the

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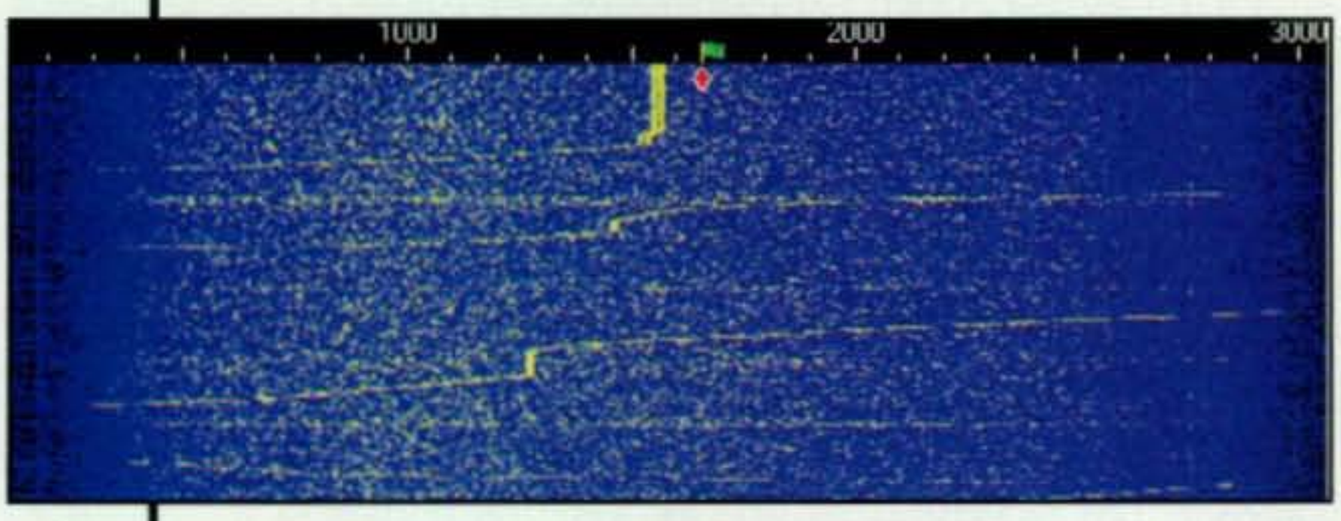
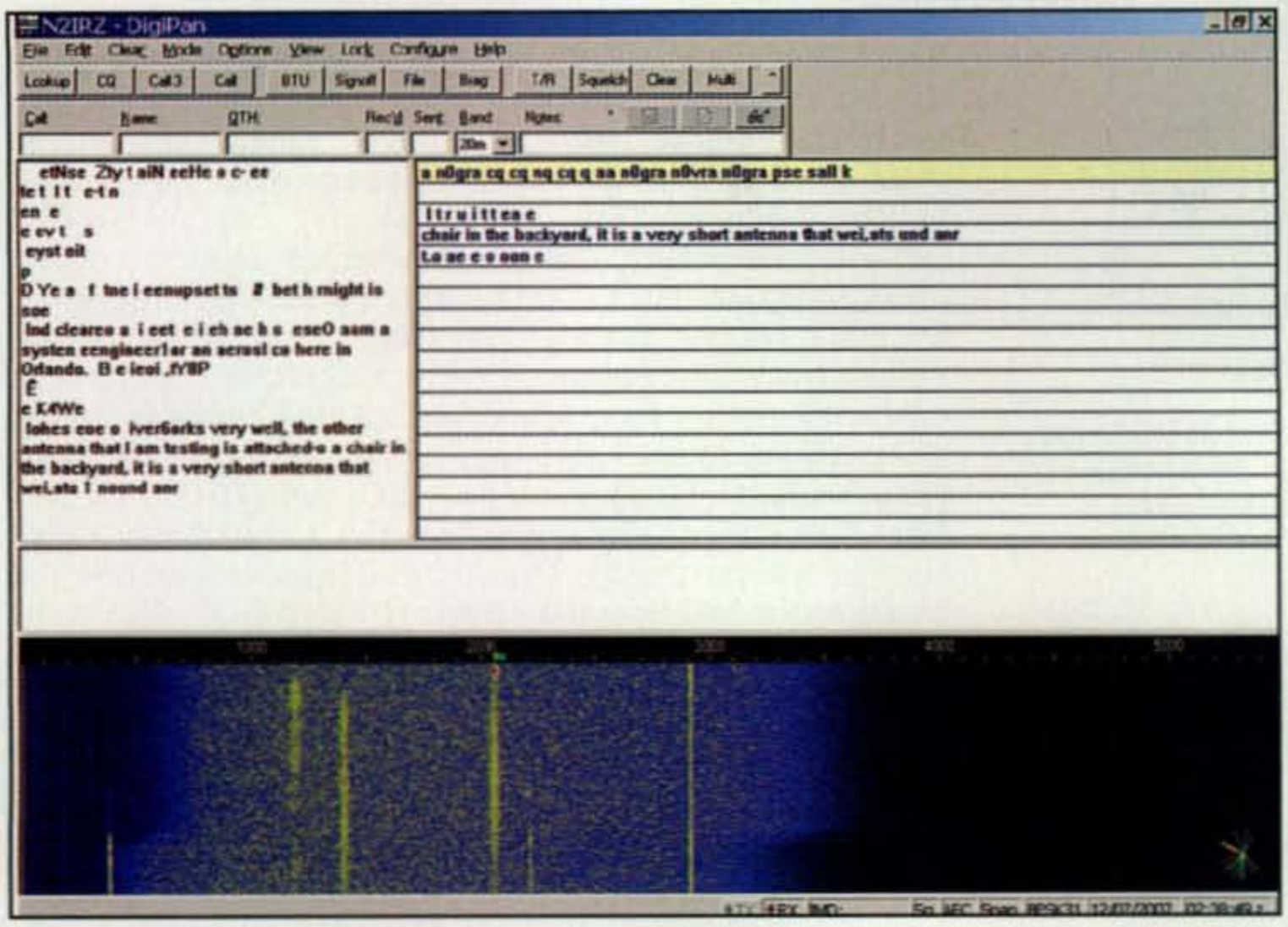


A close-up of the DigiPan waterfall display. As I was tuning across the band, I paused for each signal of interest until I found a PSK31 signal. The diagonal lines show when I was moving across the band listening for signals, and the brief vertical "jump" is when I paused for a fraction of a second to see what the signal was.



The DigiPan main screen showing the Single-channel window at the upper left, the Multi-channel window at the upper left (with the CQ message alert active), the waterfall display showing multiple weak signals at the bottom, and the (empty) transmit buffer window in the middle.

View menu, select Bookmarks so it is checked. Then if a signal is interesting, right-click it on the waterfall display to add a marker that corresponds to the display line. This can get a bit messy at times, so use it carefully and don't be afraid to switch it off. Bookmarks disappear automatically after a few seconds of inactivity. Their duration is configurable using the Configure/Multichannel inactivity timeout menu.

You can also set markers to appear at up to five specific frequencies on the waterfall display, using the Configure/Markers menu. This places thin red lines at the selected frequencies on the waterfall display.

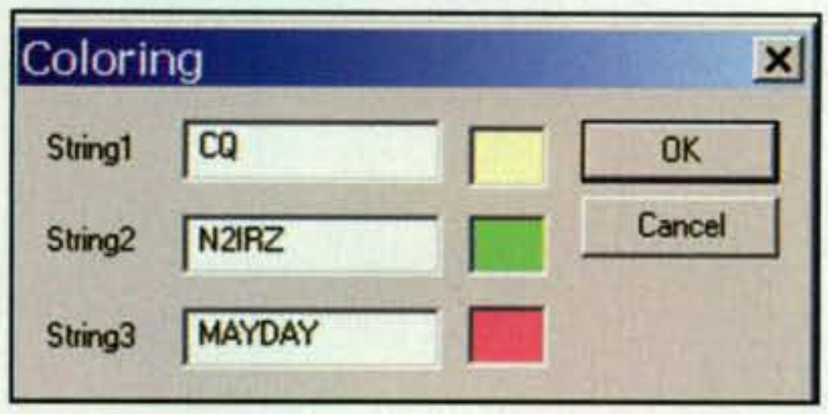
DigiPan also has a built-in logging feature. Although not quite contest-quality, it's more than adequate for keeping track of casual QSOs. Double-clicking what looks like a callsign drops it into the callsign field, and double-clicking what looks like a name drops that text into the name field. As you use the macros, the text from these fields can be included, which saves a lot of time. Saving the entry puts it into the log, and you can search the log for a callsign or enter notes about the entry.

Macros are probably one of the most useful features of DigiPan. If you're like me, you can type about 15 words per minute, using two or three fingers. If it weren't for macros, I'd be transmitting PSK31 so slowly it would almost be painful to read. Think about it: PSK31 sends at about 3 characters per second, which translates to roughly 30 words per minute, about twice as fast as I can type. Now, if *you* can type that fast, you're all set, but for the rest of us hunt-and-peck folks, those macros are a lifesaver.

There are 24 macros that can be set up in advance, and whenever you press the corresponding macro key, that text is dropped into the transmit buffer. There are buttons in DigiPan you can click on, and these correspond to the F keys at the top of your keyboard. Twelve of the macros are the straight F keys, and the other 12 are accessed by also holding down the <CTL> key.

The most powerful part of the macro feature is the variables that can be used to customize what is being sent. For example, you can drop in your own callsign, the other station's callsign, the other fellow's name, a dozen more variables, and a few dozen commands. Together these make for a powerful control system, relieving you of the burden of most of the mundane typing.

For example, let's say I want to create a macro to call CQ. I go to the Configure/Fn macros menu and select F1. This means my CQ macro will fire every time I press the F1 key (even if I'm not ready, so I have to be careful my fat fingers don't accidentally mash the keys). In the macro edit box, I first type in the label I want to appear for this macro



The text-string-alert configuration window. I have mine set to to identify CQ signals, my own callsign in case someone is calling me, and mayday calls. Both the text string to react to and the color used for highlighting can be configured.

– CQ – and then I enter the macro itself. I enter the command to switch into Transmit mode, then the text I want to send, and finally the command to switch off the transmitter and enter receive mode after clearing text from the receive window. My macro looks like this:

<TX>CQ CQ CQ DE <MYCALL> <MYCALL> <MYCALL> pse K <RXANDCLEAR>

The text for <MYCALL> is configured in the Configure/ Personal Data menu (along with my name and QTH).

There are several common and useful macros you can define. To buy yourself some time, build a brag sheet, listing the basics of your station. To simplify the end of a transmission, a "BTU" (Back To You) macro can send your callsign, the other station's callsign (taken from the log entry window), sign the QSO back to the other station, and go back to Receive mode. Once you've finished typing your regular message, just mash the right Function key and sit back while the software handles the transaction.

I also have a New Call macro, which is used to respond back to a station calling CQ (sending my callisign three times, the other station's twice); a Call macro, which is almost the same as New Call, but sends each callsign only once (to start off each time I send some text, but not start Transmit mode); a Signoff macro, which I use to end a QSO (I always thank the other fellow by name for the QSO, send 73 and my callsign, then end the QSO with SK); plus some shortcut keys such as one that toggles Transmit and Receive, and one that clears all the text from the screen.

Once you invoke a macro, that text (and any included command) is dropped into the transmit buffer, which is a type-ahead buffer. This means that text (and commands) in the buffer is sent (or executed) as fast as the transmit speed allows (about 3 characters per second), but you certainly can type whatever you want into the buffer as fast as you like. If you're quick, and there's enough text in the buffer, you can even click and edit inside the buffer until it actually transmits those characters.

One of my techniques is to wait for the other fellow to start transmitting. I hit the Call macro, which pops his and my callsign into the TX buffer, and then I read what he is typing and type out my own response while still receiving his message. Once the conversation is signed over to me, I toggle into Transmit mode and the text already in the buffer starts to go out. By that time, I'm almost finished typing in my response to his last few words. When I'm done, I hit the BTU macro to sign the QSO back over, and then sit back and relax.

Even though I can only type about half as fast as PSK31 can send, this technique ensures there's almost always something in the TX buffer that's ready to go out. That way, the other fellow doesn't have to sit and wait as my message comes through one character at a time. I get to have an actual ragchew (instead of just sending my brag sheet) and can make the other fellow believe that I can actually type. Learning something about the other fellow, or the town or county where he or she lives, is the most interesting part of amateur radio for me. Sure, the details of your station are also interesting, but not as much as the history of where you live, or what you do for a living, or… well, you get the idea.

One last thought: If you want to get a copy of DigiPan, a Google search will reveal the "official" download page, several mirrors of that site, and several thousand sites for help and other information. The software, along with virtually any sound-card interface and a radio, is all you need to use this exciting digital mode (and many others).

D-Star D-Lay

In my December column I promised that we'd be looking at D-Star high-speed digital data, as well as an encryption application called CryptoUP, written by Paul-Adrian Braissant, HB9CUF. However, due to scheduling difficulties that did not work on in time for deadline. Fast digital data has always been a passion of mine, and when I had the opportunity to test-drive an ICOM ID-1 D-Star compliant radio, I dove at the chance. Although I promised we'd discuss what I found this month, time schedules and deadlines didn't work out, so that discussion will have to wait for next time.

73, Don, N2IRZ

BY JEFF REINHARDT,* AA6JR

The Mobile "Secret"

In the real estate business the value of a property is described as being linked to three things: "location, location, location." In ham radio, particularly in mobile operations, the degree of success enjoyed when transmitting and receiving is dependent on "antenna, antenna, antenna."

Turn It Down!

Very often hams equate the ability to communicate with the need to use the maximum amount of available power to transmit. *I* know, because I was among them. One day I stepped out of my car, where I had been engaged in a conversation using the maximum output of my VHF mobile radio, in this case 50 watts. It then occurred to me that I was able to continue the conversation by picking up my HT and maintaining full contact through the repeater using "just" 5 watts, or one-tenth the power I had been using moments before.

Shortly thereafter, I began to experiment with how little power was needed to maintain a good contact into the repeaters I usd. I was pleasantly surprised that in most instances the minimum power settings of my mobile radios and hand-held transceivers were more than adequate. In the case of the HT, I also enjoyed longer battery life, and not surprisingly, the radio did not get uncomfortably warm. Of course, too, there is the FCC rule that says we should use the *minimum* amount of power necessary to maintain a contact. What really drove the point home for me was finding I could use a 300-mw "pocket radio" to hit a repeater 12 miles away with full quieting.

I have also used HTs in rental cars, in many instances also using a magnetic-mount antenna, with excellent results. Therefore, if your headlights dim each time you transmit, consider trying less power. If that doesn't do the job, you can always increase power again, but I'd be more inclined to investigate the antenna system for problems such as bad coax, poor ground, or other issue. If your mobile has a good antenna and coax, and it's well grounded to the vehicle, you're well on the way to achieving successful communications.

Using Brush Guards as an Antenna Mount

Let's take a look at nice installation and a few antenna options.

Rick Leyton, WB6WFH, is a long-time friend and experienced operator. He's also a professional mechanic with the desire for his vehicles to look and operate their best. Rick sent a note and some photos that demonstrate how well a hand-held radio that's not much bigger than a mobile microphone can be used to work repeaters with ease, provided it has a good antenna system:

I spent about a year using my Kenwood TH-F6 hand-held in my SUV before deciding to do the deed and install an antenna on the outside. I knew one thing: I didn't want to drill any holes in it.

Waiting at a stop light one day, another 4 Runner pulled up next to me and I noticed it had brush guards mounted over the tail lights. It struck me that an antenna could be mounted on them and that would do the trick. All I'd have to do is make a mount to hold my Diamond CR320A antenna.

I was disappointed that the guards mount into the plastic tail light rather than using the tail-light mounting as I had thought. I used two 3/4- inch clamps (used to ground electrical equipment to water pipes) to support the angle iron I used to support the antenna itself. The grip of the clamps wasn't quite tight enough for the support I needed, so it was necessary to shim them up with some aluminum strips. An empty soda can did the trick. The angle iron I used measures 1 1/2 inches on each side and I cut it to 1 1/2 inches wide. I also drilled and threaded an 8/32 hole to use for my grounding wire, which was necessary, since there was no grounded metal counterpoise for the antenna without it.

I scraped away a little paint from around the hole in the body where the tail-light stud mounts. Here I attached the other end of the ground. The resulting VSWR was very good on all three bands (under 1.5 to1).

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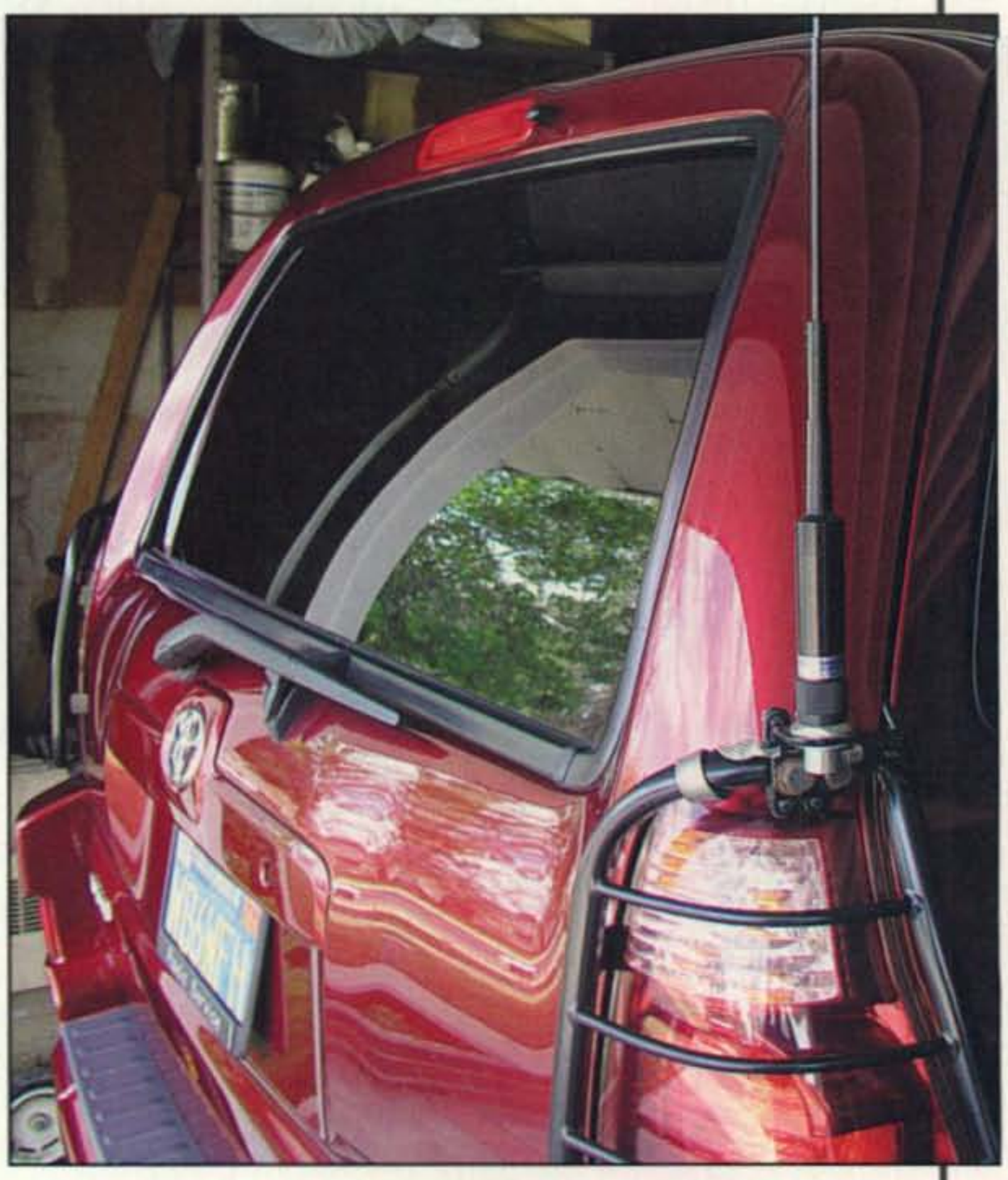
e-mail: <aa6jr@cq-amateur-radio.com>



Rick, WB6WFH, saw accessory "brush guards" as a means to achieve an effective "no holes" antenna installation. While somewhat expensive at $150, they are attractive and useful as a light-duty antenna mount. (All photos courtesy of Rick Leyton, WB6WFH)

Close-up of the mount and ground braid.

Detail on how the coax and ground braid were routed into the SUV and the secure ground connection, making a weather-proof contact with the vehicle's body.

Using Kenwood's cigarette-lighter adapter I am able to use the TH-F6 on long trips without worrying about using up the HT's battery. The adapter also charges the battery while the SUV is in use. Since the radio is about as big as the microphone on my old TM-631, it bridges the gap created by the inadequate mounting real estate of the 4 Runner's dashboard.

Now for an HF installation! I've seen HF antennas mounted on a trailer hitch. Maybe sometime before I retire...

Speaking of HF...

Over the years, we've written extensively about the popular "screwdriver" HF antennas that seem to work so well. One problem with that particular antenna configuration is the total weight of the antenna system, which can be several pounds.

As mobile operators, we must also take into consideration wind load at freeway speeds, the ability of doors and hatches to clear the antenna, and long-term exposure of the mount to weather, including corrosive road salt in many areas of the country. We also have featured many different ways to mount heavier antennas, and quite often they have provided a showcase for folks who are gifted at metal work (or at least they have a friend who is)

At last year's Dayton Hamvention® I came across a vendor displaying the REP Design LLC UHAM-100, which literature described as a "Universal Heavy-duty Screwdriver Antenna Mount." The UHAM-100 bolts to trailer hitch or to a truck bumper. Although it looks sturdy, I have not tried the product, so don't take this as an endorsement. However, if you want to investigate this potential solution a bit further, you can visit the website <www. repdesign.us>. I found the website a bit awkward to negotiate, but as the old prospectors used to say, "You have to do some mining to find some nuggets."

Operating Tips

I live relatively close to Malibu, California, where since last fall there have been three major wildfires that threatened life and destroyed a number of structures in their path.

While I did not have a direct role in the responses to those fires, it was quite helpful to monitor the communications of the local ham repeater as well as many of the public-safety response agencies. You may recall the communications van we featured in our last column (November 2007 issue); it was quite busy during those fires. Also fascinating is the air traffic control that goes into managing the movements of fire-fighting helicopters and fixed-wing aircraft making water drops.

Many modern mobile and hand-held transceivers receive public-safety and aircraft frequencies. You may find it useful to pre-program a number of those frequencies into your transceiver on unused memory channels. It's not only useful in an emergency, it's another way to derive more value from your investment in radio equipment. I'll pass along the caveat that some jurisdictions may not look kindly on your monitoring police frequencies while mobile, so be sure to check the regulations for your area before programming your unit.

You may also want to consider programming the various National Weather Service frequencies (162.55, 162.40, etc.) into memories. They're very useful especially if you travel or live in an area where weather conditions are volatile, which is many areas of the country.

Some time ago we published CB frequencies for each channel and suggested that HF mobile operators program those frequencies into their units. I have found it useful to monitor the "trucker chatter" when sitting in a traffic jam of unknown cause. We received several notes of thanks for that suggestion, and that feedback is appreciated. It's nice to know we hit one over the fence now and then!

Photos are on the Way, Right?

Once again I'm out of photos to share with *CQ* readers on that great installation you have in your car, SUV, or unicycle. Please send to me hi-resolution digital photos and a brief description of your installation, along with any tips and tricks that others may find useful.

Also, as hybrid cars and SUVs come into wider use, I'd love to hear from anyone who has experience installing a mobile radio system in one of those vehicles. Thanks and Happy Mobiling!

73, Jeff, AA6JR

qrp

BY DAVE INGRAM,* K4TWJ

Mini Rigs in Tins and Cans, Ten-Tec's Argonaut V, and more

Life in the QRP lane continues to flourish, and small homebrew rigs such as the Tuna Tin 2, ATS, and other one-board treats that fit atop small cans or squeeze into Altoids® tins are especially popular. Bob Chapman, W9JOP, is a shining tribute to that fact. He recently achieved Worked All States using an original tuna-can-based Tuna Tin 2 on 40 meters for 48 states and a square-box Tuna Tin 2 to work Alaska and Hawaii on 20 meters (photos 1 and 2). This guy likes the Tuna Tins so much that he built four of them—three for use on 40, 30, and 20 meters, and one packaged with a mating receiver for stand-alone operation on 40 meters. Now that's what we call milliwatting to the max! We understand Bob recently added an Index Labs QRP Plus transceiver to the mix, so he can now step up to 5 watts and run with the big guys.

Photo 2– Bob, W9JOP, proudly holding the round-can and square-case Tuna Tin 2s he used with his 51S-1 receiver and G5RV antenna at 50 feet to work all Sstates with a scant 250 milliwatts of power. (Photo courtesy of W9JOP)

Mini Rigs, Maximum Fun

Next in the QRP spotlight are two Spartan Sprinters running some really unique mini rigs: Phil Specht, K4PQC, and Dennis Payton, N9JXY. Before focusing on their gear, however, we should tell you more about the Spartan Sprints.

These two-hour operating events are sponsored by The Adventure Radio Society and are held from 0200 to 0400 UTC on the first Monday of each month. Incidentally, that time translates to 9 to 11 PM Eastern Standard Time, so the mini contest is actually on Sunday evening.

The Adventure Radio Society's purpose is to encourage the development and use of lightweight gear for outdoor hamming in a trail-friendly manner. Indoor setups are also welcome in Spartan Sprints; the only stipulation is that entrants limit their power to 5 watts maximum. Sprint activity usually centers around popular QRP frequencies such as 7.040 and 14.060 MHz, so listen and give it a go. You need not be a member of A.R.S. to participate in the sprint, although membership is free and includes access to the society's on-line newsletter, the "Sojourner." More details can be found at <www.ARSQRP.com>. Checkout the site and scroll through some of the contest results and photos. They are fascinating.

The Spartan Sprint has two categories of entry: a "Tubby" division for heavy rigs (final scores are related to the number of QSOs) and a "Skinny" division in which final scores are determined by the ratio of contacts to station weight. That weight, in turn, includes all equipment between the operator and the antenna connector: the transceiver (in a case), key or paddle, earphones, power supply or battery(s), etc. That is where small "pocketable"

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e-mail: <k4twj@cq-amateur-radio.com>

Photo 1– The "total QRP" setup Bob Chapman, W9JOP, used for Working All States with milliwatts of power. the receiver is a Collins 51S-1. The unit below it and atop the MFJ tuner on the left is a combination receiver and Tuna Tin 2 for 40 meters. the unit to its right is an SMK1 surface-mount kit transceiver. The three items to the right of the tuner are a round-can and two square-boxe Tuna Tin 2 transmitters. Stated mathematically, that's "Tins Times Four." (Photo courtesy of W9JOP)

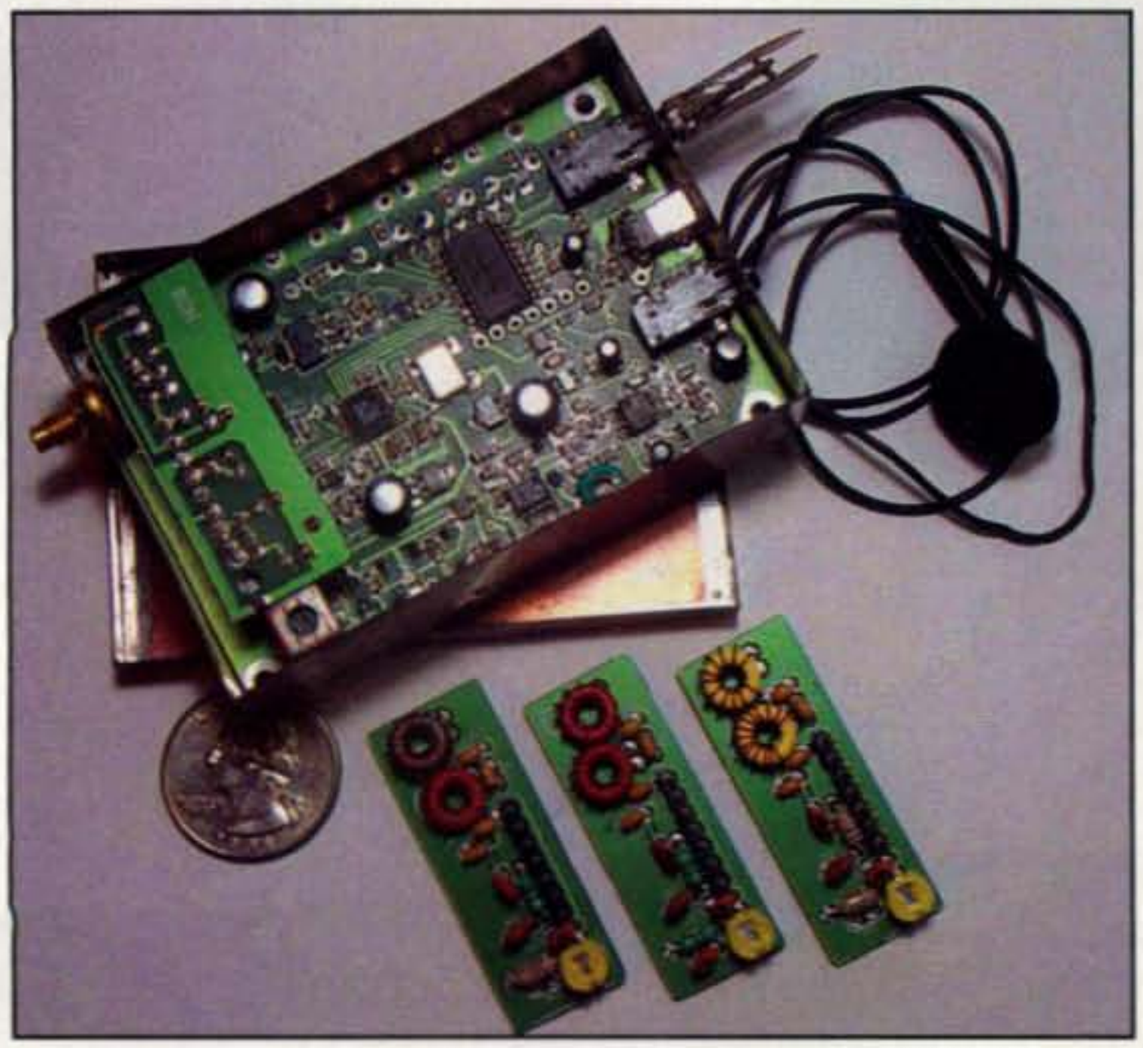


Photo 3– Phil Specht, K4PQC, gives us an inside view of his contest-winning Spartan Sprint rig, an ATS III mini transceiver built from a KD1JV kit. The bottom view shows some of its tiny surface-mount components. The rig's four pushbuttons for operation are installed on the top side of the board (their 16 solder pads are visible on the upper left board area). A paddle and earbud complete setup. (Photo courtesy of K4PQC)

HF rigs folks nicknamed "Spartan Sprinters" enter the picture. The lighter equipment's weight, the higher the score (assuming a fair number of contacts, naturally).

Both Phil, K4PQC, and Dennis, N9JXY, use "AT Sprint III" mini transceivers built from kits sold by Steve Weber (www.kd1jv.qrpradio.com). Phil enclosed his rig in a homebrew case made of PC-board material. To that he added a small PC-board-type paddle, earbud earphones, and three flat Lithium Polymer (LiPo) cells for 11.1 volts. The total weight of this tiny superstation as measured on an official weighing station at the Roswell, Georgia post office is a scant 2.4 ounces—and that includes paddle, phones, and batteries (photos 3 and 4).

Dennis, N9JXY, modified his AT Sprint III for optimum pushbutton positioning and mounted the rig in an Altoids tin (photo 5). He then added a new label for a classy look and built a tiny twin-lever paddle into a 3.5-mm stereo plug to mate with the ATS III. As a final touch, he fitted a battery plus storage rack for extra band modules in a second tin that attaches below the main/top tin. The completed setup (photo 5) is truly a work of art.

The previously mentioned AT Sprint III kit mini transceiver is quite an interesting little gem. It is contained on a 3-inch by 2.2-inch PC board that fits snugly in an Altoids tin and has a fair number of surface-mount components, so some skill is required for assembly. It covers 80 through 17 meters using plug-in modules (supplied), has a superhet receiver with four-pole crystal filter, 600-Hz audio filter, AGC, RIT, XIT, CW keyer with three memories, and pumps out 4 watts with 12 volts DC power, 2.5 watts at 9 volts, and 800 milliwatts at 5.5 volts. The rig/PC board only weighs one ounce and draws 35 ma of current on receive. All transceiver functions, including frequency tuning, keyer selections, etc., are accessed by four on-board pushbuttons. Weber's supply of ATS III kits is

Photo 4– Here is the full K4PQC Spartan Sprint station, complete with flat Lithium Polymer (LiPo) battery rocking an official weighing scale in the Roswell, GA post office at 2.4 ounces. The little rig has RIT, XIT, CW keyer with memories, and pumps out 3.5 watts with its 11.1-volt battery. (Photo courtesy of K4PQC)

Photo 5– Dennis Payton, N9JXY, mounted his ATS III rig in an Altoids tin and made a new label for the lid. He also modified the pushbuttons' positions for easy access with the lid closed, built a dual-lever paddle into the 3.5-mm plug, and added a second snap-off bottom tin to hold batteries and band modules. Three watts in a pocket. Nice! (Photo courtesy of N9JXY)

Photo 6– This "go-anywhere" setup of Andy Kabaskalian, WB2WZC, is perfect for Spartan Sprints, but its main attraction is the shirt -pocket-size (3 inch by 5 inch) waterproof logbook. It is made with synthetic paper, you can write on it with a regular pencil or ballpoint pen, and it stays clean and wrinkle free—even in the rain or snow. Details can be found at <www.waterprooflogbooks.com>.

Photo 7– The Argonaut V continues Ten-Tec's long tradition of producing high-performance gear for QRPers. It delivers up to 20 watts output on all bands and modes from 160 through 10 meters, has every operating feature imaginable built in, and its software-defined design permits quick and easy field upgrades for state-of-the-art compatibility with future evolutions in amateur radio. (Photo via Ten-Tec, Inc.)

running low, but considering its popularity we suspect he will produce a few more or replace them with an upgraded version soon. Again, check details at <www.kd1jv.qrpradio.com> for the latest news.

While writing about ultra-light and trail-friendly gear in this month's column, I received and checked out the new waterproof log books available from Andy Kabasakalian, WB2WZC, and must say they are quite impressive (photo 6). A waterproof log book? Yes, and it is ideal for camping, mobiling, boating, and biking in rainy or damp environments. As a "does it work?" test, I used a regular ballpoint pen to fill a sheet with dummy QSO data. Then I accidentally-on-purpose spilled water on the log, left it a minute, and wiped off the water with a knit shirt. The sheet came dry without wrinkles or smudges, and the writing stayed perfectly intact. Here is a log book you can use anywhere—even outdoors in the rain—drop in a shirt pocket, open up a couple of days later, and it will still be fresh as new. Nice! Questions? You can e-mail Andy at <asamail@ptd.net>.

Ten-Tec's Argonaut V

As many of our readers are aware, we strive to help newcomers "come up to speed" by occasionally including mini-reviews and information on commercially produced low-power transceivers. By knowing what is available and what the rigs offer in performance and frills, you can then make a logical buying decision and join the QRP action on the spot.

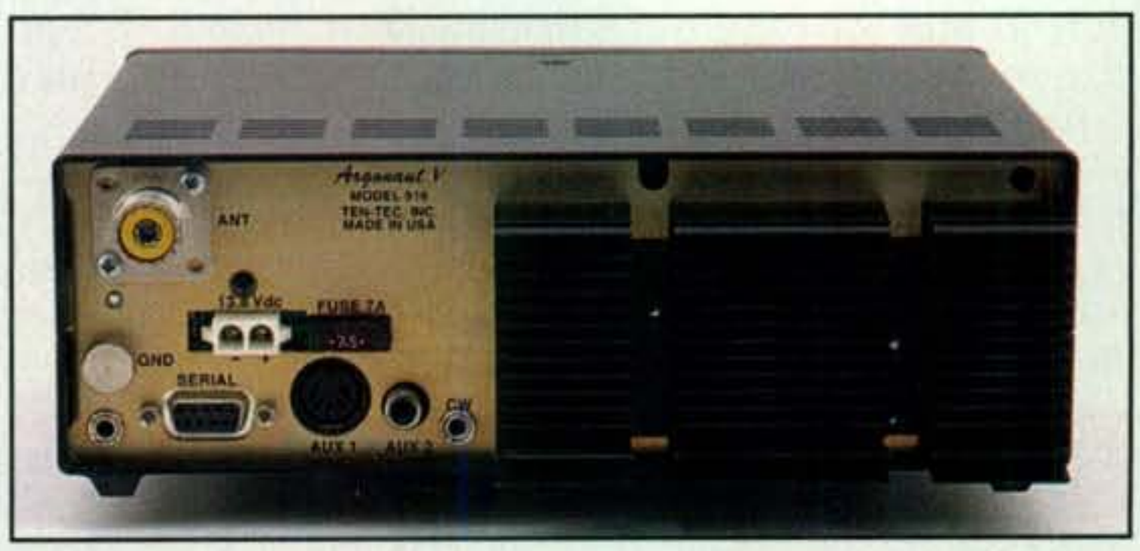


Photo 8– Rear view of the Argonaut V with its optional dual cooling fan kit installed on the heat sink. This little gem is set for non-stop hamming supreme! (Photo courtesy of Ten-Tec, Inc.)

This time we spotlight the neat little Ten-Tec Argonaut V (photos 7 and 8).

This transceiver is the latest model in a long line of Argonauts first introduced as the tan-case and loaf-of-bread-size 505 Argonaut in 1971. The Argonaut V operates 160 through 10 meters; receives 500 kHz to 30 MHz; works CW, SSB, AM and FM; and CW/SSB output is continuously adjustable from slightly less than 1 watt to 20 watts. Some folks may consider that as "QRP and a bit more," but I feel the extra power margin saves it from huffing and puffing to pump out a solid 5-watt signal. Having the extra power available when and if it is needed is also a good thing. The Argonaut V measures 2.75"H × 8.5"W × 9.75"D and weighs 5 pounds, so it is more of a home/portable (and mobile?) rig than a backpack or camping rig. It sports dual VFOs with split operating capability, RIT, XIT, 35 built-in DSP IF filters for bandwidths of 200 Hz to 2800 Hz (plus 4, 6, and 15 kHz) for voice modes, plus high-stability TCXO and direct PSK-31 plug-in compatibility.

Being a Ten-Tec rig, the Argonaut V naturally is set up for top-of-the-line CW action with smooth-as-silk full break-in operation. Add to that a built-in keyer, variable CW offset with tracking side tone, the latest factory change of optional dual rear cooling fans, and you have a rig that won't quit. If you are a serious CW operator and appreciate a small QRP rig with big-rig flair, Ten-Tec's Argonaut V could be the perfect answer. For more details visit <www.TenTec.com> or telephone Ten-Tec at 1-800-833-7373.

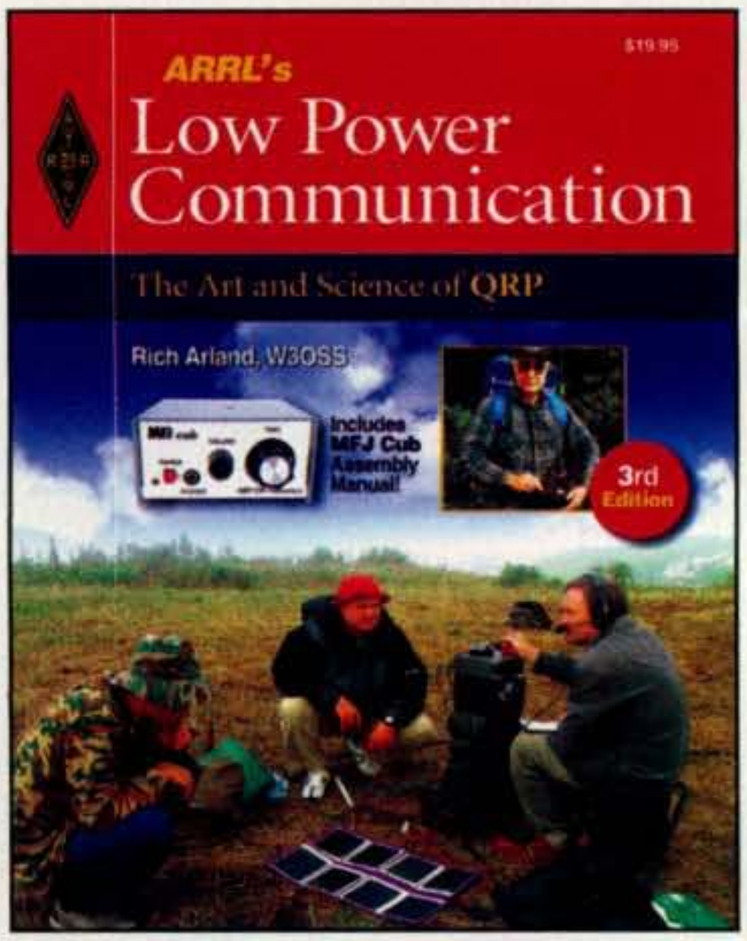


Photo 9– The updated/third edition Low Power Communications *book, written by Rich Arland, W3OSS, contains a lot of good information, including details on military radios ideal for in-field QRP activity. The book is also available bundled with a 40-meter MFJ Cub kit transceiver. (Details in text.)*

Bundled QRP

CQ's sister magazine *Popular Communications*' "Homeland Security" columnist Rich Arland, W3OSS, recently completed a new/third edition of his *Low Power Communications* book (photo 9), and it features some interesting points worth mentioning here.

First, the book is 50 percent updated with expanded chapters on antennas, emergency communications, the QRP workbench, and vintage radios. A creditable amount of information has also been added on collecting, restoring, and using military radios, which, as Rich explains, make cool QRP rigs. This opens some exciting possibilities for in-the-field, grab-'n-go QRPing and HF packing, as military radios are rough and ready units capable of working under rather extreme conditions.

Probably the most unique aspect of Rich's book is that it may be purchased alone or bundled with an MFJ 40-meter "Cub" transceiver kit—both at a fair and square price. The Cub is a nice jacket-pocket-size rig with superhet receiver, crystal filter, VFO, and hefty 2-watt transmitter. The Cub's manual (which is included in Rich's updated book) describes how to swap/substitute power-amplifier transistors for 3 and 4 watts output. I made the "mid-range mod/substitution to my (20 meter) Cub. I've worked 20 or so countries with it, use it mobile occasionally, and can say first hand it is a fun little rig. More details on the book bundle are available at <www.arrl.org/catalog>; details on the Cub specifically are available at <www.mfjenterprises.com>.

Conclusion

That fills available space for this time, gang, but remember the real fun of QRP continues nonstop on the air on 160, 80, 40, 30, 20, and 17 meters, and even on 2 meters. Enjoy homebrewing fun mini rigs, but also get in some good QRP QSOs every day. Here's hoping we meet on 40 or 30 meters QRP soon.

73, Dave, K4TWJ

what's new

BY ANTHONY A. LUSCRE,* K8ZT

Quad-Band Compact Rotatable Dipole, Audio Speech Products, and more

This month we include a look at a new quad-band antenna, explore three products in an audio speech products line to enhance our phone operating experience, and present a quick, easy source for customized front panels for any of your projects. In addition, we visit two Amateur Radio Websites of the Month.

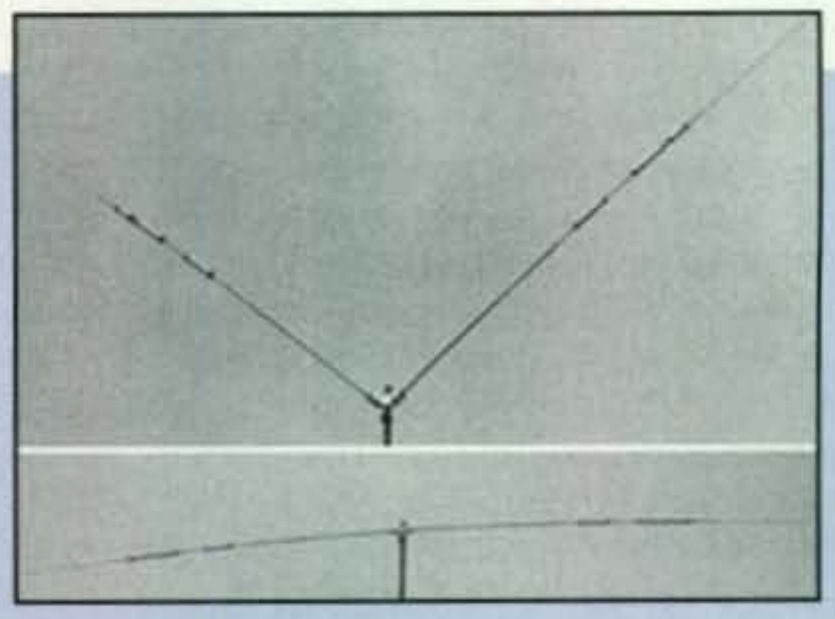


Photo A– Comet Antennas' new model H-422 Quad-band Rotatable Trapped Dipole shown in both the "V" and "straight" configurations. (Photo courtesy of Comet Antennas)

Comet Antennas Quad-band Rotatable Trapped Dipole

Comet Antennas has just released its new model H-422 Quad-band Rotatable Trapped Dipole (photo A). Frequency coverage includes the 40-, 20-, 15-, and 10-meter bands. In order to improve performance, the 7-MHz band is independently tunable, while the 14-, 21-, and 28-MHz bands tune simultaneously to low, mid, or upper band ranges. The resulting feed point can exhibit an SWR of less than 1.5:1 at the chosen center frequencies. The model CBL-2000 2-kW balun with a SO-239 connection is included.

The H-422 accomplishes all this with an assembled length in the "V"-shape configuration of 24 feet 5 inches, and 33 feet 10 inches in the "straight" configuration. Weight is less than 12 pounds. Maximum power is 1000 watts SSB, 500 watts FM.

A mast diameter of 1.25 to 2.5 inches is required for mounting. Once you get the antenna up in the air, it will accept a wind load of 9.9 square feet and maximum wind survival rated of 67 mph. Rotation radius in the "V" shape configuration is 12 feet 6 inches and in the "straight" configuration 17 feet 5 inches.

Construction is of telescoping aluminum tubing with extruded aluminum/stainless-steel mounting hardware included. Three pre-drilled radiator lengths are provided for easy tuning. Comet claims, "with the 'V' shape good performance is achieved at a minimum of 10 feet above ground!" For more information, contact NCG Company, 15036 Sierra Bonita Lane, Chino, CA 91710, or phone: 800-962-2611. You can also visit <www.cometantenna.com> or send an e-mail to <micks@cometantenna.com>.

Three New hamProAudio Speech Products

MFJ Enterprises has introduced three new hamProAudio Speech Products. Do you have two radios but only one keyer, one headset, one paddle, and other accessories? Then the MFJ-643 Single Operator/Two Radio (SO2R) Switch can help reduce the clutter of your operating position and save you money. You only need one microphone, keyer, soundcard interface, iambic paddle, etc.

The MFJ-643 lets you operate two radios with the following accessories: desktop and headset microphones, keyers/keys/paddles, soundcard interfaces, modems, etc. Just set the internal jumpers for the MFJ-393 Professional Boom-Mic Headphones, Heil series headphones, a computer boom-mic, or computer boom-mic headset. Your input source can be a dynamic or electret mic (low or high impedance), stereo or monaural receiver audio, sound card or modem, or key or keyer.

When operating, you get an instant LED visual indication of the transmit audio's path so you know to which radio your audio is being sent. On receive, you instantly can choose among Mix, Radio 1, Stereo, or Radio 2 depending on how you want the audio presented to your headphones. During operation, you have a choice of PTT functions: Use your microphone's PTT switch, a foot or hand

Photo B– The MFJ-644 facilitates operating two radios with one microphone, key, and/or headset. (Photo courtesy of MFJ Enterprises)

*5441 Park Vista Court, Stow, OH 44224-1663
e-mail: <k8zt@cq-amateur-radio.com>*

switch, or the convenient PTT switch located on the front of the MFJ-643. There are also additional inputs, dual outputs for your keyer, and two lines to switch an antenna between radios, key an amplifier, or anything else you want to use them for.

If you want even more features, the model MFJ-644 (photo B) is similar to the MFJ-643, but is enhanced with the UniversalMic Interface. This MFJ exclusive lets you use any mic with any radio. Internal jumpers configure any microphone to any radio. The MFJ-644 gives you three additional input sources: an 8-pin modular (RJ-45) input jack, an 8-pin round input jack, and MFJ's own input 3.5-mm jack. The 3.5-mm jack allows the user to choose audio and PTT functions from the Heil series of Boom-Mic Headsets and also provides a "phantom voltage" on the tip for the MFJ-393 Boom-Mic Headphones or on the ring for a computer boom-mic or computer boom-mic headset.

The third product, the MFJ-653 (photo C) hamProAudio Speech Articulator, "greatly improves transmit speech intelligibility for super punch!" Based on extensive speech research, the MFJ-653 uses optimized frequency shaping to focus the energy in the band of frequencies where speech intelligibility is concentrated. It also removes powerful low frequencies that overwhelm the important high frequencies that carry intelligibility.

You can boost the highly intelligible band of frequencies centered around 2 kHz by up to 16 dB and gently remove the powerful, low frequencies that have little intelligence. The high-pass filters' cutoffs are 1.1 kHz and 500 Hz. Using a SSM-2166 broadcast-industry speech-compression IC, the MFJ-653 syllabic compressor with its adjustable 15:1 compression ratio can nearly double your RF output power with low distortion. A highly effective noise gate (downward expansion) with front-panel level and delay controls smoothly removes annoying background noise picked up during speech pauses. The result? You'll be heard and understood. Powerful, highly intelligible speech gives you a commanding presence that slices through DX clutter! You can use any transceiver, and with its UniversalMic Interface, you can use almost any microphone (high/low impedance, dynamic, and electret) with the MFJ-653, regardless of whether or not the microphone was designed for your particular transceiver. Like the 644, the MFJ-653's microphone input jacks include an RJ45

Photo C– The MFJ-653 allows you to tailor your transmit audio to improve readability on the end of your QSOs. (Photo courtesy of MFJ)

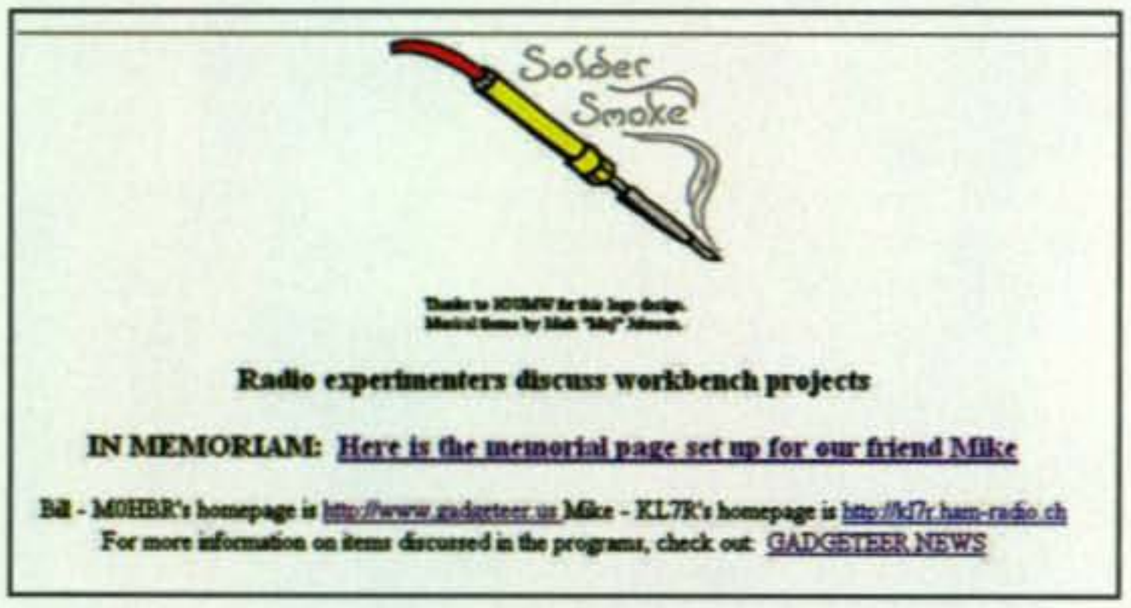


Fig. 1– Screen capture from the SolderSmoke website.

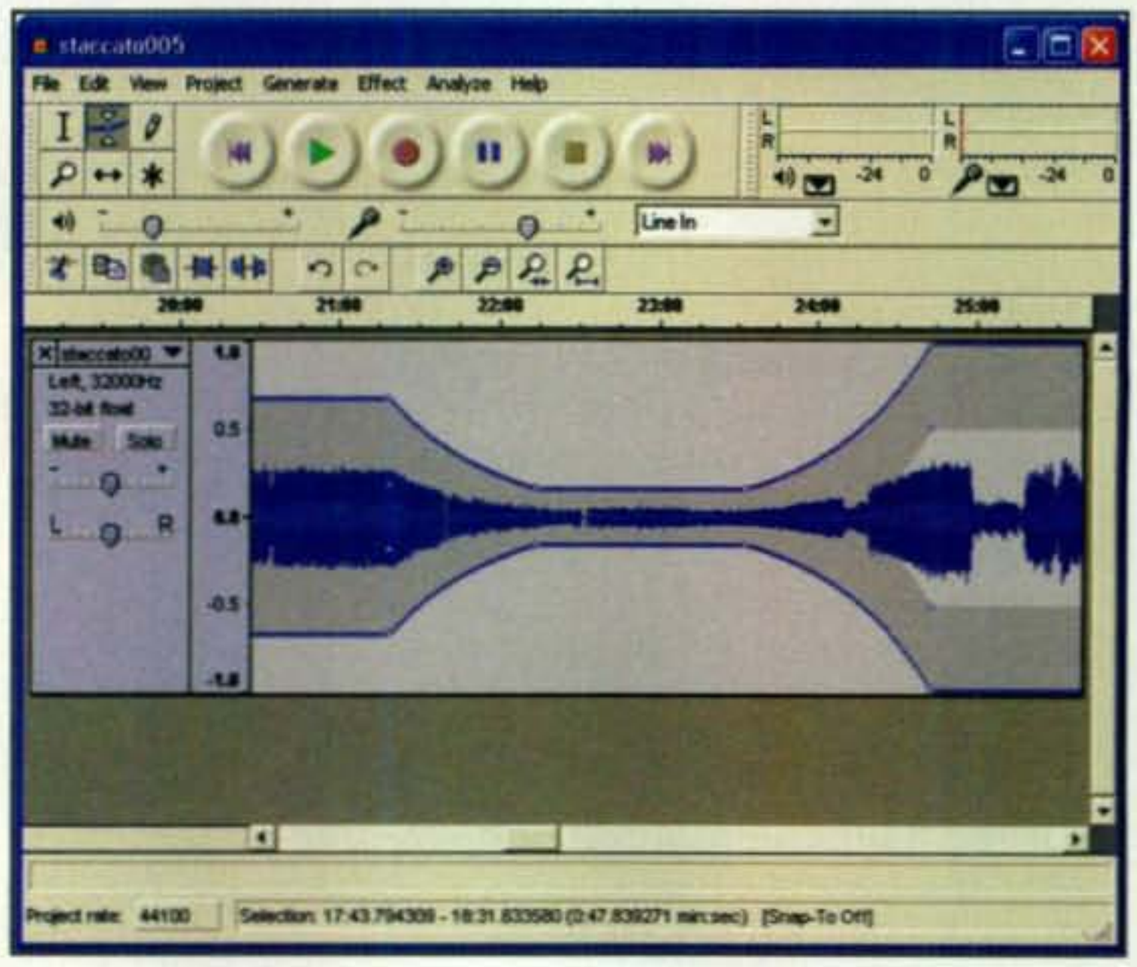


Fig. 2– Screen capture of the Audacity sound recording/ editing software.

modular, an 8-pin round, and MFJ's exclusive programmable 3.5-mm. An adjustable preamplifier lets you use even low-level- output microphones. Its compact size is 5"W × 1 3/4"H × 4 3/4"D. It takes up little room on your desk and is small enough to use mobile. Output cables to connect to transceivers with 8-pin round or 8-pin modular microphone connectors are included.

The MFJ-643, MFJ-644, and MFJ-653 are compact 7 3/4"W × 2 3/4"H × 5 1/2"D units that require 12 VDC for operation. Prices are as follows: The MFJ-643 is $139.95, the MFJ-644 is $159.95, and the MFJ-653 is $149.95.

To order, get a free MFJ 2008 catalog, or for the location of your nearest dealer, contact MFJ Enterprises, Inc., phone 1-800-647-1800, fax 1-662-323-6551, or order directly online at <www.mfjenterprises.com>.

Custom Panels from Front Panel Express

Are you designing or building a project? Forget drilling and the old chassis punches. Front Panel Express can create a professional-looking front panel for you in cost-effective single units or production runs. The company supplies you with free design software, and then you e-mail back a plan and they use modern CNC technology to produce and ship your panel to you.

Other features include a wide range of materials or customization of provided material and automatic and detailed price calculation. You can contact Front Panel Express by mail at 5959 Corson Avenue South, Suite I, Seattle, WA 98108, telephone 206-768-0602, or visit <www.frontpanelexpress.com>.

Two Amateur Radio Websites of the Month

This month's featured site was created by Bill Meara, MØHBR, and the late Mike Caughran, KL7R. The site, SolderSmoke, at <www.soldersmoke.com> (fig. 1), has over 70 podcasts from Bill and Mike. A wide variety of amateur radio subjects are discussed, but the focus is on homebrew construction and design of ham radio equipment. So get out that MP3 player you received for Christmas (or borrow your child's) and load it up with ham radio podcasts to fill your commuting time or down time.

As a bonus site for this month, you will also want to visit <http://audacity.sourceforge.net> (fig. 2). There you can download the free Open Source program Audacity. With Audacity you can then create and edit your own Podcasts. Audacity can also be very useful for recording on-the-air activity, as you can see a graphic representation of the audio and save/edit it.

Wrap-up

That is all for this month's column. Thanks for the feedback e-mails from last month's column and remember that I welcome your feedback, questions, and/or comments. Please feel free to use my e-mail or snail-mail address on the first page of this column. Until next month . . .

73, Anthony, K8ZT

Note: *Listings in "What's New" are not product reviews and do not constitute a product endorsement by CQ or the column editor. Information in this column is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of this column is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.*

BY JOE LYNCH,* N6CL

First ISS Reflection QSO Claimed

On December 9, 2007, Bernd Mischlewski, DF2ZC, and Frank Bosse, DH7FB, completed a two-way CW QSO by bouncing their signals off the surface of the International Space Station (ISS). The following is from Bernd as posted on the Moonnet reflector:

Triggered by Peter, SM2CEW's tries to complete a QSO by using the ISS as a reflector, Frank, DH7FB, and I decided to try that as well. From Peter's experience (and also Frank's when SWLing Peter's tries) we believed it would be worthwhile considering BPSK63, as this would enable us to exchange all information within a few seconds only (using the EME report and QSO rules).

However, with the first tries on 8 December, we quickly realized that the amazingly quickly changing large Doppler makes using this mode impossible. Therefore, we returned back to good old CW, because this is copyable when you are not 100 percent tuned on the signal. The second try was Sunday 9 December at ISS orbit 51845 starting with a common window at 1626 UTC. We copied signals at elevations of >20 degrees and within a minute exchanged all data. Signal reports were about S3–S5 (DF2ZC running only 300 watts out). It was a tough task to follow the quick Doppler changes and also adjust elevation and azimuth rotators. Two hands is at least one too few. This was quite a thrill! Now we are celebrating.

VHF Plus Calendar

Feb. 3	Very poor EME conditions
Feb. 8–10	Orlando HamCation & Computer Show (See text for details)
Feb. 10	Good EME conditions
Feb. 14	First Quarter Moon and Moon Perigee
Feb. 17	Moderate EME conditions
Feb. 21	Full Moon and Total Lunar Eclipse visible throughout most of the Americas, Africa, and Europe
Feb. 24	Moderate EME conditions
Feb. 28	Moon Apogee
Feb. 29	Last Quarter Moon

—EME conditions courtesy W5LUU.

EME DXpedition to Guinea

The following is from Ned Stearns, AA7A, and Mike Fulcher, KC7V, via their website: <http://www.voodoocontestgroup.com/EME_home.htm>:

This marks the second year that Ned Stearns, AA7A, and Mike Fulcher, KC7V, have operated EME in West Africa following the efforts of the VooDoo Contest Group in the CQ WW DX CW Contest. The VooDoo Contest Group had it beginnings in 1986 when three friends from Phoenix—K5VT, KC7V, and N7BG—traveled to St. Thomas, VI with other hams to participate in the CQ WW CW Contest. Their group name, VooDoo Contest Group, was coined by Rob, GM3YTS, in 1995 as they crossed the border between Benin and Togo in West Africa. It is thought that Rob was inspired by a group of voodoo priests whom they encountered while on the road. The team's nickname has become "VooDudes."

Last year, the VooDoo Contest Group started its adventure back in Bamako, Mali, where they operated in the CQ WW DX CW Contest and operated EME as TZ5A in November 2006. The ever-growing pile of contest and EME equipment was stored in Bamako following last year's event, and this year it was time to move the contest equipment and EME stuff to a new venue.

The VooDoo Contest Group selected Conakry, Guinea for its operation in 2007 as the next stop, since it put the operation at a place in Africa where they could get good, low-angle propagation out over the Atlantic Ocean. They had been breathing dust for a few years, and the idea of a seaside operating location was somewhat appealing. Once they arrived in Bamako on 15 November 2007, they gathered their things from storage, added some new hardware, and put it all in a bus and took a 900 km trip across the two-lane (sometimes), pot-holed roads of West Africa.

After the two-day bus ride to Conakry, they assembled the HF contest station over the next several days. As a last-minute change to the plan, they had finally been issued the more desirable callsign 3X5A for both HF and VHF operation. The 2007 CQ WW DX CW Contest effort was a big success with nearly 15,000 QSOs and 40 million points scored. On Monday morning following the DX contest, the entire HF station was disassembled and packed up ready to go back into storage until 2008. And then, the EME station was quickly assembled for four days of operation by AA7A and KC7V. Mike and Ned completed 125 EME QSOs combined on both JT65b and CW modes.

New Discoveries about the Northern Lights

NASA's fleet of THEMIS satellites has made some surprising new discoveries about outbursts of the Northern Lights and the source of their power. Findings include giant magnetic ropes that connect Earth to the sun and explosions in the outskirts of Earth's magnetic field. According to the Science@NASA story:

NASA's fleet of [Time History of Events and Macroscale Interactions during Substorms (THEMIS)] spacecraft, launched [a year ago this month], has made three important discoveries about spectacular eruptions of Northern Lights called "substorms" and the source of their power. The discoveries include giant magnetic ropes that connect Earth's upper atmosphere to the sun and explosions in the outskirts of Earth's magnetic field.

THEMIS has also observed a number of relatively small explosions in Earth's magnetic bow shock. "The bow shock is like the bow wave in front of a boat," explains Sibeck. "It is where the solar wind first feels the effects of Earth's magnetic field." When a knot of magnetism within the solar wind hits the bow shock—Bang! We get an explosion."

The technical term for these explosions is *hot flow anomalies,* or HFAs. HFAs boost the temperature of solar wind particles ten-fold (as high as 10-million degrees) and they can stop the solar wind dead in its tracks. "This is no mean achievement considering the fact that the

e-mail: <n6cl@sbcglobal.net>

solar wind moves at supersonic speeds near a million miles per hour," says Sibeck.

"Hot flow anomalies may not play a major role in energizing auroral substorms; they happen too infrequently, less than once a day," notes Jonathan Eastwood of the University of California, Berkeley, who is studying them. "Nevertheless, they are of interest. This is a fundamental physical process that accelerates particles to high energies and we are delighted to be able to study it.""

For more information concerning these discoveries, visit the website: <http://science.nasa.gov/headlines/y2007/11dec_themis.htm?list209719>.

EMEers' Properties Escape San Diego County Fires

Both Gene Powers, K6DV, and Paul Chominski, WA6PY, live in San Diego, California. Both were under the threat of the wildfires that swept through California last October. Fortunately, both of their properties escaped the fires. The following, concerning Gene, is from the "432 EME Newsletter":

Gene Powers, K6DV, reports that the California fires came close to taking his Palomar Mountain home. Strong easterly winds began blowing on Sunday, October 21, and two fires that started in San Diego County were soon out of control. Three more fires started on Monday. One was at the base of Palomar Mountain. Gene was ordered to evacuate Tuesday morning as the fire began burning up the mountain. The wind died down Wednesday and shifted direction so backfires were lit. They burned down the mountain and when they met the main fire, there wasn't anything left to burn, so the fire burned itself out and the homes on the top of the mountain were saved. Gene was allowed to return home on October 31, when the fire was under control and the power utility moved a large portable generator up the mountain as a temporary power supply until the burned power poles can be replaced. The largest fire burned 200,000 acres and 1,000 homes. It burned into the Rancho Bernardo area, where Paul, WA6PY lives. Fortunately, Paul's home also escaped the inferno.

Hams Aid in Natural Disasters

In the "Public Service" column by WA3PZO elsewhere in this issue, you will read about how in December hams provided emergency communications in the U.S. Northwest during flooding and in the central section of the U.S. in the aftermath of ice storms. Here in Tulsa, Oklahoma, the tree damage has been compared to the damage caused by a Category 4 hurricane. On a statewide level, emergency personnel stated that this was the worst storm damage ever in the state's history. At its peak, more than 600,000 homes were without electrical power because of downed power lines. More about the ham radio operators' activities can be found on the ARRL website: <http://www.arrl.org>.

Elsewhere in North America, Mexican ham radio operators assisted in communications in the aftermath of the early November flooding that affected the city of Villahermosa. More information on their story can be found at the International Radio Emergency Support Coalition (IRESC) website: <http://www.iresc.org>. Click on the "News" link on the left side of the page.

Regarding the December winter weather in Tulsa, Oklahoma, your editor experienced the loss of all HF antennas and electricity at his QTH. Fortunately, the 6-meter beam had been lowered during previous work on the HF antennas and the 2-meter quad was able to withstand the weight of the icing. As I write this, I am still without power, four days after the power went out.

Current Convention

The 62nd Orlando HamCation & Computer Show will be held February 8–10 at the Central Florida Fairgrounds, 4603 West Colonial Drive, Orlando, Florida. For more information, please go to: <http://hamcation.com>. CQ will have a booth there.

Calls for Papers

Calls for papers are issued in advance of forthcoming conferences either for presenters to be speakers, or for papers to be published in the conferences' *Proceedings,* or both. For more information, questions about format, media, hardcopy, e-mail, etc., please contact the person listed with the announcement. The following organizations and/or conference organizers have announced calls for papers for their forthcoming conferences:

Southeastern VHF Society Conference: Technical papers are solicited for the 12th annual Southeastern VHF Society Conference to be held in Orlando, Florida on April 25–26. Papers and presentations are solicited on both the technical and operational aspects of VHF, UHF, and Microwave weak-signal amateur radio. In general, papers and presentations on non-weak-signal-related topics such as FM repeaters and packet will not be accepted, but exceptions may be made if the topic is related to weak signal. For example, a paper or presentation on the use of APRS to track rovers during contests would be considered.

The deadline for the submission of papers and presentations is February 29. All submissions should be in Microsoft Word (.doc) or Adobe Acrobat (.pdf) files. Pages should be 8 1/2 by 11 inches with a 1-inch margin on the bottom and 3/4-inch margin on the other three sides. All text, drawings, photos, etc., should be black and white only. Please indicate when you submit your paper or presentation if you plan to attend the conference and present there, or if you are submitting just for publication. Papers and presentations will be published in the conference *Proceedings* by the ARRL. Send all questions, comments, and submissions to program chair, Steve Kostro, N2CEI, at <svhfs2008@downeastmicrowave.com>. For further information about the conference, please see the society's website: <http://www.svhfs.org> and/or <http://www.flwss.net>.

Central States VHF Society Conference: Technical papers are solicited for the 42nd annual Central States VHF

Society Conference to be held in Wichita, Kansas on July 24–27. Papers, presentations, and posters on all aspects of weak-signal VHF and above amateur radio are requested. You do not need to attend the conference, nor present your paper, to have it published in the *Proceedings*. Posters will be displayed during the two days of the conference.

Non-weak signal topics such as FM, repeaters, packet radio, etc., are generally not considered acceptable. However, there are always exceptions. Please contact the folks below if you have any questions about the suitability of a topic. Strong editorial preference will be given to those papers that are written and formatted specifically for publication, rather than as visual presentation aids.

Deadline for submissions: For the *Proceedings*, June 2; for presentations delivered at the conference, June 30; and for notifying the group that you will have a poster to be displayed at the conference, also June 30. Bring your poster with you on July 25. Contact information: Mel Graves, WRØI, via e-mail <wr0i@sgdrugfree.com>, or snail mail to: Melvin Graves, WRØI, P.O. Box 273, Wichita KS 67201-0273.

Submissions can be made via the following: Electronic formats (preferred); via e-mail; uploaded to a website for subsequent downloading; or on media (3.5-inch floppy, CD, or USB stick/thumb drive).

And Finally . . .

Earlier in this column you read about our vagabond plight in the aftermath of the December 2007 ice storms that affected our part of the U.S. As you can see by the length of this column, this month's coverage of VHF-plus activity is pretty sparse, thanks to our Spartan lifestyle.

Even so, thanks to the generosity of a wonderful couple, Mark and Teresa Springer, my wife Carol and I were able to stay in a warm home and had access to their computer so that I could write this column. Mark and Teresa are members of a church that served as an American Red Cross emergency shelter. In gratitude for their kindness, Carol and I served as volunteers at the shelter when we were not checking on members of my church.

In the aftermath of this disaster I have done some serious introspective thinking about my own disaster preparedness. For example, without electricity, we are unable to operate from our home—for any purpose. After staying two nights during which the inside temperature dropped from 76 to 46 degrees, we bailed out. Again, thanks to the Springers, we had a warm place to go. Even so, that was available only because their electricity had been restored the day before their offer for us to stay with them.

A solution to the loss of electricity is to buy a generator. However, the decision to buy one is loaded with many questions. For example, how many watts should the generator produce? Our bare necessities are the forced-air heater and some appliances. The trade-off between the amount of wattage needed and the amount of wattage produced is in both the cost and the generator's runtime. For example, a 3000-watt generator has the capacity to run the forced-air heater, but not the heater *and* the refrigerator. It will run ten hours on three gallons of gas at half of the wattage capacity. A larger capacity generator means more cost, less fuel efficiency, and more weight.

Another question is where to store the generator and the fuel. Our garage is out of the question because of the close proximity of the gas water heater. One ignition of the gas coupled with a mix of fumes from the generator and/or the fuel and we would have a change of QTH—perhaps permanently! The logical question is an out building. However, we need to check with local zoning to make sure that we can have such a building and store fuel in it.

The generator issue notwithstanding, I have determined that I need a thorough disaster-preparedness plan. Really, all of us do.

Hurricane Katrina taught the whole country a valuable lesson regarding individual and corporate disaster preparedness. In the aftermath of our ice-storm disaster in December, I can see that there are issues to be addressed in our preparedness—in whatever might be our public-service capacity. I have learned lessons as an amateur radio operator. I have also learned lessons as a pastor of an elderly congregation. Most of all, however, I have learned lessons as a husband. In that capacity, I am responsible for my best friend's welfare. That is a pretty awesome responsibility!

If you have a story to tell concerning your disaster preparedness, please send it to me so that I can give it a venue—either in this column or as an article in *CQ VHF* magazine.

Until next month… 73 de Joe, N6CL

awards

BY TED MELINOSKY,* K1BV

South African Radio League Awards

We start out this month with some general information, move on to a list of those states that have yet to sponsor an all counties award, and then cover the South African Radio League awards series.

What is the Rarest County? This question comes up a couple times a year. An old timer will tell you that if you need it, the county is "rare." I would suggest adding a few qualifiers such as (1) no interstate highway goes through the county at any point, and (2) it's a rural location, lightly populated, and farming is the primary occupation.

General Certification Rule (GCR). Ninety-nine percent of award sponsors do not require you to send the QSL cards needed for the award. The GCR rule requires only the written certification by two witnesses (licensed amateurs) that they have examined the cards and that the list as provided is correct. Only a few high-prestige awards require that the cards be submitted.

Do county contacts count if they are made on any legal ham band? Yes, we gladly accept 6 meters, the WARC bands, 60 meters, the microwave bands, etc. I'm still waiting for the first application for 2 meters, moonbounce, and PSK-31. Any mode is fine as well.

Individual State County Awards

About once a year I like to list those states where there is no established award for working their counties. I'd like to encourage responsible groups or individuals to sponsor these awards for each of the 50 states. They are a way to measure your progress as you complete state after state going towards the USA-CA All Counties Award. As I write this column in late November, the opportunity for an award to be established exists in the following states: AL, AK, HI, ID, IL, IA, KS, KY, MT, NE, NM, NV, SD, and TN.

While USA-CA traditionally has used the "Judicial Districts" for Alaska contacts, it might be interesting if an Alaskan club offers such an award for both "boroughs" and "judicial districts." Feel free to write to me if you need help with rules. This is a great project for a club, and this column will help provide publicity.

The SARL Awards Series

This month we feature the awards series offered by the South African Radio League (SARL). There is one award that centers on working South African stations, a second award that features working the countries on the continent of Africa, and interestingly enough, another that features 160-meter contacts. For North American stations, the "Top Band" award requires just two contacts on 160 meters, but when you factor in the distance that has to be covered on frequencies barely above the top of the AM broadcast band (the distance to South Africa from the east coast of the U.S. is about 8,000 miles, or 12,800 km), I would frame and mount this award on the best spot on my wall!

General Requirements: The GCR rule applies, except as mentioned in specific rules below. Awards are free to SARL members. The fee for all others is as follows: 10 IRCs, $US10, or R10,00. Apply to: Awards Manager, South African Radio League, P.O. Box 1721, Strubensvallei 1735, South Africa (internet: <http://www.sarl.org.za>; e-mail: <tjerk@iafrica.com>).

All Africa Award. Contact 31 areas in Africa—each of the six call areas of South Africa (ZS1–6) and one contact in each of 25 countries on the continent of Africa, excluding South Africa. Only contacts with stations on the continent of Africa are valid for the award. African islands and ship-based stations do not count. Countries are identified according to the DXCC list. Deleted countries count, provided that contacts were made while the country existed according to the list. (Note that V5 callsigns will not be accepted for ZS3.)

Countries list: 7X Algeria, 9G Ghana, 9X Rwanda, D2 Angola, J5 Guinea-Bissau, 6W Senegal, TY Benin, TU Ivory Coast, 9L Sierra Leone, A2 Botswana, 5Z Kenya, T5 Somalia, XT Burkino Faso, 7P Lesotho, ST0 Southern Sudan, 9U Burundi, EL Liberia, ST Sudan, TJ Cameroon, 5A Libya, 3DA Swaziland, TL Central African Republic, 7Q Malawi, 5H Tanzania, EA9 Cueta/Melilla, TZ Mali, C5 The

USA-CA Special Honor Roll

Wayne Jones, KA2NDX
USA-CA All Counties #1163
November 23, 2007

USA-CA Honor Roll

500		2000	
LYR-794	3424	KØRCJ	1356
DM3ZF	3425	KA2NDX	1357

1000		2500	
KA2NDX	1747	KA2NDX	1276

1500		3000	
KA2NDX	1464	KA2NDX	1186

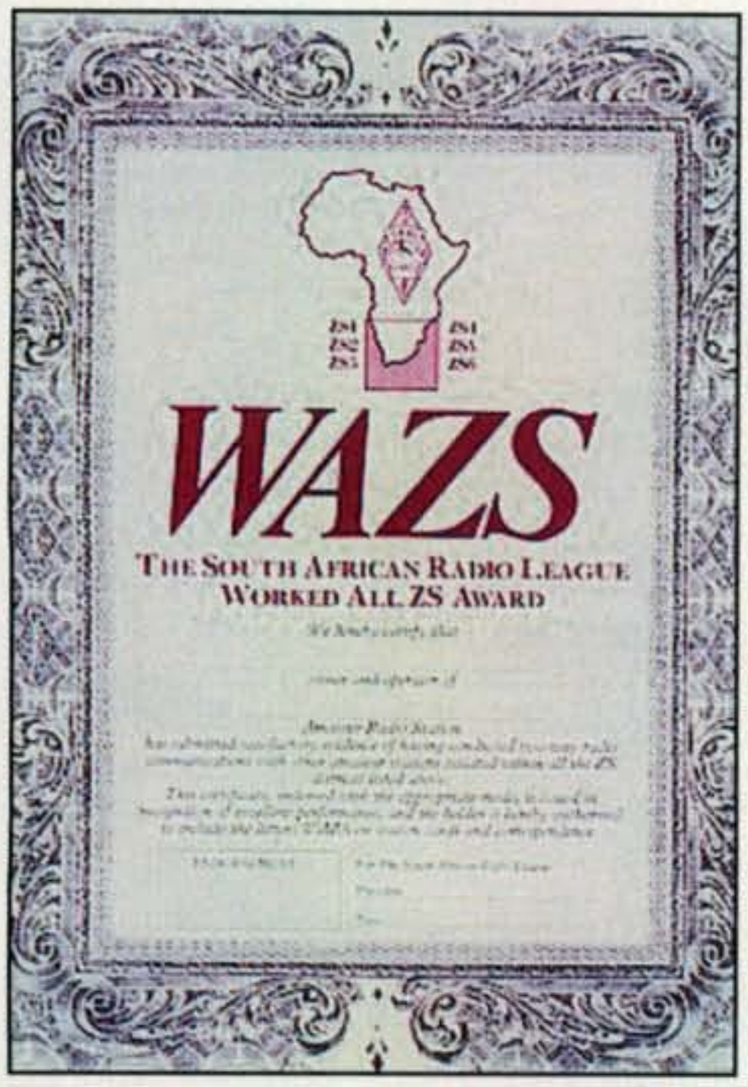
The total number of counties for credit for the United States of America Counties Award is 3077. The basic award fee for subscribers is $6.00. For nonsubscribers it is $12.00. To qualify for the special subscriber rate, please send a recent CQ mailing label with your application. Initial application may be submitted in the USA-CA Record Book, which may be obtained from CQ Magazine, 25 Newbridge Road, Hicksville, NY 11801 USA for $2.50, or by a PC-printed computer listing which is in alphabetical order by state and county within the state. To be eligible for the USA-CA Award, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated June 1, 2000. A complete copy of the rules may be obtained by sending an SASE to Ted Melinosky, K1BV, 12 Wells Woods Road, Columbia, CT 06237 USA. DX stations must include extra postage for airmail reply.

*12 Wells Woods Rd., Columbia, CT 06237
e-mail: <k1bv@cq-amateur-radio.com>

The South African Radio League's All Africa Award is issued for contacting 31 areas on the continent of Africa.

Gambia, TT Chad, 5T Mauritania, 5V Togo, TN Congo, CN Morocco, 3V Tunisia, J2 Djibouti, C9 Mozambique, 5X Uganda, SU Egypt, V5 Namibia, SØ Western Sahara, 3C Equatorial Guinea, 5U Niger, 9Q Zaire, ET Ethiopia, 5N Nigeria, 9J Zambia, TR Gabon, 3X Republic of Guinea, and Z2 Zimbabwe.

Worked All ZS Award (WAZS). Show proof of contact with 100 South African stations since January 1, 1958



Show proof of contact with 100 South African stations to earn the Worked All ZS Award.

Lowell Tennyson, KBØBA
USA-CA All Counties #1154, August 1, 2007

I became interested in amateur radio in 1976 and obtained my Novice license. I upgraded to General by 1977 and then to Extra class in 1982. My main interest at the time was DX, and I have since contacted over 256 countries. I was awarded 5 Band Worked All States #750 by the ARRL. I've operated on bands from 2 through 80 meters. I have also participated in numerous Field Day exercises over the years. In 1981–82 I transmitted from many countries for county hunters, although I didn't collect QSL cards at the time. I got serious about county hunting on one of our trips to Phoenix for a national winter black-powder shoot.

I served in the Navy Seabees, MCB62, from June 1972 until February 1975, when I was given a disability discharge. My duty stations included Guam and Gulfport, Mississippi.

I received my journeyman's card by graduating from Rock Island Arsenal's machinist apprenticeship. After a number of years I became an Equipment Specialist and then an Industrial Specialist for the HQ, Army Munitions and Chemical Command, retiring in 1993 after 31-plus years of employment. As an equipment specialist I was sent to Vietnam from October 1979 to January 1980 to support the Army on large-caliber weapons. My skills as a machinist have been put to use in making antenna parts as well as building several muzzle-loading shotguns.

I won the national Levi Garrett award for shooting trap with a single-barrel, muzzle-loading shotgun that I built. I have since built a double-barrel shotgun as well. I am a lifetime member of the National Rifle Association as well as the National Muzzle Loaders Rifle Association.

Several years ago, I was instrumental in establishing an amateur radio antenna ordinance in Blue Brass, Iowa by emphasizing the need for amateur radio capability in the community. I am a member of SkyWarn for the National Weather Service and I have completed CERT training.

I have operated from all 99 counties in Iowa, but will be doing it again now that my wife, Sandra, has her license (NØXYL). Sandra has always been my map reader/navigator, but finally I convinced her to get her license as we can work as a husband and wife team. I know she did it just for me, but I also know she is enjoying the hobby.

Lowell, KBØBA, USA-CA All Counties #1154.

We have attended the National Convention in Wisconsin, the mini in San Angelo, the National in Aurora, and in October of last year we went to South Carolina for the mini and then on to Florida. We transmit from as many counties as possible on our trips. We have enjoyed the conventions, and it's a fun place to put faces to the voices we hear on the air daily.

My wife and I both are involved in tracing our roots, which means there are many stops at courthouses and libraries during our travels. We combine county hunting and genealogy at every opportunity! Would you believe we have been to 18 courthouses in Texas? I've transmitted from 105 counties in the state so far. I've even had our 29-ft. fifth-wheel camper modified to serve as a portable station.

I completed my first time around for the "whole ball of wax" on 7/7/07. Wasn't that a great date! I was awarded USA-CA All Counties #1154 on August 1. Now on to the second time around, this time as a team.

73, KBØBA

Contact South African stations on 160 meters after January 1, 1960 for the SARL's Top Band certificate.

in the numbers per district as follows: ZS1, 16 contacts; ZS2, 8 contacts; ZS3, 1 contact; ZS4, 6 contacts; ZS5, 13 contacts; and ZS6, 56 contacts. In addition to the basic award (WAZS), awards for multiples of 100 callsigns may be earned. Applicants for a higher award (WAZS-200, etc.) must meet the minimum call area requirements at the time of application or must cite the number of their previously issued award. Specific mode and/or band endorsements may be requested. The award is free to SARL members. Other South African applicants should send the QSL cards, a list of details, and a handling and postage charge of R60.00. All others send GCR list and fee of $US10 or 10 IRCs.

Note: Only callsigns from the South African mainland count. ZS3 callsigns from South West Africa (now Namibia V5); old ZS callsigns from Lesotho, Swaziland, and Botswana; and offshore stations such as Walvis Bay, Penguin Islands, Marion, Antarctic, etc., do not count. Special callsigns ZS99ARA, ZT6Z, and ZS25TUK from the South Africa mainland are okay. Note that different callsigns are needed. Successive holders of the same callsign do not count separately, but stations with several callsigns may be claimed under all those callsigns. ZS6XY, ZS6XY/6, and ZS6XY/P are the same callsign, but ZS6XY/4 shows a different geographical callsign area and is considered a different callsign.

Top Band Award. Contact South African stations on 160 meters after January 1, 1960. South Africans need six different ZS call areas, five of which must be in the Republic of South Africa; the sixth can be 3D6, 7P8, or A2. DX stations within 1000 km of the borders of South Africa must contact three different call areas in RSA. All others need to contact two ZS call areas, and one must be in the RSA. Endorsements for all CW/Phone/Mixed are available. The award is also available for SWLs.

We're always interested in hearing from clubs, special-interest groups, and individuals who sponsor awards. Please contact me at the address shown on the first page of this column.

73, Ted, K1BV

A Preview of the 2007 Most Wanted Survey Results

BY CARL SMITH,* N4AA

Are my eyes deceiving me? The solar flux was 89 as of mid-December? Wow! We have been begging, crying for sunspots, and with the Christmas season approaching is this a present for us? Oh, say it is true!

After the ARRL 10 Meter contest weekend (December 8–9), we need all the help we can get. Personally, I spent a grand total of 1.4 hours operating (according to my computer and the CT logging program). In all that time I managed to make 84 contacts—52 on CW and 32 on SSB. CW netted me one country and 16 states, while SSB saw no DX and only 12 states. I guess I should not expect much more with only 1.4 hours on the air. A friend (I won't give his name to allow him to save face) reported 190 contacts, with five DX, two VE, and 35 states total. He didn't say what mode or how much time he spent getting all those contacts. I did see a lot of comments about the "slim pickins" over that weekend, so I guess my friend and I weren't the only ones with low numbers.

What do we have to look forward to in the contests left in this season? I have no idea and I doubt that anyone else does either. We'll just have to watch, listen, and take what we can get. Shortly after you should get this issue we have the CQ WW 160 Meter CW DX Contest the weekend of January 26–27. February 9–10 there's the CQ WW WPX RTTY Contest, followed the next weekend by the ARRL DX Contest on CW, and the weekend after that is the CQ 160 Meter SSB Contest. The last of this group are the ARRL DX SSB Contest on March 1–3, and the CQ WW WPX SSB Contest on March 29–30. There is plenty of action is this listing for whatever your preference. You'll probably hear N4AA on the air in at least some of these activities, or picking off a DX station for a band/mode counter on about any day of the week.

2007 #	Prefix	Country	2006 #
1	P5	North Korea	3
2	7O	Yemen	4
3	KP1	Navassa	5
4	FR/G	Glorioso	6
5	3Y/B	Bouvet	7
6	ZS8	Marion island	9
7	KP5	Desecheo	8
8	BS7H	Scarborough Reef	1
9	FT8W	Crozet	11
10	VKØ/H	Heard island	10

Table I– The 2007 Most Wanted Survey's top ten worldwide, mixed mode.

Most Wanted Survey Results 2007

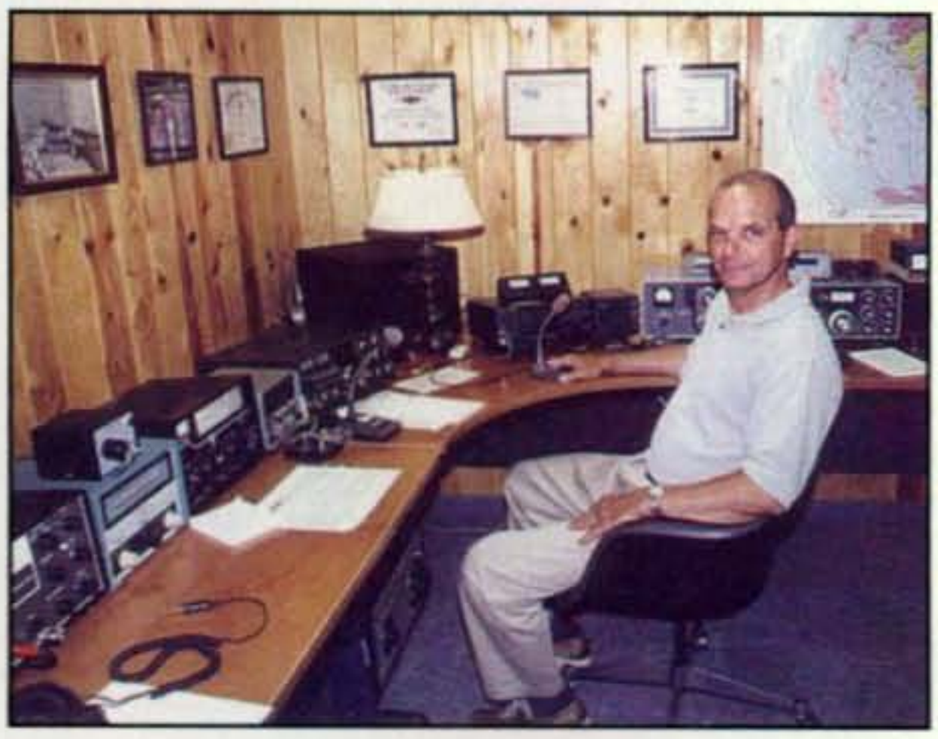
The DX Magazine's 2007 Most Wanted Survey results were completed in December and should be on the website <http://www.dxpub.com> by the time you read this. Just to give you a little taste, Table I lists the top ten, worldwide, mixed mode.

Here are my comments on just these few:

1. I suspect P5 is back on top due to all those who still need it on CW, forcing it to the top of the Mixed list.

2. Yemen is where one would expect it to be, since there has been no authorized activity there in several years.

*P.O. Box DX, Leicester, NC 28748-0249
e-mail: <n4aa@cq-amateur-radio.com>*



Do you recognize this guy? This is Riley Hollingsworth, K4ZDH, the Special Counsel of the FCC's Enforcement Bureau. He thought about retirement, but changed his mind. He said, "I still have work to do." (Photo courtesy of Riley, K4ZDH)

CQ DX Field Award Honor Roll

The CQ DX Field Award Honor Roll recognizes those DXers who have submitted proof of confirmation with 175 or more grid fields. Honor Roll lisiting is automatic upon approval of an application for 175 or more grid fields. To remain on the CQ DX Field Award Honor Roll, annual updates are required. Updates must be accompanied by an SASE if confirmation is desired. The fee for endorsement stickers is $1.00 each plus SASE. Please make all checks payable to the Award Manager, Billy F. Williams. Mail all updates to P.O. Box 9673, Jacksonville, FL 32208.

Mixed

K2TQC 258	N4MM 198	F6HMJ 182
HAØDU 228	W4UM 198	K2SHZ 182
W1CU 219	N4NX 192	K2AU 182
VE3XN 217	VE3ZZ 191	KØCA 181
N8PR 213	HA9PP 190	K1NU 180
KØDEQ 210	BA4DW 188	K8OOK 180
HA1RW 206	OK1AOV 187	W5ODD 177
KF8UN 205	9A5CY 187	NØFW 176
JN3SAC 199	W6OAT 185	ON4CAS 175

SSB

W1CU 203	W4ABW 184	NØFW 176
VE7SMP 190	N4MM 180	DL3DXX 175
KØDEQ 184	W4UM 180	

CW

W1CU 211	JN3SAC 193	N4MM 178
DL3DXX 203	W4UM 190	N4NX 177
KØDEQ 201	OK2PO 184	KØCA 175

The WPX Program

CW

3194 ..... UA3QUO

SSB

None

Mixed

2001 ..... DL1KPH 2002 ..... KC9ARR

CW: None
SSB: 2000 KWØA. 2500 I3ZSX
Mixed: 450 DL1KPH. 800 DH5MM. 1500 KC9ARR. 2400 WZ4P.

10 meters: K3JHT

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MDD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GO, W4BQY, IØJX, WA1JMP, KØJN, W4VQ, KF2O, WB8CNL, W1JR, F9RM, W5UR, CT1FL, WA4QMQ, W8ILC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SMØDJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS, I8YRK, SMØAJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8UB, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, KBØG, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DEØDAQ, I1WXY, LU1DOW, N1IR, IK4GME, VE9RJ, WX3N, HB9AUT, KC6X, N6IBF, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, I7PXV, S53EO, DF7GK, S57J, EA5BM, DL1EY, DJ1YH, KUØA, VE2UW, 9A9R, UAØFZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN, W2OO, AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B, KØDEQ, DKØPM, SV1EOS, UAØFAI, N4GG, UA4RZ, 7K3QPL, EW1CQ., UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR.

160 Meter Endorsements: N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8ILC, K9BG, W1CU, G4BUE, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SMØDJZ, DK5AD, W3ARK, LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, UR2QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N6JV, ONL-4003, W5AWT, KBØG, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, W4UW, NXØI, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, WX3N, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA1CLV, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, DJ1YH, KUØA, VR2UW, UAØFZ, DJ3JSW, OE6CLD, HB9BIN, N1KC, SM5DAC, S51U, RAØFU, CT4NH, EA7TV, LY3BA, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU, KØDEQ, DKØPM, SV1EOS, N4GG, UA4RZ, 7K3QPL, EW1CQ, UA4LY, RZ3DX, UA3AIO., UA4RC, N8BJQ, UA3BS, UA9FGR.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage if airmail desired) to "CQ WPX Awards," P.O. Box 355, New Carlisle, OH 45344 USA. Note: WPX will not accept prefixes/calls which have been confirmed by computer-generated electronic means.

*Please Note: The price of the 160 meter bar for the Award of Excellence is $6.50.

3. Navassa . . . well, enough has been written about Navassa, and Desecho as well, as to the reasons why there has been no activity from either of these relatively easy places to get to. We can only hope that someone can manage a breakthrough in the stonewalling of government bureaucracy in the near future.

4. Glorioso is another one that we expected to see action from in recent years. Unfortunately, that didn't happen due to health issues and then the transfer of control of the island to a different agency. It is still a possibility, and I know our friends in France are still working to make it happen.

5. Bouvet is a tough one. This is one of those Antarctic places that is difficult to get to, even after you permission is gained to go there. It could be compared to Peter I, I suppose, although I'm not sure of that. I will say that I have heard conversation about an attempt to get to Bouvet in the foreseeable future. This is not a rumor, since I heard the comments myself from someone in a position to know and probably "go" on such a trip.

6. Marion Island is another one of those "deep south" islands that requires some serious work to gain permission to be there. Last I heard/saw was that the government was probably going to severely restrict access due to conservation concerns.

7. I mentioned Desecho above, along with Navassa.

8. Scarborough Reef . . . the 2007 team did a good job with 45,000 QSOs but that was obviously not enough to drop it very far down the Most Wanted List. Anyone up to another adventure to "The Rocks"?

9. Crozet is another French island, and we keep hoping our friends in France can get permission to go there.

10. Heard Island . . . there's an old, familiar name. It was some ten years ago when VKØIR was there. That is about the length of time it takes a place to gain Top Ten status after a major operation.

There are some experienced Antarctic DXpeditioners who might just be looking at some of those islands covered with snow and ice, but I suspect it will take a while before anyone can gain the desire, the team, and especially the money it would take to go to any of those islands. Remember the huge cost of the Peter I DXpedition. Also, safety must be

The CQ WW DX SSB Contest from Hawaii, KH7X. Left to right: KL2A, KH7U, AH6NF, K1VR, AH6OZ, N6BV, KH6ND, OH2MM, OH8NC, N6TJ, KH6YY. (Photo courtesy of Mike, KH6ND)

The WAZ Program

10 Meter SSB

584 ..... HB9DDO

12 Meter SSB

39 ..... VE2BQB

15 Meter SSB

638 ..... SP1DMD

17 Meter SSB

45 ..... VE2BQB

20 Meter SSB

1170 ..... OZ8RN 1172 ..... HB9DDO
1171 ..... SP1DMD

40 Meter SSB

106 ..... VE2BQB

12 Meter CW

53 ..... JA2EPW 54 ..... VE2BQB

17 Meter CW

67 ..... KC7V 68 ..... VE2BQB.

20 Meter CW

577 ..... HB9DDO

30 Meter CW

80 ..... VE2BQB 81 ..... HB9DDO

40 Meter CW

259 ..... VE2BQB 260 ..... HB9DDO

160 Meters

255 ..... K6ZZ (31 zones) 256 ..... HB9DDO (30 zones)

All Band WAZ

Mixed

8488 ..... K5YG 8490 ..... DL2QT
8489 ..... WB3JNC

SSB

5054 ..... IZ8EZP

Digital

004 ..... HB9AAA

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for all *CQ* awards is $6.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $12.00 for nonsubscribers. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

a top priority of any operation, but especially operations to the Antarctic area, where the weather is a huge factor that can become deadly.

If you feel strongly enough about your need for any of the top ten above, you might want to consider the financial aspect of getting these places on the air. As you are financially able, be a contributor to any of the DX organizations that support DXpeditions. There are major organizations in most countries. Here in the U.S. we have the Northern California DX Foundation (NCDXF) and the International DX Association (INDEXA), along with others such as YASME, the Colvin Fund at the ARRL, etc. There are other groups that have tax-deductible status, if you are interested in that. You can donate to specific DXpeditions through your local DX club, too, or you can donate directly as an individual. Many small donations to the DX organizations can grow into

5 Band WAZ

As of December 1, 2007, 740 stations have attained the 200 zone level and 1573 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:

None

The top contenders for 5 Band WAZ (zones needed, 80 or 40 meters):

N4WW, 199 (26)
W4LI, 199 (26)
K7UR, 199 (34)
W2YY, 199 (26)
IK8BQE, 199 (31)
JA2IVK, 199 (34 on 40m)
IK1AOD, 199 (1)
DF3CB, 199 (1)
GM3YOR, 199 (31)
VO1FB, 199 (19)
KZ4V, 199 (26)
W6DN, 199 (17)
W3NO, 199 (26)
HB9DDZ, 199 (31)
RU3FM, 199 (1)
N3UN, 199 (18)
OH2VZ, 199 (31)
W1JZ, 199 (24)
W1FZ, 199 (26)
SM7BIP, 199 (31)
SP5DVP, 199 (31 on 40)
N4NX, 199 (26)
N4MM, 199 (26)
EA7GF, 199 (1)
N6HR/7, 199 (37)
JA5IU, 199 (2)
NØIJ, 199 (21)
RU3DX, 199 (6)
N4XR, 199 (27)
WØPGI, 199 (26)
HA5AGS, 199 (1)
EA8AYV, 199 (27)
VE3XN, 199 (26)
YU7GMN, 199 (10)
K7LJ, 199 (37)
RA6AX, 199 (6 on 10m)
RX4HZ, 199 (13 on 80m)
KG9N, 199 (18)
EA5BCX, 198 (27, 39)
G3KDB, 198 (1, 12)
JA1DM, 198 (2, 40)
9A5I, 198 (1, 16)
K4CN, 198 (23, 26)
G3KMQ, 198 (1, 27)
N2QT, 198 (23, 24)
OK1DWC, 198 (6, 31)
W4UM, 198 (18, 23)
US7MM,198 (2, 6)
K2TK, 198 (23, 24)
K3JGJ, 198 (24, 26)
W4DC, 198 (24, 26)
F5NBU, 198 (19, 31)
OE2LCM, 198 (1, 31)
HA1RW, 198 (1, 31)
WK3N, 198 (23, 24)
W9XY, 198 (22, 26)
KZ2I, 198 (24, 26)
W7VJ, 198 (34, 37)
K9MIE (18, 21)
W9RN (26, 19 on 40)
W5CWQ (17, 18)

The following have qualified for the basic 5 Band WAZ Award:

YL3DQ (151 zones)
G3VKW (186 zones)

5 Band WAZ updates:

K6ZZ (174 zones)
UA3TCJ (196 zones)

***Please note: Cost of the 5 Band WAZ Plaque is $100 shipped within the U.S.; $120 all foreign (sent airmail).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for the 5BWAZ award is $10.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $15.00 for nonsubscribers. An endorsement fee of $2.00 for subscribers and $5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

The CQ DX Field Award Program

SSB

55 ..... IW3SIP

Mixed

91 ..... W6OAT

Endorsements

Mixed

200 ..... N8PR/213
175 ..... W4UM/198
150 ..... W6OAT/185

SSB

175 ..... W4UM/180

CW

175 ..... W4UM/190

The basic award fee for subscribers to *CQ* is $6. For non-subscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Please make all checks payable to the award manager.

CQ DX Awards Program

SSB

None

CW

None

SSB Endorsements

330 ..... IN3DEI/337
330 ..... OK1MP/337
330 ..... EA4DO/337
330 ..... ZL1BOQ/334
320 ..... SV3AQR/326
275 ..... XE1MEX/293

CW Endorsements

330 ..... OK1MP/336
330 ..... K4CEB/336
330 ..... K9OW/336
330 ..... KA7T/334
310 ..... EA3ALV/317

RTTY Endorsements

320 ..... OK1MP/325

The basic award fee for subscribers to *CQ* is $6. For non-subscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Currently we recognize 337 active countries. Please make all checks payable to the award manager.

THE WPX HONOR ROLL

The WPX Honor Roll is based on the current confirmed prefixes which are submitted by separate application in strict conformance with the CQ Master Prefix list. Scores are based on the current prefix total, regardless of an operator's all-time count. Honor Roll must be updated annually by addition to, or confirmation of, present total. If no up-date, files will be made inactive.

MIXED

5489 9A2AA	4026 VE3XN	3569 KF2O	3107 W9OP	2637 OZ1ACB	2239 VE6BF	1741 AB5C	1504 KC9ARR	742 K5IC
4843 W1CU	3948 I2PJA	3566 KØDEQ	2996 9A4W	2457 JN3SAC	2202 N8BJQ	1731 KX1A	1288 K6UXO	648 KWØH
4839 W2FXA	3760 N9AF	3384 WB2YQH	2910 W9IL	2455 K1BV	2024 AE5B	1705 W2EZ	1269 K5WAF	633 ZS2DL
4419 EA2IA	3749 I2MQP	3379 IK2ILH	2971 W2WC	2441 W6OUL	1947 KØKG	1662 SV1DPI	1016 RA1AOB	
4275 N4NO	3703 I2UIY	3282 YU7BCD	2873 W2ME	2397 K5UR	1891 VE9FX	1643 N1KC	979 KM6HB	
4213 YU1AB	3646 S53EO	3227 K9BG	2704 K2XF	2242 I2EAY	1826 W7CB	1556 W2OO	825 KL7FAP	

SSB

4807 IØZV	3445 EA2IA	2857 4X6DK	2326 CX6BZ	2085 N6FX	1792 SV3AQR	1611 W2ME	1371 IK2DZN	1031 IK8OZP
4266 VE1YX	3349 N4NO	2711 LU8ESU	2250 I3ZSX	2076 K2XF	1765 KQ8D	1480 AB5C	1289 AE9DX	978 EA7HY
3932 I2PJA	3155 I2UIY	2672 KF7RU	2209 IK2QPR	2046 K5UR	1754 DL8AAV	1464 VE7SMP	1258 N1KC	951 KU4BP
3900 F6DZU	3142 CT1AHU	2595 EA1JG	2178 NQ3A	1935 SV1EOS	1729 W6OUL	1458 JN3SAC	1232 AG4W	843 VE6BF
3606 OZ5EV	3108 I4CSP	2591 IN3QCI	2135 W9IL	1849 K3IXD	1718 W3LL	1412 I2EAY	1145 EA3EQT	729 K7SAM
3544 I2MQP	2972 OE2EGL	2431 G4UOL	2094 I8LEL	1827 AE5B	1688 KI7AO	1386 IK4HPU	1045 KX1A	637 K5WAF
3532 9A2NA	2970 KF2O	2419 YU7BCD	2093 W2WC	1795 W2FKF	1623 VE9FX	1381 N8BJQ	1042 IZØBNR	

CW

4854 K9QVB	3316 EA2IA	2632 W2ME	2415 W2WC	2120 JN3SAC	1895 W6OUL	1402 WO3Z	1053 K5WAF	824 VE9FX
4705 WA2HZR	3078 9A2NA	2551 KA7T	2251 N6FX	2093 VE6BF	1804 EA7AAW	1334 RUØLL	1042 VE1YX	608 IK2SGV
3864 N4NO	2927 KØDEQ	2526 I7PXV	2236 OZ5UR	2089 K2XF	1804 I2EAY	1267 K6UXO	1030 AA5JG	
3685 VE7DP	2688 I2UIY	2474 YU7BCD	2175 W9IL	1967 I2MQP	1783 N8BJQ	1202 WA2VQV	915 N1KC	
3398 LZ1XL	2636 KF2O	2465 EA7AZA	2148 IK3GER	1945 K5UR	1465 AC5K	1147 KX1A	914 W9HR	

large foundation donations for deserving DXpeditions. If you are not familiar with the DX organizations in your area or country, just go to Google and type in "DX Foundations." You will be surprised at the number you see listed.

Upcoming DX

Although not in the Top Ten group on the survey, there is some good DX coming up shortly. I mentioned these last month, but I'll repeat them just to whet your appetite. Look for the following:

J5C from Guinea Bissau, January 11–21 (http://www.j5c.eu)

VP6DX from Ducie February 10–28 (http://www.vp6dx.com)

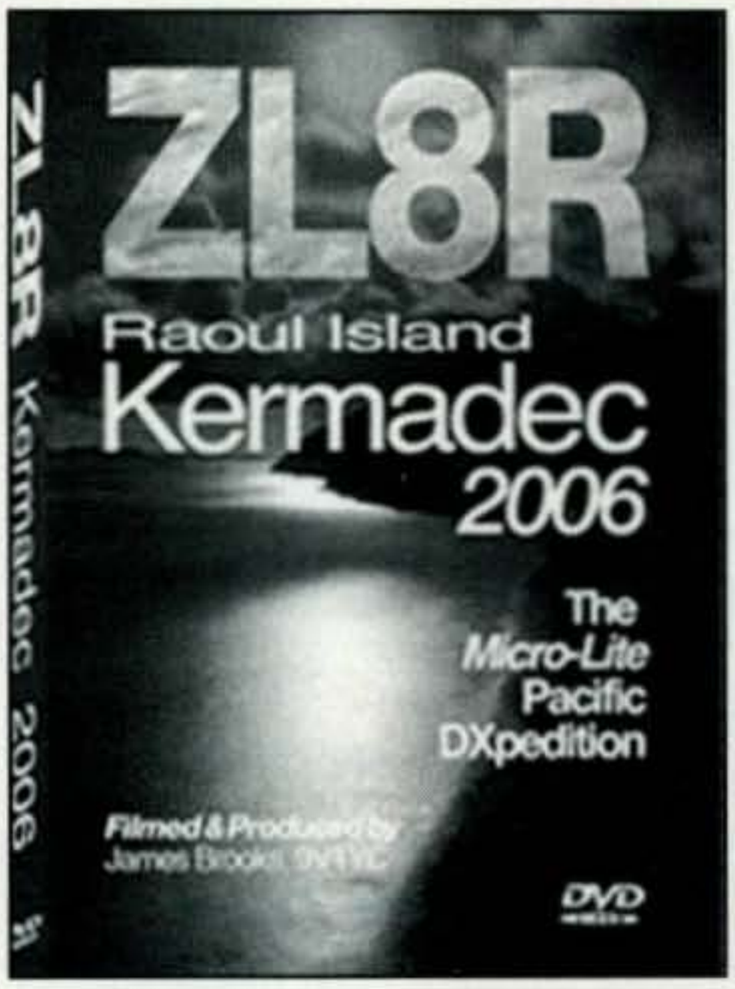
TI9K from Cocos Island, February 6–16 (http://www.ti9.eu.com)

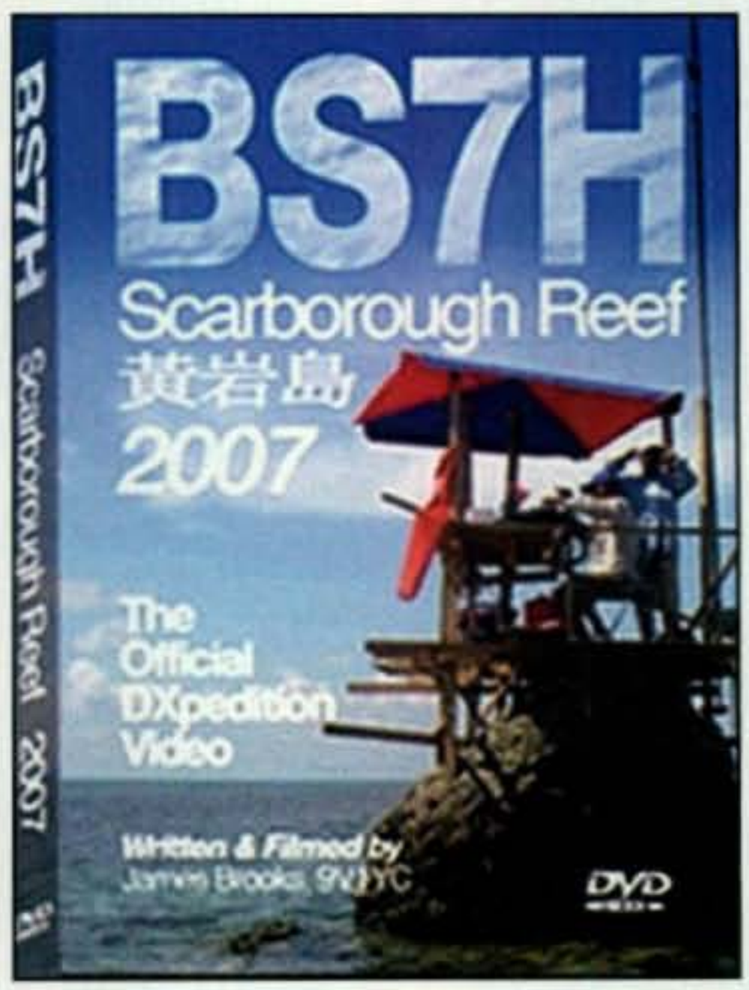
TX5C from Clipperton, March 4–18 (http://www.clipperton2008.org)

New Videos from 9V1YC

I also want to mention two new DXpedition videos by James Brooks, 9V1YC, the "king" of such videos.

Videos of DXpeditions to ZL8R and BS7H are new and just now being offered to the DX community. You'll want to add these two to your collection, either at home or for your DX club. As usual, they are great! For details on ordering, please see the website: <http://www.dxvideos.com>.





These two new DXpedition videos by James Brooks, 9V1YC, are now available. See the website <http://www.dxvideos.com> for details. (Photos courtesy of James, 9V1YC)

I have not mentioned operating habits recently. For some reason, those bad habits seem to have diminished, at least somewhat, to a more tolerable level. I still believe there is room for improvement, and I continue to distribute the "green" QSL stuffers containing the Uncle DX *Suggestions for DX Pile-ups*. The cost of providing these has been supported by a number of individuals and a few organizations. I thank them for their support of the program.

Until next time, enjoy the chase and Have Fun! 73, Carl, N4AA

QSL Information

VE3ZIK via DO7ZZ
VP2M/WQ5W via WQ5W
VP2MDG via K2DM
VP2MKA via W4GKA
VP5/NØBG via WØBV
VP5/PY2XB via PT7WA
VP5W via W7TSQ
VP8RAF via GMØTQJ
VP9/K1XM via KQ1F
VP9/OH3SR via OH3SR
VP9/US1I via N5FG
VP9I via KQ1F
W1SRT via W3IZ
W2WAS/VP5 via W2WAS
W6/OH3SR via OH3SR
WA2VYA/VP5 via WA2VYA
XE1ISC via LA4LN
XM3YDX via RW4WM
XM3ZIK via DO7ZZ
XR3J via HB9AOF
XT2JZ via SM5DJZ
XX3JP via HB9CRV
YA/EA4FAS via EA4FAS
YA1AR via SM5DJZ
YA1OS via SM5DJZ
YB3MM/2 via IZ8CCW
YI9DAZ via M3SDE
YO/OK1XV via OK1XV
YTØ7SRT via YT3W
YW6YL via IT9DAA

(The table of QSL Managers is courtesy of John Shelton, K1XN, editor of "The Go List," 106 Dogwood Dr., Paris, TN 38242; phone 731-641-4354; e-mail: <golist@golist.net>.)

BY JOHN DORR,* K1AR

Contest Activity: Another View of the Future

February's Contest Tip

By Randy Thompson, K5ZD

Looking for an opportunity to sharpen your ears prior to the next big contest? The full recording of my K5ZD Single Op All Band effort in the 2005 and 2006 CQ WW DX CW Contest is available online at <http://www.k5zd.com/live/>. I plan to provide real-time audio streaming throughout the 2007–08 contest season as time permits. You can find the live audio at the same internet address.

I also find that reading about the experiences of previous contests can be helpful for "getting motivated." You can read my contest reports at <http://www.k5zd.com/articles/index.html>. In addition, check out Tom, W2SC's adventures to Barbados on his website at <http://tgeorgens.home.mindspring.com/>. He has some audio recordings as well. Learning from others can help anyone's score. Give it a try!

Calendar of Events

All year	**CQ DX Marathon**
Jan. 26–27	**CQ WW DX 160M CW Contest**
Jan. 26–27	REF CW Contest
Jan. 26–27	YL ISSB SSB QSO Party
Jan. 26–27	BARTG RTTY Contest
Jan. 26–27	UBA SSB DX Contest
Feb. 2	Minnesota QSO Party
Feb. 2–3	Vermont QSO Party
Feb. 2–3	YL ISSB CW QSO Party
Feb.2–3	Mexican Int'l RTTY Contest
Feb. 2–4	Delaware QSO Party
Feb. 3	North American CW Sprint
Feb. 9	Asia-Pacific CW Sprint
Feb. 9–10	CQ WW RTTY WPX Contest
Feb. 9–10	Dutch PACC Contest
Feb. 9–10	Louisiana QSO Party
Feb 9–10	British Columbia QSO Challenge
Feb. 9–11	YLISSB SSB QSO Party
Feb. 10	North American SSB Sprint
Feb. 16–17	ARRL CW DX Contest
Feb. 22–23	Russian WW PSK Contest
Feb. 23–24	**CQ WW DX 160M SSB Contest**
Feb. 23–24	REF SSB Contest
Feb. 23–24	UBA CW DX Contest
Feb. 23–24	Mississippi QSO Party
Feb. 23–24	North American RTTY QSO Party
Feb. 24–25	North Carolina QSO Party
Mar. 29–30	**CQ WW WPX SSB Contest**

Given the status of the current sunspot cycle, it seems ironic to have a discussion about the robustness of contest activity. This irony is fueled, in part, by the growing pessimism that surrounds the overall future of our hobby. Also, with the average age of a typical ham approaching 240 years (hi), there may be some justification for these concerns. Of course, there are the other widely acknowledged distractions we continually hear about such as the internet, cell phones, computer games, etc. Indeed, the world is readily available at our fingertips.

Have you walked through a consumer electronics store lately? It's particularly interesting to look at the computer gaming department. It may not surprise you, but it sure doesn't look like a Dayton Hamvention® hospitality suite. The average age of the shopper/browser is probably 15 years old, dominated by a group of youngsters who appear to have as least as much enthusiasm for their sport as we did for amateur radio contesting in our early years. Yes, my fellow contester, we have serious competition indeed.

Well, now that I've gotten you to the point of possibily wanting to sell your equipment while there's still a marginal market of buyers available, let's shift gears and focus on an aspect of contesting that's very intriguing—especially in light of my above comments. Why is it that in a period of seemingly stagnant or declining growth in our ranks we continue to see increasing contest activity? Haven't we already speculated that the population of available HF operators is declining? With the average age of hams rising, isn't the number of "contest hours" operated by a typical competitor less than ever before? It seems that we have all of the ingredients to witness a *decline* in overall activity, not an *increase*.

I believe there are a number of factors to consider here. For starters, it would seem that for many new hams, the old-fashioned appeal of talking to faraway lands via radio has not changed—even with today's access to a worldwide community of computer users. If you're pre-disposed to the excitement that comes from "building it and working them yourselves," contest operating is a notable way to tour the world. Clearly, many new hams see HF operating from this point of view.

While amateur radio growth is declining, there are pockets of dramatic increase. You can determine this in many ways, but an obvious method is to understand a country's newly issued callsign allocations. Consider what's happening in countries such as England (with the M3, 2EØ, and G1–6 blocks now widely in use) or Germany (yes, the DM block is back, not to mention a hoard of new DB, DG, and DH callsigns). To be fair, some of this callsign jockeying is a result of local "vanity" programs, but there's no denying that many countries are seeing an influx of new HF operators. Clearly, these new people are a boon to contest scores. Also, when combined with other hot spots such as Italy, Holland, China, and Indonesia, the picture may not be as bleak as we think.

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Scott Redd, KØDQ
A Personal Note by K1AR

If you've read this month's "*CQ* Interviews" on page 13, you'll note that it features one of contesting's ambassadors, Scott Redd, KØDQ. For those of us who are a little "long in the tooth," we may remember Scotty as that blazingly fast operator from the days of XE1IIJ, or you could have worked him from A92Q or W3GRF. Most recently Scott has put in a few appearances from the sunny Caribbean.

From my personal experience, hams do not get any better representation than being allowed to share their reputation with KØDQ. I've known Scotty for nearly 30 years and am proud to count him as one of my good friends. Whether Scott was serving our nation in the Persian Gulf or helping lead the fight against worldwide terrorism, he has always been a gentle soul who has made time for his fellow hams and contributed so much to our hobby, and contesting in particular.

On a personal level, Scott has always provided counsel to my family, whether it was help in guiding my son through the process of being admitted to Georgia Tech or providing a shoulder to use when contemplating difficult career decisions.

If you had the opportunity to attend the 2000 Dayton Contest Dinner, you were rewarded with what most will claim was the best talk ever delivered at a ham radio event. And whether you measure his professional success by commanding a U.S. Naval Fleet or discussing foreign policy with a U.S. President, Scott has done it all. The fact that he can still rack up the QSOs at nearly 400 an hour is icing on the cake.

Now as Scotty chooses to move on to the next phase of his life, contesting is in for a treat, as we'll benefit from the enormous skills and experience that only someone such as Scott Redd can share. I, for one, am looking forward to having more of those QSOs!

Another key factor is the improvement in equipment—especially overseas. Certainly it can't hurt activity if operators have better equipment to use when operating. That not only makes for increased activity, but piques their interest so that they operate more hours in a given contest. The result—more activity and higher scores.

Finally, it's apparent that the quality of *operating is* getting better, too. There was a time when I was concerned about setting my keyer speed too high. Would I miss out on stations calling me because I was sending too fast? Although admittedly I'm coming at this point from an East Coast perspective, we can't send fast enough at peak rate times. The volume of quality operators has markedly increased for sustainable periods. This translates into higher rates and higher scores. Certainly, too, a quality piece of operating gear on the other end doesn't hurt from this perspective either. I would add that this is not just a CW issue. SSB rates have climbed to staggering levels as well. The fact is there are just more stations to work on any mode, in any contest, at any time of the year. This is true for both DX and many domestic contests. That's good for us contesters and great for the hobby in general!

What can be concluded here? As active participants in our hobby, we certainly have cause for concern about its future. Yet there are ways to measure activity and interest, and fortunately one of them is contest operating. Contesting has a lot of gusto and momentum. It's been an aspect of amateur radio that many hams have dabbled in since the early days of our hobby. Why? Because it's easy to get started at a basic level and addresses the interests of many hams, whether their focus is on DXing, station performance, or just wanting to make an intriguing QSO. There's no scientific way to understand the underlying phenomenon of escalating contest activity. I'm just glad it's happening!

A Comment from Riley

If you're an active ham in the U.S., you are likely to be aware of the interest by the FCC over the past decade in ensuring that the Amateur Radio Service plays by the rules. Leading that charge is Riley Hollingsworth, K4ZDH, FCC Special Counsel for Amateur Radio Enforcement.

There are several areas that are on Riley's radar screen when it comes to contest operating practices, but one topic of note is the illegal action by some U.S. hams of transmitting "out of band" on 40 meters SSB while saying, "Listen up for stateside." Indeed, the FCC is receiving an increasing number of complaints about the practice and is paying particular attention to potential violators whenever possible. While this scenario may not apply to you, Riley advises us that illegal operating activities such as these are the best way in the world to eliminate any near-term chance of upgrading an amateur license without a full-blown hearing. Put another way, the FCC, while supportive of the contest community, is even more passionate about its mission of enforcement for the minority of those who see things another way and don't play by the rules.

Speaking of Riley's views, I'm pleased to announce that K4ZDH will be the speaker at the 2008 Dayton Hamvention® Contest Dinner. This will be the first time that Riley has spoken directly to contesters at large, and I'm certain his comments will be riveting. Stay tuned for more information on tickets and other details.

Final Comments

Well, as usual I'm running right up against my deadline and the *CQ* editorial staff is looking over my shoulder waiting for me to hit the send button. As you can see this time, February is one of the most active contest periods of the year, with literally dozens of operating events available for us to enjoy. I hope to work you in a few!

73, John, K1AR

beginner's corner

A Propagation Primer: Dealing with Mother Nature

BY WAYNE YOSHIDA,* KH6WZ

Have you ever turned on your low-band rig and thought your receiver was broken *because there seemed* to be no stations on the air? Then when you checked the controls on the radio and your antenna connections, everything was fine. You next changed the band switch to listen on other frequencies and you could hear some radio signals. Maybe you have heard a few of your fellow radio club members saying something about "Cycle 22 versus Cycle 23" on the local FM repeater and wondered what in the world they were talking about.

While there are several very good, but very technical articles and books about radio propagation, every time I try to read them I get a headache. Thus, let's boil down all the techie-stuff and drill down to see what the propagation numbers mean. Let's see if we can answer the question "Is this going to be a 'good' or 'bad' day for radio?"

With a little understanding of the data from the propagation broadcasts on the radio and the internet, we should be able to make an educated guess about how good (or how bad) radio conditions are going to be as we get ready get on the air. Knowing about band conditions can also help you select the "right frequency" when you are participating in ham radio operating events such as Field Day or the CQ World-Wide DX Contest. Also, if you are trying to "work DX" and increase the number of states or countries you have contacted, knowing which bands offer the best (loudest) signals is a great asset.

By the way, we are currently at the "tail-end" of solar Cycle 23, which started in 1997. This is what a lot of hams are talking about these days when they complain about the poor conditions for long-distance (DX) contacts. However, since we are at the bottom of the cycle and conditions are generally poor, we should be happy to look forward to a new and better 11-year sunspot cycle, predicted to start sometime in mid-2008, although this is a very controversial topic of scientific discussion. More on the sunspot cycle later. . . .

One Practical Way to Tell: Turn on Your Radio

In the 1987 movie "Good Morning Vietnam," actor Robin Williams, as radio disc jockey Adrian Cronauer, gives a weather report to the troops and says, "You got a window? Open it."

We can also do a simple (but not sarcastic) test to check for radio propagation, just like that weather report. There is a network of ham radio beacons in 18 countries. The beacons are built and installed by ham radio volunteers, and they are coordinated by the Northern California DX Foundation (NCDXF) and the International Amateur Radio Union (IARU). These beacons operate on a certain schedule and have a distinct series of transmissions, so there should be no mistake in

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Call	Location	14.100	18.110	21.150	24.930	28.200	Operator	Status
4U1UN	United Nations (NY)	00:00	00:10	00:20	00:30	00:40	UNRC	OK
VE8AT	Canada	00:10	00:20	00:30	00:40	00:50	RAC/NARC	OK[1]
W6WX	United States (CA)	00:20	00:30	00:40	00:50	01:00	NCDXF	OK
KH6WO	Hawaii	00:30	00:40	00:50	01:00	01:10	KH6BYU	OK
ZL6B	New Zealand	00:40	00:50	01:00	01:10	01:20	NZART	OK
VK6RBP	Australia	00:50	01:00	01:10	01:20	01:30	WIA	OK
JA2IGY	Japan	01:00	01:10	01:20	01:30	01:40	JARL	OK
RR9O	Russia	01:10	01:20	01:30	01:40	01:50	SRR	OK
VR2B	Hong Kong	01:20	01:30	01:40	01:50	02:00	HARTS	OK
4S7B	Sri Lanka	01:30	01:40	01:50	02:00	02:10	RSSL	OFF[3]
ZS6DN	South Africa	01:40	01:50	02:00	02:10	02:20	ZS6DN	OK
5Z4B	Kenya	01:50	02:00	02:10	02:20	02:30	ARSK	OK[1]
4X6TU	Israel	02:00	02:10	02:20	02:30	02:40	IARC	OK
OH2B	Finland	02:10	02:20	02:30	02:40	02:50	SRAL	OFF[3]
CS3B	Madeira	02:20	02:30	02:40	02:50	00:00	ARRM	OK
LU4AA	Argentina	02:30	02:40	02:50	00:00	00:10	RCA	OFF[2]
OA4B	Peru	02:40	02:50	00:00	00:10	00:20	RCP	OFF[3]
YV5B	Venezuela	02:50	00:00	00:10	00:20	00:30	RCV	OK

[1]Operation may be intermittent due to local conditions.
[2] Moving to a new location.
[3]Currently off the air.

Table I– NCDXF propagation beacon schedule (times in UTC).

being able to tell if the signals you are hearing are coming from a particular beacon. A list of the beacons appears in Table I.

The NCDXF/IARU beacons send CW signals at 22 words per minute, a pretty snappy and fast code speed. One transmission consists of the beacon callsign followed by four 1-second dashes. The callsign and the first dash are sent at 100 watts. The remaining dashes are sent at 10 watts, 1 watt, and 100 milliwatts. Even though you may not be able to read the code, or the signals are very weak, you can still use the beacons as an indicator of radio conditions, because the frequencies and times are known, and the only variable most likely is radio propagation. (Of course, this assumes that your station equipment is in working order!)

For example, if your station is in southern California, and your radio is tuned to the 20-meter frequency of 14.100 MHz and the time is 0030 Coordinated Universal Time (UTC), chances are more than good that the CW signal plus the four 1-second dashes are coming from the KH6WO beacon in Hawaii.

Solar Activity: Sometimes Good, Sometimes Bad

For the more scientifically minded, there is another way to obtain radio propagation information—by checking solar activity using "Geophysical Alerts." This is yet another sort of "weather report," and in fact, some people refer to this as part of our "space weather." We also need a receiver to check for these reports, but the internet is another source of this information, too.

Fig. 1– In December 2006 a solar flare was strong enough to disrupt the GPS system—not a good day for radio. This image was captured by the GOES 13 SXI satellite. (Image courtesy of Space Weather Prediction Center (SWPC), Boulder, Colorado, National Oceanic and Atmospheric Administration (NOAA), US Dept. of Commerce)

In North America (and other parts of the world as well), we can tune the receiver to the National Institute of Standards and Technology (NIST) radio stations, located in Boulder, Colorado and the island of Kauai, Hawaii. The Geophysical Alerts are broadcast from WWV at 18 minutes after the hour and at 45 minutes after the hour from WWVH (Kauai). The messages are usually sent at 0000, 0300, 0600, 0900, 1200, 1500, 1800, and 2100 UTC). WWV operates on 2.5, 5, 10, 15, and 20 MHz, while WWVH operates on the same frequencies except for 20 MHz. These stations have transmit power in the tens of megawatts range, so you should be able to hear at least one of them on at least one of these frequencies anywhere in the world!

The Geophysical Alerts contain the data that impacts radio propagation. As mentioned, this information gets pretty technical, but I will try to define these terms in everyday language. The information for these alerts actually comes from National Oceanic and Atmospheric Administration (NOAA). Let's concentrate only on the data we need in order to determine whether we are having a good or bad radio day. There are two major sets of numbers needed to determine radio propagation: *solar flux* and the *A*- and *K-indices*.

Solar flux is a measurement of the intensity of solar radio emissions at about 2800 MHz. Solar flux is measured each day, and the ratings range from about 50 to 300. When these numbers are "high," this is an indication of a "good radio day" for HF operations. A solar-flux figure might be 65 or lower in years of minimum solar activity. In most years, the average solar flux figure falls between 100 and 200.

The *A*- and *K*-indices are a measurement of the behavior of the magnetic field in and around the Earth, and they change daily. The *A*-index is a daily value on a scale from 0 to 400, and the *K*-index uses a scale from 0 to 9. When these numbers are "low," this also contributes to a "good" HF radio day.

Other interesting terms include *solar radiation storms* and *radio blackout levels*. These are measured by NOAA's primary Geostationary Operational Environmental Satellites (GOES).

Speaking of GOES, in December 2006 a solar flare created an intense solar radio burst that caused a large number of receivers to stop tracking the GPS signal. This was a pretty bad day for radio, since the X-ray radiation coming at the Earth was enough to cause a temporary radio blackout. A picture of this solar flare was captured by the GOES 13 SXI (Solar X-Ray Imager) satellite (see fig. 1).

The Sunspot Cycle

As mentioned earlier, during the early part of the 11-year sunspot cycle, the flux numbers are low, but they rise and fall as the cycle proceeds. The numbers will remain high for extended periods around sunspot maximum. The sunspot cycle has low numbers in the early part (the start) of the cycle, and as the cycle progresses the numbers increase, meaning that radio conditions begin to improve, long-distance radio signals on the low bands begin to get louder, and contacts seem easier to make. At some point a "maximum" occurs and continues for a period of time, and then the solar-flux numbers gradually begin to get lower and conditions cause radio contacts to become more difficult to establish. These trends are created by Mother Nature, so although the scientists have been able to see the approximation of the cycle length, the actual "start," "finish," and "end" of these cycles is sort of unpredictable.

What Does All This Mean?

Radio-wise, when solar flux is high and the *A*- and *K*-indices are low, the bands from 20 meters through 10 meters (the "higher frequencies" of the HF bands) will have excellent conditions for long-distance contacts. On the bands from 160 to 30 meters (the "lower frequencies" of the HF bands), the solar-flux conditions are not much of a factor, but the *A*- and *K*-indices become more important, and very low numbers will provide the best long-distance contacts on these lower bands.

Currently we are at the bottom of a sunspot cycle, so radio conditions are generally poor. However, this does not mean that contacts cannot be made. If you doubt this, take a look at the contest results in recent issues of *CQ*, and you will see that stations from all over the world continue to make long-distance contacts despite the "theoretical" radio propagation conditions. However, for us "plain folks" with mediocre stations, this means that we have to work harder to get those long-haul contacts.

Think of this 11-year sunspot cycle as a "rite of passage" that every ham active on the HF bands goes through. In a few months we will definitely be able to say that we "survived" a sunspot minimum, and we all can look forward to improving conditions in the months to come. Also be sure to check the "Propagation" column by Tomas Hood, NW7US, each month in *CQ* for more information on propagation and what we can expect in the future. 73, Wayne, KH6WZ

References

Jacobs, George W3ASK, et al, *The NEW Shortwave Propagation Handbook*, published by CQ Communications, Inc., ISBN-10: 0943016118, ISBN-13: 978-0943016115. Available from the CQ Bookstore online at <http://www.cq-amateur-radio.com/>, or see ads in this issue of *CQ*.

Joselyn, J.A., et al, "Solar Cycle 23 Project: Summary of Panel Findings," November 8, 1996: <http://www.sec.noaa.gov/info/Cycle23.html>.

National Oceanic and Atmospheric Administration (NOAA), Cycle 24 Prediction News Release, April 2007: <http://www.sec.noaa.gov/SolarCycle/SC24/PressRelease.html>.

National Oceanic and Atmospheric Administration (NOAA), "Space Weather Page": <http://www.noaawatch.gov/themes/space.php>.

Luetzelschwab, Carl, K9LA, "The Sun, the Earth, the Ionosphere: What the Numbers Mean, and Propagation Predictions – A Brief Introduction to Propagation and the Major Factors Affecting It": <http://www.arrl.org/tis/info/k9la-prop.html>.

Northern California DX Foundation International Beacon Project: <http://www.ncdxf.org/Beacon/intro.html>.

WWV and WWVH broadcast information: <http://www.sec.noaa.gov/Data/info/WWVdoc.html>.

Geophysical Alerts online, from the NOAA website: <http://www.sec.noaa.gov/Data/info/WWVdoc.html>.

CQ Propagation Editor Tomas Hood, NW7US's website: <http://propagation.hfradio.org>

BY TOMAS HOOD,* NW7US

Electromagnetic (EM) Force – Part II

A Quick Look at Current Cycle 23 Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, November 2007: 2
Twelve-month smoothed, May 2007: 9

10.7 cm Flux
Observed Monthly, November 2007: 70
Twelve-month smoothed, May 2007: 74

***Ap* Index**
Observed Monthly, November 2007: 5
Twelve-month smoothed, May 2007: 8

As promised last month, let's delve into the facts of electromagnetic (EM) radiation, a self-propagating wave in space that is composed of both electric and magnetic components.

Electromagnetic radiation (including x-rays, all light, and radio waves) propagates in the form of waves, which we measure by their wavelength and frequency. The wavelength of an electromagnetic wave is measured from crest to crest, and a complete wave cycle consists of one wavelength. The frequency of this same wave is the number of complete wave cycles generated in one second. This measurement is expressed in Hertz (Hz). A frequency of 1,800,000 cycles per second, or 1.8 megahertz (MHz), is said to be in the 160-meter wavelength band of the radio spectrum.

The radio-frequency (RF) spectrum that is most useful for telecommunication ranges from about 10 kilohertz (kHz) to about 300 gigahertz (GHz). The RF sepctrum is divided into five main bands, or frequency ranges, each of which has a unique set of characteristics, uses, and regulations. Each of these main bands is further split into various subbands, which are also referred to as bands (see <http://en.wikipedia.org/wiki/Electromagnetic_spectrum> and http://en.wikipedia.org/wiki/Electromagnetic _radiation).

This month, we're going to focus on the "high frequency" band, sometimes known as the shortwave radio spectrum, or simply the "HF" frequencies. This range starts at 3.0 MHz and ends at 30.0 MHz. These frequencies are useful for both short-range and long-range radio communications because of a combination of unique phenomena, including the existence of the ionosphere.

Short-range radio propagation includes the movement of the radio wave from the point of its origin to a point directly in the line of sight of the transmitting source. As the radio wave propagates away from its source—say, from a dipole antenna—it cannot by itself follow the curve of the Earth's surface. However, communication beyond line-of-sight distances is possible.

While electromagnetic radiation exhibits wave properties, it also exhibits particle properties. In the particle model of electromagnetic radiation, a radio wave consists of discrete packets of energy. The frequency of the wave is proportional to the magnitude of the particle's energy. As these packets of energy are absorbed by an atom in the path of the radio wave, they excite an electron, elevating it to a higher energy level. If the electron is energized enough so that it escapes the positive pull of the atom's nucleus, it is liberated from the atom until it loses energy and can be captured by a nearby atom.

During such interaction between the EM wave and a region of atoms, a refraction of the radio wave may occur because of the change in speed caused by the transfer of energy through the atoms of the region. This is the case when a radio wave enters an ionospheric region and is refracted back toward the Earth. This ionospheric "reflection" is what allows HF radio signals to propagate over very long distances, beyond the line of sight.

Next month we will look more closely at the interaction between a radio wave and dense regions of atoms, such as an ionospheric region or a plasma trail created by a passing meteor.

February Propagation

From the middle of February through early April, typical equinoctial propagation conditions can be expected on the HF frequencies. This usually

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LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for February 2008

Propagation Index.....	Expected Signal Quality (4)	(3)	(2)	(1)
Above Normal: 5-9, 17-27, 29	A	A	B	C
High Normal: 3-4, 11-16 21-24, 26-28, 30	A	B	C	C-D
Low Normal: 2	B	C-B	C-D	D-E
Below Normal: 10	C	C-D	D-E	E
Disturbed: 1, 28	C-D	D	E	E

Where expected signal quality is:
A—Excellent opening, exceptionally strong, steady signals greater than S9.
B—Good opening, moderately strong signals varying between S6 and S9, with little fading or noise.
C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.
D—Poor opening, with weak signals varying between S1 and S3, with considerable fading and noise.
E—No opening expected.

HOW TO USE THIS FORECAST

1. Find the *propagation index* associated with the particular path opening from the Propagation Charts appearing in *The New Shortwave Propagation Handbook* by George Jacobs, W3ASK; Theodore J. Cohen, N4XX; and Robert B. Rose, K6GKU.

2. With the *propagation index*, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of 3 will be poor (D) on Feb. 1st, fair (C) to good (B) on Feb. 2, then good (B) on Feb. 3 and 4, and so on.

3. As an alternative, the Last-Minute Forecast may be used as a general guide to space weather and geomagnetic conditions through the month. When conditions are Above Normal, for example, the geomagnetic field should be quiet and space weather should be mild. On the other hand, days marked as Disturbed will be riddled with geomagnetic storms. Propagation of radio signals in the HF spectrum will be affected by these conditions. In general, when conditions are High Normal to Above Normal, signals will be more reliable on a given path, when the path is ionospherically supported.

means a noticeable improvement in conditions between the Northern and Southern Hemispheres. Look for improvements between the United States and South America, Africa, Australasia, Antarctica, and parts of Asia. Equinoctial propagation occurs during the spring and fall months, when the sun is most directly overhead at the equator, producing similar ionospheric characteristics over large areas of the world. It tends to maximize during sunrise and sunset periods and over both short- and long-path openings.

As I write this, we are at the very bottom of solar Cycle 23. How alive can the higher frequencies be with long-distance propagation? It is always a surprise to the casual amateur radio operator when he or she gets on a band such as 10 meters during the solar minimum and discovers that there is still some life on the band, beyond short-skip distances, especially during periods when sunspots occur and the daily 10.7-cm flux levels increase enough to wake up the higher frequencies. However, the currently weak solar activity does not support worldwide DXing on the highest HF bands for any significant length of time. The lower HF bands can become real players, though, as veteran HF operators know.

During the daylight hours, optimum DX propagation conditions are expected on 20 meters. The band is forecast to open to all areas of the world sometime during this period, although often with moderate to strong fading. Conditions on 17 and 15 meters may be good, too, but usually for far shorter distances than during peak solar cycle years. Conditions are expected to become optimal for an hour or two after sunrise and again during the late afternoon. For short-range paths (regional), 40 meters should be usable during most of the daylight hours. With increasing hours of daylight during February, expect the HF bands to remain open for an hour or so longer into the early evening than during the prior winter months.

Daytime conditions on 10 and 12 meters will be less exciting. Openings will be possible for stations in low-latitudes using north-south paths, with no openings expected into Europe and the Far East.

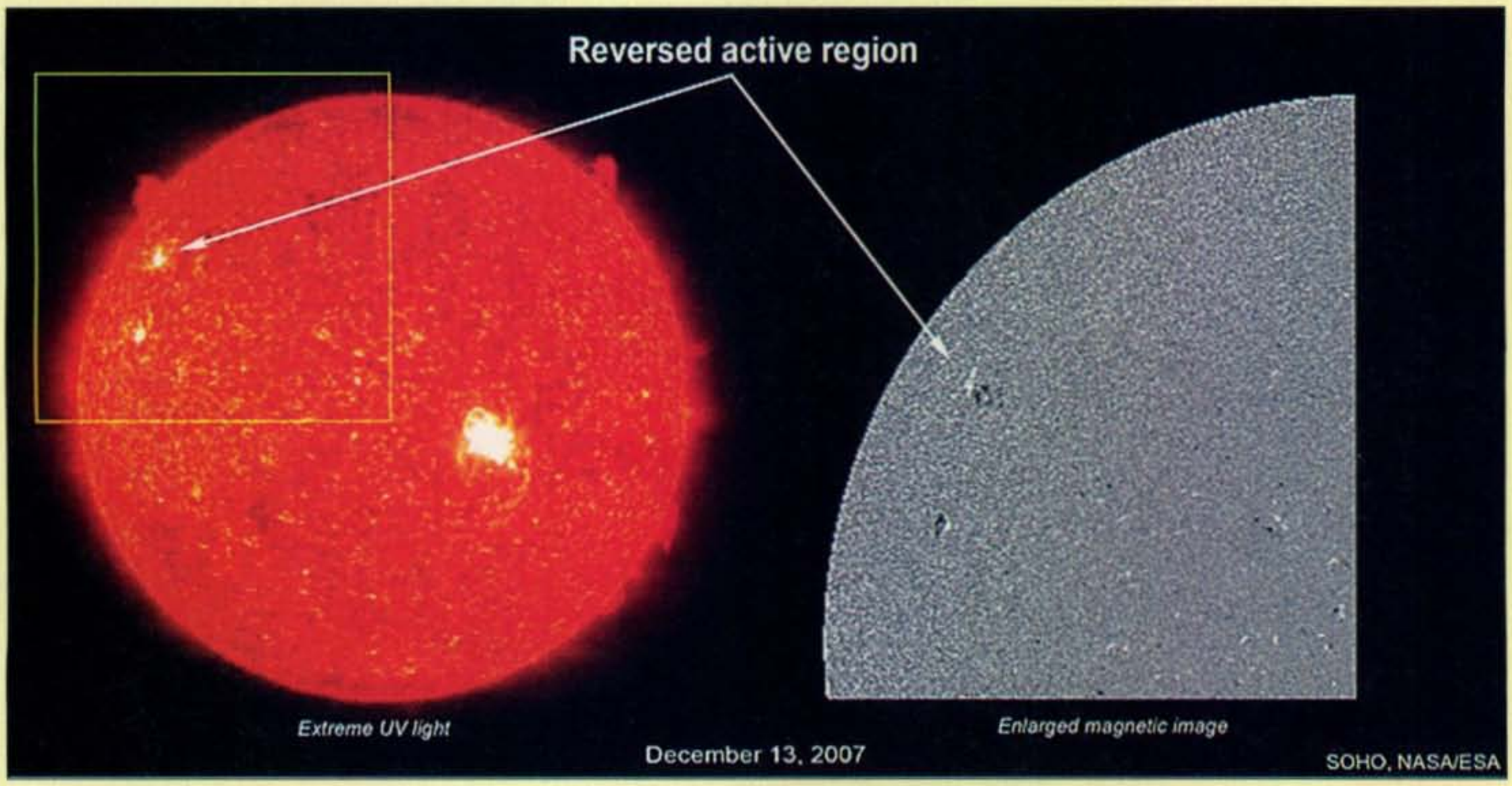
During the early evening hours and to as late as midnight, seven bands should be available for DX openings; 15, 17, 20, 30, 40, 80, and 160 meters. Fifteen and 17 meters should hold up for openings towards Central and South America and the Caribbean, the Pacific area, the Far East, and parts of Asia. Better openings into many areas of the world may be possible on 20 meters during this period, with the strongest signals from southerly and westerly directions. Good DX conditions are also forecast for 30, 40, and 80 meters for openings towards the east and the south. Openings in the same direction, but with higher noise levels and weaker signals, should also be possible on 160 meters.

Between midnight and sunrise it should be a toss-up among 20, 30, and

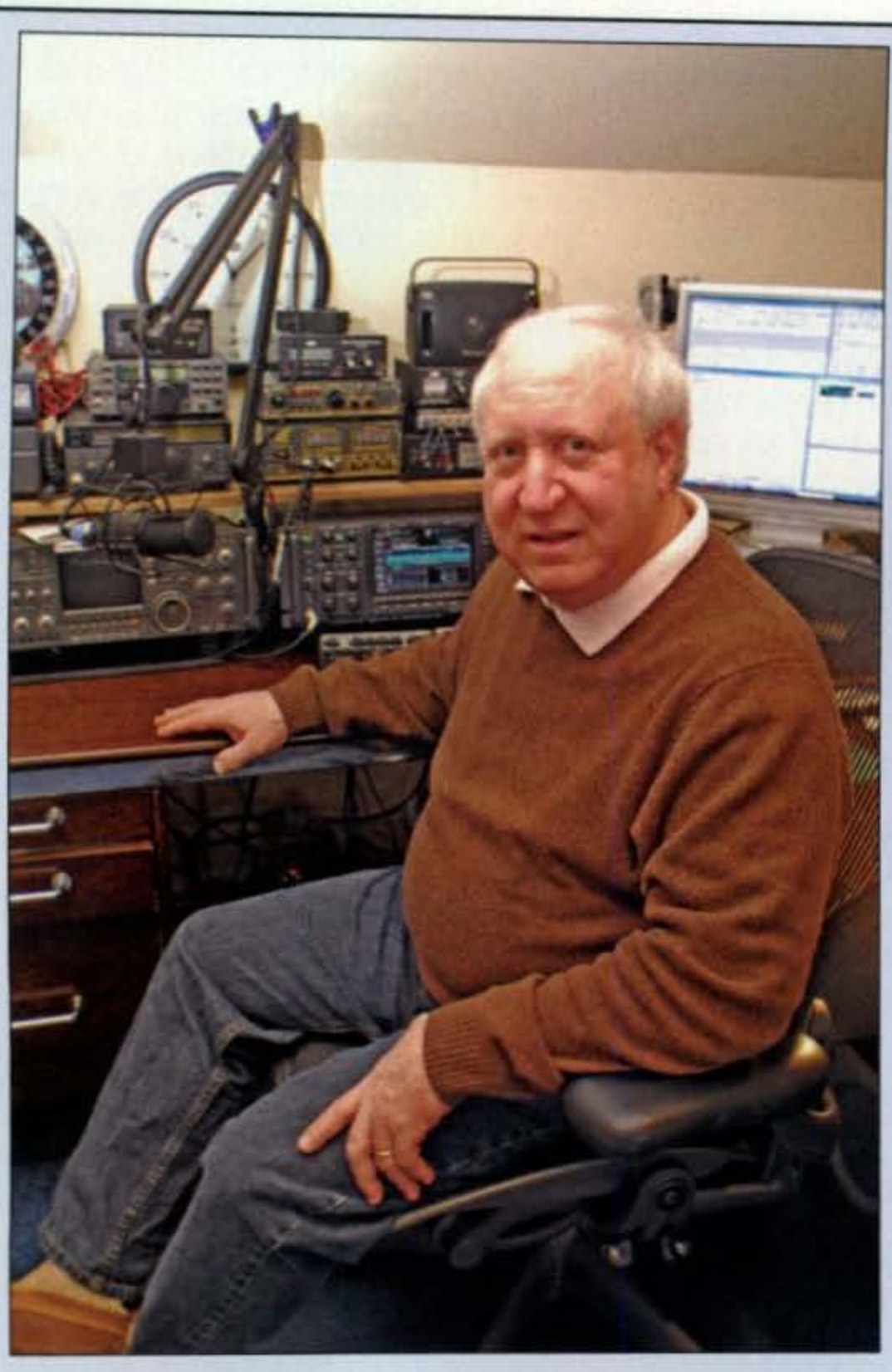
Solar Cycle 24 News Flash!

On December 11, 2007, a patch of magnetism developed on the eastern limb of the sun that could be a sign that solar Cycle 24 has finally arrived. This high-latitude event featured a reversed polarity magnetic orientation, reversed from the predominant orientation of solar Cycle 23 magnetic structures. Solar physicist David Hathaway of the Marshall Space Flight Center said this about the event: "New solar cycles always begin with a high-latitude, reversed polarity sunspot." "High latitude" refers to the sun's grid of latitude and longitude. Old solar cycle spots appear near the sun's equator. New cycle spots develop higher, around 25 or 30 degrees latitude.

The region that appeared on December 11th fits both these criteria. It is high latitude, at 24 degrees north, and is magnetically reversed. However, this magnetic structure was not a sunspot, but just a bright knot of magnetic fields. If these fields had coalesced into a dark sunspot, scientists would have announced that solar Cycle 24 has officially begun. This has not happened as of the writing of this news flash in mid-December.



From SOHO, a UV-wavelength image of the sun and a map showing positive (white) and negative (black) magnetic polarities. The new high-latitude active region is magnetically reversed, marking it as a harbinger of a new solar cycle. (Source: SOHO/NASA)



On the Cover

Lots of people try to get their names up in lights, but Fred Serota, K3BHX, of Blue Bell, Pennsylvania, managed to get ham radio's name up in lights—literally. As ARRL State Government Liaison for Eastern Pennsylvania, several years ago Fred helped get the state's governor to declare June as Amateur Radio Month in Pennsylvania, and then got the local electric company to use the public service billboard on top of its office tower in Philadelphia to flash a message reading, "Ham Radio Operators Emergency Communications In Time Of Need" (see photo, September 2005 *CQ*, p. 52).

A pediatrician in the Philadelphia suburbs, Fred's main ham radio interest is DXing. His main radio is an ICOM IC-7800, with an older IC-781 as backup. He's also got an Elecraft K2 QRP rig and the D-Star capable IC-2820 for 2 meters and 440 MHz. But Fred says his favorite places to be are the 40- and 20-meter CW bands, working DX the old-fashioned way.

A ham for the past 50 years, Fred says he got his start by going to work with his dad, who worked at WIP radio in Philadelphia in the 1950s. Fred hung around with the engineers, several of whom were hams. One of them gave him his license exam, and then helped him put up an antenna and get on the air. The antenna you see on our cover (*not* the same one) is a Moseley Pro 40-10-meter beam at 40 feet on his US Tower crankup. Fred's other main ham interest right now is working with some fellow University of Pennsylvania alumni to get ham radio active again at the college. *(Cover photo by Larry Mulvehill, WB2ZP)*

40 meters for DX paths. These bands should open to many areas of the world with conditions favoring openings towards the south and the west. Expect similar conditions on 80 meters, but with weaker signals and higher noise levels. Be sure to check 160 meters for some unusual DX openings towards the south and the west during this period. Conditions on the bands between 160 and 20 meters are expected to peak at local sunrise.

VHF Conditions

Trans-equatorial (TE) scatter propagation tends to increase during the equinoctial period, and some 6-meter openings may be possible between 7 and 10 PM local time. The best bet for such openings is between the southern tier states and South America for paths approximately at right angles to the equator. An occasional TE opening may also be possible on 2 meters. Unlike *F2*-layer or sporadic-*E* openings on 6 meters, TE openings are characterized by very weak signals with considerable flutter fading.

Expect moderate coronal-hole activity. With the influence of coronal mass ejections (CMEs) or elevated solar-wind streams, the geomagnetic field may reach minor storm levels. While most days will see quiet conditions, there is a fair chance that geomagnetic storms will trigger modest auroral activity. Auroral activity tends to occur more frequently during the equinoctial period.

Current Solar Cycle Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for November 2007 is 1.7, up from October's 0.9. Perhaps we've seen the lowest monthly mean, and the end of Cycle 23 is indeed at hand. The lowest daily sunspot value of zero (0) was recorded on November 1–5, 7–15, 18–23, and 27–30. The highest daily sunspot count was 10 on November 16 and 24. The 12-month running smoothed sunspot number centered on May 2007 is 8.7. A forecast for 2008 has been released, calling for a smoothed sunspot count of 3 and reflecting a much more conservative and gradual start of Cycle 24 (see the news flash for an additional update).

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 69.7 for November 2007. The 12-month smoothed 10.7-cm flux centered on May 2007 is 74.2. The newly released predicted smoothed 10.7-cm solar flux for January 2008 is 61.

The observed monthly mean planetary *A*-index (*Ap*) for November 2007 is 5. The 12-month smoothed *Ap*-index centered on May 2007 is 8.4. Expect the overall geomagnetic activity to vary greatly between quiet to minor storm levels during February. Refer to the Last-Minute Forecast at the beginning of this column for the outlook on conditions during February.

I invite you to visit my online propagation resource at <http://propagation.hfradio.org/>, where you can get the latest space data, forecasts, and more, all in an organized manner. If you have a cell phone with internet capabilities, try <http://wap.hfradio.org/>.

Drop me an e-mail or send me a letter if you have questions or topics you would like to see me explore in this column. Also, I'd love to hear any feedback you might have on what I have written. Until next month . . .

73, de Tomas, NW7US

math's notes

BY IRWIN MATH,* WA2NDM

Ultra Capacitors

In the June 2007 column we described the relatively new breed of so-called "ultra capacitors." These devices have capacitance ratings of well beyond 1 Farad, and what is so unique is the fact that they can store significant amounts of energy. The common devices that the experimenter can easily obtain, however, usually have working voltages of only 5 volts, and as a result are somewhat limited in their applications. Higher voltage units certainly have been produced, and it seems that their applications could easily change our view of portable power supplies.

What primarily prompted this month's column is a technical brief in the August 2007 issue of "NASA Tech Briefs," a publication describing technology developed for space applications that could have commercial uses. The particular article describes a cordless-drill battery-replacement assembly using ultra capacitors. This was built as a proof-of-concept device, but you could easily adapt the results for your particular application.

In the article the authors obtained a common industrial cordless drill and replaced its battery pack with six 100-Farad (yes we said Farad!) 2.5-volt capacitors connected in series. This resulted in a 16.67-Farad capacitor at 15 volts. The capacitor was then charged by a simple voltage source. The total energy stored in such a "capacitor pack" can be calculated by the formula $E = {}^1/_2CV^2$, which in this case works out to 1875 watt-seconds! This means that such a capacitor could deliver this amount of energy in 1 second. In a period of 10 seconds, a total of 187.5 watts could be delivered, and in 100 seconds (1.6 minutes), 18.75 watts. Remember, however, that this is not a battery but a capacitor. As a result, the discharge voltage will vary as a function of time ,and at the end of the time period the voltage will be zero (or close to it). Using the standard RC time-constant formula (TC = RC), the capacitor's voltage will decrease from maximum to 37% in one time constant. If the load required 1 ampere, the resistance of the load would be 15 ohms (15 volts/1 ampere = 15 ohms). This means that during one time constant (15 × 16.67 = 250 seconds, or 4.1 minutes), the initial 15 volts would drop to 5.55 volts. If the load required less current (the resistance would be higher), the voltage would drop slower.

I have no idea how well the cordless drill actually performed, and if you want more details you will have to get a copy of the August 2007 issue and search for the article entitled "Ultra-Capacitor Cordless Drill, NASA LEW-18116-1." If you try to duplicate this experiment, please let me know the results of your efforts. However, if you do wish to duplicate the experiment, be sure to use equalizing resistors across each capacitor. Subjecting them to voltages above their maximum rating can destroy them in short order. Fig. 1 shows a way to do this. Keep in mind that this is my circuit, and the original article does not give a complete schematic. I must say that this article really sparked my interest, as it seems to me that this concept could easily be a candidate for portable power in the future. In addition, it is one with which the average experimenter could easily get involved.

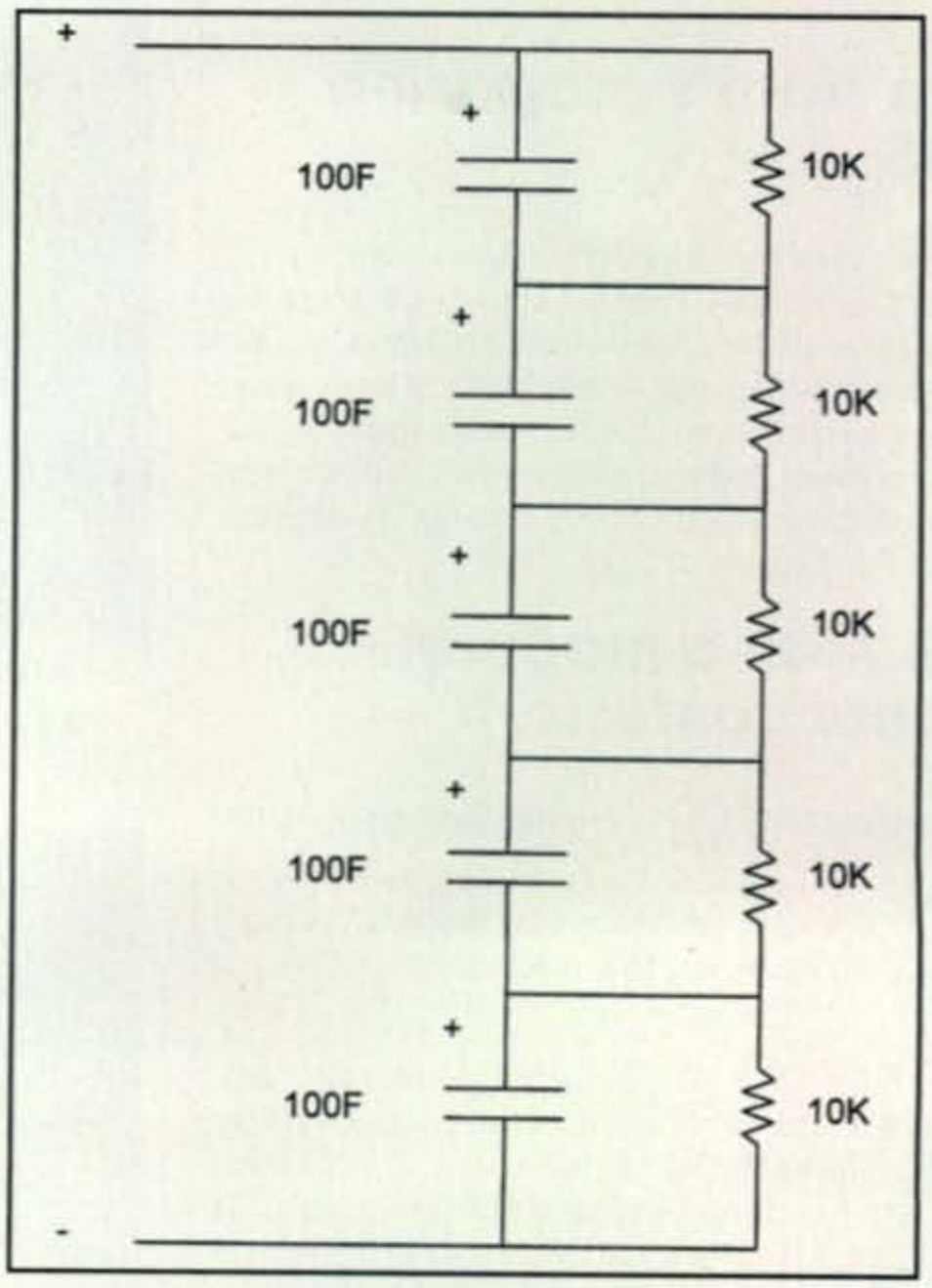


Fig. 1– Ultra-capacitor bank with equalizing resistors.

In general, when compared to batteries, ultra capacitors have a number of significant advantages. They do not use chemical reactions,, so they do not "wear out." In fact, they can be charged and recharged millions of times with very little degradation. In an AC circuit, a coupling capacitor, for example, is charged and discharged literally millions of times per second with no degradation. Ultra capacitors can also be charged very rapidly, as they are only capacitors and, as we just indicated, do not have to rely on chemical reactions. Finally, ultra capacitors have no memory, like nickel-cadmium batteries, and can even be discharged repeatedly down to zero with no adverse effects. What a great battery replacement!

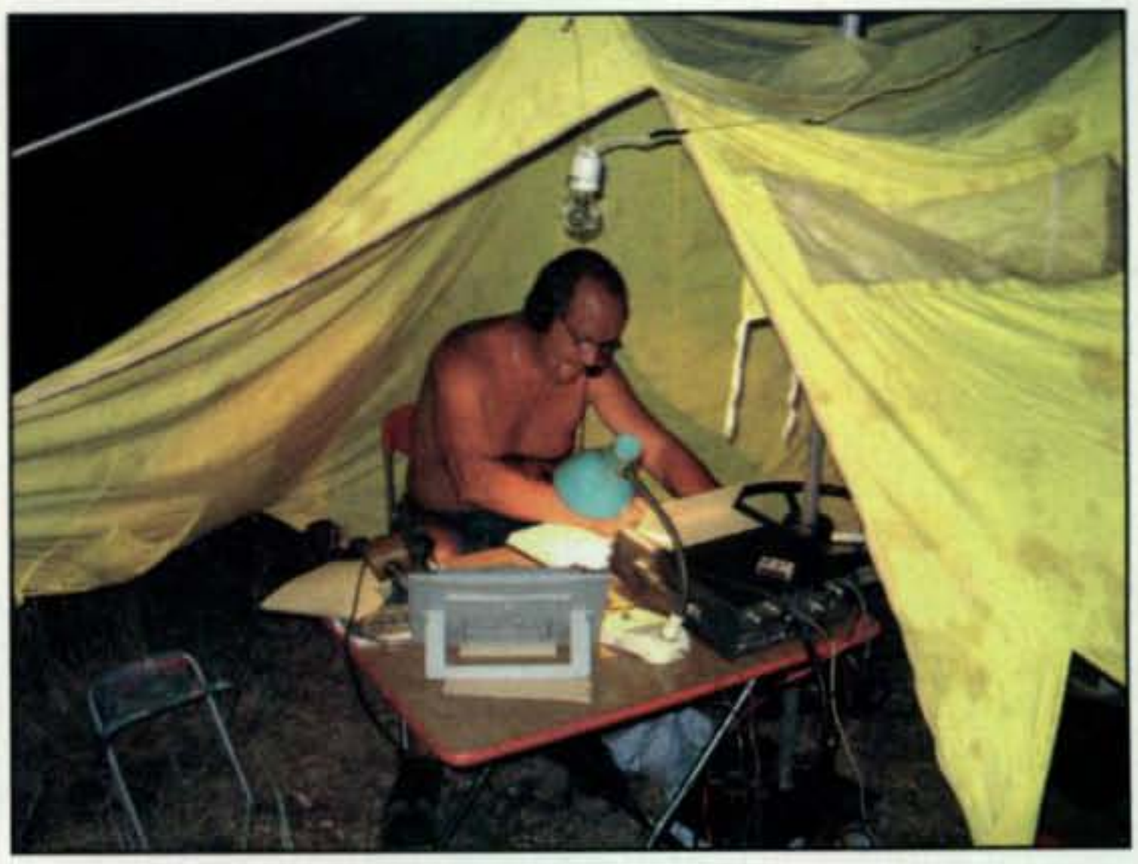
There is a downside, however. To charge such a capacitor requires a large energy source, so if you want to deliver 1875 watts in a fraction of a second, you had better have a way to force 1875 watts into the capacitor. To charge the capacitor in 1 second will require the full 1875 watts. If you want to slow down the rate of charge to something a bit more practical, simply add a resistor in series with your voltage source. Now, though, you will have to go back to the RC time-constant issue (in reverse). Still, such a system can be charged in a fraction of the time needed for an equivalent battery. A final downside is cost, but as we know, mass production will take care of that eventually. Nevertheless, here is food for thought!

73, Irwin, WA2NDM

*c/o CQ magazine

Results of the 2007 CQ WW VHF Contest *(from page 39)*

Art, K1BX, at the controls of the 6-meter station at K1WHS.



Here's Yuri, UR5ITU, operating multi-op station UT1IC from locator KN98FD in eastern Ukraine. Antennas used in "field conditions" were six elements on 50 MHz and seven elements on 144 MHz, good for winning the world multi-op plaque.

scheduled for July 19–20. The full announcement will appear in the June issue of *CQ*, on the CQ website (www.cq-amateur-radio.com), and on the VHF contest website (www.cqww-vhf.com). In addition, thanks to the FB efforts of several overseas amateurs, the contest announcement now gets posted on websites in several languages: Spanish, Portuguese, Russian, Thai, and more now coming on line.

With that, the CQRI members adjourned to the nearby Aquidneck Marina to view the KB1KMS marine rover-mobile scheduled for its maiden VHF voyage to water-bound grids FN52 and FN40 in the 2008 CQ WW VHF Contest. 73, John, W1XX

Scatter

First time in this contest. Had lots of fun as a hilltopper. Not much equipment needed, just an FT-817, Arrow antenna, a lawn chair and a big hat for shade . . . **AI9I.** Entered for the first time in conjunction with the UK 144 Backpacker Contest . . . **GW8ZRE.** Not much propagation but worked two new grids on 6 . . . **K3TC.** Great contest, but wish there had been more enhancement . . . **K4UVA.** Sure wish more people would listen down in the CW portion . . . **K8SIA.** This was the most CW QSOs I have made in any VHF contest. Calling CQ during the two-hour *E*-skip opening on Saturday evening boosted my score with several new grids . . . **WB2AMU.** It was nice to

This is the self-styled "Gridsquare Limo" of station KA2LIM. It houses the operating positions for this multi-op effort from western New York grid FN12.

see another 6-meter opening this year. It was not as spectacular as last year, but fun nonetheless. Thanks for all the QSOs . . . **W9SZ.** KL7s and VEs were nice to see in the contest . . . **W7MEM.**

I operated portable from the island of Crete, SV9, during my vacation . . . **IK2MLS.** First time operating this contest with only a few hours to operate. I sure enjoyed a beautiful Vermont summer afternoon on Saturday with some simple portable antennas from FN33 and FN34. I heard some stations on 2 meters from Canada but couldn't quite make the contacts . . . **K1ZK.** This was my first contest and I had a blast! Saturday opening on 6 meters was awesome. Looking forward to more contesting . . . **KB1NRB.** Operated portable in CN92, Lake County, Oregon, at 7,135 feet. A fun contest, but 6-meter conditions not as good as last year . . . **KB7ME.** Not as good as last year, but thanks anyway for a great contest . . . **KFØQ.** It's not how much you score, but that you participate . . . **KF6JBB.** Operated only 1 1/2 hours on a hilltop overlooking San Juan Capistrano where it was windy and warm . . . **KG6TGI.** Only worked an hour and a half. Wish I had more time . . . **KW1AM.** Our best score we have had in this contest . . . **NØUNL.** With some openings on 6, I had a great time . . . **N1GLT.** Only had a G5RV Jr. for 6 meters and a J-pole for 2 meters operating portable at camp in New Hampshire. Will have some aluminum up in the air next time . . . **N1ORK.** The VHF contests are always great fun, even more so when the band is open. How does CQ manage to time the contest to these openings? . . . **N1ZN.** Six meters was fun on Saturday, but things really slowed down on Sunday . . . **N2GKM.**

Thanks to UW5W and US5WU for two new grid locators on 2 meters, for me numbers 276 and 277 . . . **OE1SOW.** A better performance than my 2005 effort from Mt. Wachusett (MA) in FN42 with its beautiful view all the way to Boston. An opening to the south and Midwest appeared just as I needed to pack and get off the mountain. Talked to many spectators explaining ham radio, one reason why I really enjoy operating from a public venue . . . **NE1RD.** Good activity but I only had one hour to operate . . . **VA2LGQ.** First time in this contest. I really like the format, as it's easy for anyone with the newer HF/VHF radios to get on the air and experience VHF contesting . . . **W3BC.** Just one good opening on Saturday evening, nothing like last year. We'll probably be remembering the 2006 sporadic-*E* for a long time . . . **W5WVO.** Fun contest, though it would've been great if 6 meters opened up more on Sunday. Didn't work any Florida or Caribbean this year, although OX3LX was a nice surprise at 0110Z. Worked over 16 hours of the contest and hope to do it again next year . . . .**W2AJM.** There were a couple of nice surprises with short EU and OX opening . . . **W4TAA/VE3.** This is always a fun contest. Conditions were not what they were last year when we worked a bunch of Europeans; this year only one . . . **W3SO.** Great openings to W1, W5, and WØ on Saturday while roving . . .

W4VHF. This year 6 meters was all sporadic-*E* to random areas, quiet one moment and then a 20 over 9 signal would pop in and right back out. Sunday morning there was a two-plus hour pipeline to Texas. Great contest once again with participation picking up. Keep up the good work and we'll see everyone again next year . . . **KG6IYN.**

Saw some of the shortest *E*-skip of my life on 6 meters with many NY-to-OH and NY-to-WV contacts. My shortest path was 414 miles to WA8SDA in EM99 at 2359Z on Saturday . . . **N2QT.** Lots of *E*-skip on 6 meters with 15 EM and 18 EN grids, but missed the VEs. FN43, 44, and 54 were very loud and very short skip, 450 miles. Worked one double hop, DM79 in Colorado . . . **N3UM.** This was a great contest with good propagation and ops not working the contest giving out QSOs to those who were. With tropo and good meteors, what else could you ask for?...**N5KDA.** Gave QRP a shot again hoping to improve on my 2004 score. Six meters was open sporadically Saturday, but propagation was not favorable for QRP. Really had to work for every contact. There was a time Saturday evening on 6 meters it was a challenge to know where to point your beam. The band was propagating to the NE, SE, and SW at the same time from EN52. There was a short-lived 2-meter tropo opening to the grids south of me in EM63, EM50, and others, but the guys up north in EN53 and EN64 seemed to be more in the drop zone . . . **N9TF.** This was my first time as a single op a contest. I am 13 years old. It sure was fun when 6 meters was open . . . **KE5CIF.**

GRID MULTIPLIER LEADERS
BY BAND
WORLD

Single-Op
50 MHz

W4TAA/VE3	112
UR5QU	105
EH6SA	98
T9ØT	97
UT7QF	84
UT5EU	74
UT2II	68
UZ7U	67
UY5QO	67
EA3AKY	64

144 MHz

DA2A	46

Multi-Op
50 MHz

OK1DC	40
IW1QN/1	33
HG3IPD	20
UT7E	20

144 MHz

UT1IC	15

USA

Single-Op
50 MHz

K1TOL	171
K2DRH	153
W5PR	136
WD5K	123
W1XX	113
W2MMD	108
KA1LMR	102

144 MHz

K2DRH	68
N5KDA	45
KCØTPP	41
N9DG	36
K9CT	33
W4WJF	30
W3ADC	29
KB9TLV	28
N3HBX	27
NØVZJ	27

Multi-Op
50 MHz

K1WHS	179
K8GP	165
K5QE	156
K3EAR	148
W3SO	118

144 MHz

K5QE	66
K3EAR	61
K8GP	59
W3SO	51
K1WHS	32

Number/letter groups after call letters denote the following: Class (A = all band, 6 = 6 meters, 2 = 2 meters, Q = QRP, Q* = QRP portable hilltopper, R = rover, M = multi-operator), Final Score, Number of QSOs, Number of grid locators, State/Province (USA/Canada only), Grid Locator or Number of grids activated (rover only). Rover scores for USA are listed separately. Certificate winners are listed in boldface.

2007 VHF RESULTS
NORTH AMERICA
UNITED STATES

W1XX	**A**	**65,928**	**439**	**134**	**RI**	**FN41**
K1EM	**A**	**35,100**	**294**	**108**	**CT**	**FN31**
W1RZF	**A**	**31,212**	**265**	**102**	**MA**	**FN42**
WA1Z	**A**	**18,060**	**206**	**84**	**NH**	**FN42**
KC1MA	**A**	**11,016**	**148**	**68**	**MA**	**FN51**
W1OUN	A	9,638	134	61	MA	FN42
N1JEZ	**A**	**8,908**	**117**	**68**	**VT**	**FN44**
K1TR	A	8,544	133	48	NH	FN42
WZ1V	A	8,400	125	48	CT	FN31
K1OQ	A	7,442	105	61	CT	FN41
N1SXL	A	7,150	118	50	CT	FN41
N1GLT	A	5,406	100	53	NH	FN42
K1AFC	A	3,080	71	40	MA	FN32
W1DYJ	A	2,788	67	34	MA	FN42
W1TR	A	2,665	61	41	CT	FN31
N1ZN	A	2,415	57	35	CT	FN31
K5ZD	A	2,001	58	29	MA	FN42
N8RA	A	1,817	48	23	CT	FN31
KA1EKR	A	1,125	38	25	MA	FN42
K1VU	A	816	33	24	MA	FN42
KE4VH	A	416	25	13	CT	FN31
KB1NRB	A	72	8	6	CT	FN41
N1ORK	A	21	5	3	CT	FN43
K1TOL	**6**	**91,143**	**533**	**171**	**ME**	**FN44**
KD1EU	6	338	26	13	CT	FN31
N4CW/1	6	234	26	9	ME	FN53
KW1AM	6	180	18	10	CT	FN41
W1QK	**Q***	**3,234**	**77**	**42**	**CT**	**FN31**
K1ZE	**Q***	**3,162**	**72**	**31**	**CT**	**FN31**
NE1RD	**Q***	**1,380**	**59**	**20**	**MA**	**FN42**
KB1ILY	Q*	682	31	11	CT	FN31
KA1LMR	**Q**	**49,257**	**371**	**117**	**NH**	**FN43**
W3EP	**Q**	**13,148**	**151**	**76**	**CT**	**FN31**
N1ESE	Q	6	2	2	NH	FN43
K1WHS	**M**	**236,953**	**958**	**211**	**ME**	**FN43**
KB1DFB	**M**	**19,099**	**199**	**71**	**CT**	**FN41**
NE1B	**M**	**16,125**	**192**	**75**	**NH**	**FN42**
KA2CYN	**A**	**9,834**	**139**	**66**	**NY**	**FN31**
KV2M	**A**	**8,211**	**124**	**51**	**NJ**	**FM29**
WB2RVX	A	5,390	86	49	NJ	FM29
WB2LEB	A	3,180	83	30	NJ	FN20
N2GKM	A	1,690	48	26	NY	FN31
N2CSP	A	1,305	39	29	NJ	FN20
N2SLO	A	864	28	24	NY	FN30
K2RMX	A	748	30	17	NY	FN20
N2KIN	A	665	34	19	NY	FN30
WA2BTR	A	522	22	18	NJ	FN20
WA2NXK	A	154	13	7	NJ	FN20
W2MMD	**6**	**32,508**	**301**	**108**	**NJ**	**FM29**
W2AJM	**6**	**4,704**	**98**	**48**	**NY**	**FN21**
WB2AMU	6	3,024	72	42	NY	FN30
W2CVW	6	88	11	8	NJ	FN20
WB2SIH	**Q**	**4,256**	**79**	**38**	**NY**	**FN31**
W2JEK	Q	612	33	18	NJ	FN20
KA2LIM	**M**	**41,697**	**283**	**123**	**NY**	**FN12**
K2SMD	**M**	**10,974**	**145**	**59**	**NJ**	**FM29**
K2OAK	M	6,930	120	42	NJ	FN20
N3HBX	**A**	**43,384**	**295**	**116**	**MD**	**FM19**
K2PLF	A	17,424	178	88	MD	FM19
K3ISH	**A**	**15,760**	**166**	**80**	**PA**	**FN21**
N3ALN	A	15,522	163	78	MD	FM19
N3UM	A	8,835	128	57	MD	FM18
KB3P	A	3,040	62	38	PA	FN20
KB3LIX	A	1,209	37	31	PA	EN90
K3NK	A	980	44	20	PA	FM19
N3FNE	A	672	35	16	MD	FM19
W3LL	A	507	29	13	MD	FM19
W3DQT	A	275	20	11	MD	FM08
K1DS	A	264	17	12	PA	FN20
NS3T	A	154	18	7	MD	FM19
K3MSB	**6**	**9,225**	**123**	**75**	**PA**	**FM19**
KA1DWX	**6**	**1,960**	**56**	**35**	**DE**	**FM29**
AF3I	6	714	34	21	PA	FN10
N3GE	6	2	2	1	DC	FM18
W3ADC	**2**	**6,786**	**117**	**29**	**MD**	**FM19**
KB3KRW	2	64	8	4	MD	FM19
WA2QDI	2	30	5	3	PA	FN21
WB0IWG	Q	416	21	16	PA	FM19
N3TEE	Q	84	11	7	DE	FM29
K3EAR	**M**	**218,045**	**748**	**209**	**PA**	**FM19**
W3SO	**M**	**106,977**	**468**	**169**	**PA**	**FN00**
W3KWH	M	1,484	42	28	PA	EN90
W3GNQ	M	493	23	17	DE	FM28
K4QI	**A**	**37,454**	**254**	**122**	**NC**	**FM06**
KN4SM	**A**	**25,466**	**194**	**107**	**VA**	**FM16**
W4MYA	A	21,185	193	95	VA	FM07
AA4V	**A**	**19,552**	**201**	**94**	**SC**	**FM02**
K4SV	A	10,557	129	69	NC	EM85
K4FJW	A	9,240	137	55	VA	EM86
W4WA	**A**	**8,437**	**133**	**59**	**GA**	**EM84**
N4TL	A	5,145	101	49	NC	FM05
K4TO	**A**	**5,088**	**79**	**48**	**KY**	**EM77**
WJ9B	**A**	**4,750**	**92**	**50**	**FL**	**EL89**
WA4QYK	**A**	**4,578**	**89**	**42**	**TN**	**EM86**
K2EVW	A	3,555	67	45	VA	EM96
W4FRA	A	3,264	64	48	NC	FM15
K4FTO	A	1,488	51	24	VA	FM18
KI3O	A	1,080	35	24	VA	FM18
K8YC	A	1,050	38	21	NC	EM95
KC4RSL	A	975	34	25	GA	EM84
WB4DXU	A	702	33	18	TN	EM86
AD4IE	A	693	29	21	NC	EM95
W4NE	A	560	24	20	SC	EM84
KI4MWQ	A	450	24	18	VA	FM18
K1LNX	A	325	22	13	TN	EM86
K3IXD	A	315	17	15	SC	EM93
AI4GR	A	230	19	10	NC	EM85
W1LVL	A	143	12	11	FL	EL99
KG4QEN	A	120	10	8	NC	EM95
N3UA	A	32	6	4	VA	FM17
K4NRT	A	28	6	4	TN	EM86
KW2N	A	12	3	3	NC	EM85
K4ELV	**6**	**7,772**	**134**	**58**	**AL**	**EM63**
K4SN	**6**	**4,554**	**99**	**46**	**FL**	**EL96**
W2YE	**6**	**4,150**	**83**	**50**	**VA**	**FM19**
N4MJ	**6**	**3,402**	**81**	**42**	**TN**	**EM56**
WB4YDL	6	2,625	75	35	TN	EM56
W8RJL	6	2,014	53	38	VA	FM16
W6UB	6	989	43	23	TN	EM75
N4MM	6	962	37	26	VA	FM09
N2QT	6	782	34	23	VA	FM07
W4DDR	6	609	29	21	TN	EM85
K4WI	6	540	27	20	AL	EM62
KC8KSK	6	352	22	16	SC	FM03
WA4ZKD	6	336	21	16	KY	EM78
N4GG	6	288	18	16	GA	EM74
WA8OJR	6	288	18	16	SC	EM94
W9WI	6	285	19	15	TN	EM66
KI4QNG	6	240	16	15	VA	FM18
K8IJ	6	35	7	5	KY	EM78
WA4OSD	6	25	5	5	TN	EM66
W2OO	6	16	4	4	TN	EM85
K4BAI	6	15	5	3	GA	EM72
W4WJF	**2**	**10,260**	**171**	**30**	**NC**	**EM96**
K4JSI	**Q***	**1,860**	**52**	**31**	**VA**	**FM08**
WZ4C	**Q***	**1,584**	**81**	**16**	**NC**	**EM86**
K4UVA	**Q**	**7,497**	**103**	**63**	**VA**	**FM17**
N4JF	**Q**	**909**	**40**	**23**	**AL**	**EM63**
KR4F	Q	660	33	20	AL	EM64
W4BCU	Q	588	27	14	TN	EM86
W4NTI	Q	285	19	15	AL	EM73
NZ1D	Q	30	6	5	FL	EL98
KI4CYG	Q	18	3	3	NC	EM95
NG4DX	**M**	**25,380**	**232**	**94**	**VA**	**EM96**
N4DXY	**M**	**11,715**	**157**	**71**	**AL**	**EM62**
NN4RR	**M**	**9,715**	**144**	**67**	**GA**	**EM73**
KI4VGH	**M**	**3,081**	**76**	**39**	**NC**	**FM13**
KI4WXI	M	440	22	20	TN	EM75
W6ZI	**A**	**14,000**	**161**	**70**	**OK**	**EM26**
AB5GU	**A**	**11,396**	**151**	**74**	**TX**	**EL29**
NØXLR	A	1,628	42	37	TX	EM13
K3TD	A	1,080	37	27	TX	EM10
WD5U	A	340	17	17	TX	EM13
W5DDR	A	308	17	14	NM	DM84
NØRQ	A	252	15	12	TX	EM13
NM5M	A	162	16	6	TX	EM13
W5PR	**6**	**51,952**	**382**	**136**	**TX**	**EL29**
WD5K	**6**	**44,526**	**352**	**123**	**TX**	**EM12**
W5WVO	**6**	**8,379**	**133**	**63**	**NM**	**DM65**
K3FM	**6**	**7,656**	**132**	**58**	**MS**	**EM50**
WØVX	6	2,592	72	36	TX	EM12
KD5J	6	320	20	16	AR	EM45
K5WW	6	4	2	2	TX	DL99
N5KDA	**2**	**7,380**	**82**	**45**	**MS**	**EM41**
KE5CIF	**Q***	**1,593**	**51**	**27**	**TX**	**EM13**
W1KLM	Q	104	13	8	AR	EM45
K5QE	**M**	**230,436**	**826**	**222**	**TX**	**EM31**
KG6IYN	**A**	**18,865**	**244**	**55**	**CA**	**DM12**
W6YX	A	3,192	90	24	CA	CM87
KC6ZWT	A	2,688	71	24	CA	CM98
KI6BLP	A	1,287	71	11	CA	DM13
N6MU	A	1,164	66	12	CA	DM03
WA6MBL	A	540	39	10	CA	DM03
KC6SEH	A	481	25	13	CA	CM98
N4DLA	A	386	26	11	CA	CM87
K6JRA	A	248	22	8	CA	CM87
AI6O	A	140	18	5	CA	DM12
KF6JBB	A	132	14	6	CA	DM12
N6QQ	6	21	7	3	CA	DM13
KG6TGI	**Q***	**154**	**16**	**7**	**CA**	**DM13**
W7CE	**A**	**11,310**	**163**	**58**	**WA**	**CN87**
KB7ME	**A**	**1,496**	**49**	**22**	**OR**	**CN92**
N6KW	A	1,054	43	17	WA	CN87
W7MEM	A	851	33	23	ID	DN17
KI7JA	A	663	34	13	OR	CN85
KG7P	A	583	38	11	WA	CN87
N7NT	A	477	40	9	AZ	DM43
NG7Z	A	203	22	7	WA	CN87
K7CW	**6**	**6,656**	**128**	**52**	**WA**	**CN87**
K7BG	**6**	**2,146**	**58**	**37**	**MT**	**DN47**
KD7DCA	6	128	16	8	AZ	DM43
N7EPD	Q	56	9	4	WA	CN86
K7RST	**M**	**2,808**	**77**	**27**	**AZ**	**DM42**
N8BI	**A**	**8,568**	**120**	**63**	**OH**	**EN91**
WN8R	A	6,615	103	49	OH	EN91
K8DXR	A	5,454	91	54	OH	EN90
K8MR	A	5,136	81	48	OH	EN91
W8KNO	A	1,682	49	29	OH	EN91
W8RU	**A**	**1,400**	**40**	**28**	**MI**	**EN82**
WA8WV	A	972	31	27	WV	EM98
KD8AJK	A	925	28	25	OH	EN81
K8SIA	A	527	29	17	MI	EN82
W8IDM	A	221	14	13	OH	EN91
WO3X	A	63	13	3	OH	EN91
N8II	**6**	**8,127**	**129**	**63**	**WV**	**FM19**
KB8UUZ	**6**	**4,800**	**96**	**50**	**OH**	**EN91**
K8CMP	6	2,850	75	38	OH	EN91
K8KFJ	6	432	24	18	WV	EM98
KQ8D	6	340	20	17	MI	EN72
NO8R	6	324	18	18	MI	EN73
NF8M	6	88	11	8	MI	EN82
WB8JUI	6	72	9	8	OH	EN81
N8XA	**Q**	**9,555**	**121**	**65**	**OH**	**EM89**
N8CMZ	Q	620	29	20	OH	EN91
K8GP	**M**	**226,240**	**798**	**224**	**WV**	**FM08**

K2DRH	**A**	**216,138**	**771**	**221**	**IL**	**EN41**
K9CT	**A**	**55,125**	**373**	**125**	**IL**	**EN50**
N9DG	**A**	**33,762**	**250**	**102**	**WI**	**EN53**
KE9I	**A**	**32,107**	**307**	**97**	**IN**	**EN61**
N9AKR	A	28,440	266	90	IL	EN61
W9THD	A	21,483	192	93	IN	EN71
KB9TLV	A	17,925	168	75	WI	EN45
W9GKA	A	11,160	163	62	IL	EM58
AC9X	A	10,850	132	70	IN	EN60
WO9S	A	8,965	116	55	IL	EN61
KG9N	A	7,261	135	53	IL	EN50
KB9PJL	A	3,952	68	38	WI	EN44
K9SSH	A	2,870	65	41	IN	EN61
K9RWT	A	2,356	58	38	IL	EN51
KJ9C	A	1,512	55	27	IN	EM69
KC9CSH	A	1,450	44	29	IL	EM59
K9OR	A	1,377	42	27	IL	EN62
K9DMW	A	1,219	40	23	IL	EN52
W9HR	A	748	27	22	WI	EN62
N9GH	A	546	23	13	IL	EN51
K9GY	A	455	22	13	IL	EN61
N9BC	**6**	**5,885**	**107**	**55**	**WI**	**EN64**
K9CS	**6**	**3,567**	**87**	**41**	**IL**	**EN60**
N9UX	6	2,666	62	43	WI	EN52
W9RE	**6**	**2,016**	**63**	**32**	**IN**	**EM69**
K9UH	6	1,680	56	30	IL	EM57
N9WEW	6	252	18	14	IL	EN60
KE0BN	6	234	18	13	WI	EN53
NS9I	6	60	10	6	WI	EN54
AI9I	**Q***	**610**	**31**	**10**	**IL**	**EN51**
K9AKS	**Q**	**21,837**	**192**	**87**	**IL**	**EN41**
N9TF	Q	4,600	81	40	IL	EN52
W9SZ	Q	2,508	63	33	IL	EN50
AF9J	Q	49	7	7	WI	EN52
NØVZJ	**A**	**36,741**	**274**	**111**	**MN**	**EN35**
KCØTPP	**A**	**30,600**	**221**	**100**	**MO**	**EM48**
W6OAL	**A**	**27,244**	**258**	**98**	**CO**	**DM79**
NØGZ	**A**	**18,312**	**190**	**84**	**IA**	**EN31**
KØAWU	A	13,013	132	77	MN	EN37
NØPOH	A	4,092	75	44	CO	DM79
KØJQA	A	2,368	58	37	IA	EN31
WAØCQG	A	1,755	46	27	MN	EN34
KØØSU	A	1,269	44	27	CO	DM78
NTØV	**A**	**1,134**	**40**	**27**	**ND**	**EN08**
KCØTDJ	A	1,092	36	26	IA	EN40
W6GMT	A	999	35	27	MN	EN37
WØRT	A	690	25	15	KS	EM27
KØPK	**6**	**2,738**	**74**	**37**	**MN**	**EN37**
KCØDEB	6	520	26	20	KS	EM29
WBØQIR	6	315	21	15	MO	EM37
WAØGUD	6	154	14	11	IA	EN21
WØBH	6	110	11	10	KS	EM18
NØTK	6	108	12	9	CO	DM79
WEØA	6	1	1	1	MN	EN34
KØSZ	2	6	3	1	NE	EN10
KFØQ	**Q***	**2,146**	**54**	**29**	**MN**	**EN44**
KBØHNN	Q*	180	15	12	MN	EN26
KCØRQH	**Q**	**2,178**	**53**	**33**	**MN**	**EN35**
NØUNL	**M**	**21,251**	**239**	**79**	**NE**	**EN10**

ROVER

W4VHF	**87,330**	**509**	**123**		**4**
WB8BZK	**55,286**	**272**	**154**		**6**
N9TTX	**28,215**	**154**	**135**		**11**
WAØVPJ	**11,324**	**101**	**76**		**6**
K9JK	**11,305**	**102**	**85**		**10**
WB3BEL	**10,692**	**123**	**66**		**4**
N2SLN	**8,712**	**105**	**72**		**2**
AE1P	**3,034**	**67**	**41**		**3**
K6EU	**2,924**	**66**	**34**		**4**
W3DHJ	**2,376**	**47**	**36**		**4**
AA5JG	**2,240**	**52**	**40**		**3**
W3BC	**1,961**	**41**	**37**		**4**
AE5P	**1,664**	**34**	**32**		**10**
W6KA	**1,173**	**36**	**23**		**6**
K8DOG	238	16	14		4
K1ZK	153	12	9		2

CANADA

VA2UK	**A**	**3,486**	**74**	**42**	**QC**	**FN25**
VE2HAY	A	1,056	43	24	QC	FN35
VE2DC	A	432	18	16	QC	FN35
VE2TKH	**6**	**1,426**	**46**	**31**	**QC**	**FN36**
VA2LGQ	6	90	10	9	QC	FN15
VA3KA	**A**	**1,080**	**34**	**24**	**ON**	**FN15**
VE3OX	A	918	29	27	ON	FN14
W4TAA/VE3	**6**	**35,504**	**317**	**112**	**ON**	**FN15**
VE3AP	**6**	**11,880**	**165**	**72**	**ON**	**FN25**
VE3HG	6	598	26	23	ON	FN03
VE3TLT	**Q**	**322**	**18**	**14**	**ON**	**EN92**
VE3HHT	**M**	**2,079**	**48**	**33**	**ON**	**EN92**
VE3CRU	**R**	**32,620**	**188**	**140**		**7**
VE3SMA	**R**	**3,362**	**59**	**41**		**4**
VE3OIL	R	1,092	35	28		2
VE4EAR	**6**	**2,856**	**68**	**42**	**MB**	**EN19**
VE5UF	**A**	**6,804**	**122**	**54**	**SK**	**DO61**
VA6AN	**A**	**987**	**36**	**21**	**AB**	**DO33**
VE7IHL	**A**	**96**	**10**	**6**	**BC**	**CN99**
VA7MJR	**Q**	**26**	**13**	**2**	**BC**	**CN89**
VA7MM	**R**	**833**	**31**	**17**		**4**
VO1MCE	**A**	**5,346**	**98**	**54**	**NL**	**GN36** (Op: VO1AU)
VO1KVT	**6**	**5,800**	**116**	**50**	**NL**	**GN29**
VO1TA	6	132	12	11	NL	GN19

MEXICO

XE2WWW	**6**	**135**	**15**	**9**	**EL06**
6I2SO	**M**	**702**	**35**	**18**	**DL95**

PUERTO RICO

NP3CW	**A**	**108**	**11**	**9**	**FK68**

AFRICA

MOROCCO

CN8KD	**6**	**4,004**	**91**	**44**	**IM63**

ASIA

CHINA

BG4QGO	**6**	**546**	**39**	**14**	**OM91**

CYPRUS – UK SOV. BASE AREAS

ZC4LI	**6**	**2,070**	**63**	**30**	**KM64**

THAILAND

E21DKD	**2**	**15,010**	**395**	**19**	**OK04**
HS4FHT	**2**	**2,744**	**98**	**14**	**OK16**
HS8LUR	**2**	**2,688**	**192**	**7**	**NJ99**
HS6RMY	**2**	**1,410**	**47**	**15**	**OK06**
E2ØPFE	**2**	**1,170**	**117**	**5**	**OK03**
HS9EQY	**2**	**812**	**58**	**7**	**NJ97**
HS8VAY	**2**	**624**	**104**	**3**	**NJ99**
HS3ANP	**2**	**504**	**36**	**7**	**OK14**
E2ØXMG/4	**2**	**464**	**29**	**8**	**OK17**
E21YDP	**2**	**250**	**25**	**5**	**OK03**
E21QEB	2	64	16	2	OK03
HS8KGG	2	40	10	2	OK03
HSØEHF	2	16	4	2	OK03
HS7ZSX/P	**Q***	**1,216**	**76**	**8**	**NK92**
HS6MCB/P	**Q***	**756**	**42**	**9**	**OK05**
HS8KAY/P	**Q***	**560**	**70**	**4**	**NJ97**
HS2ZMU	**M**	**17,822**	**469**	**19**	**OK03**
HSØIAQ	**M**	**12,348**	**343**	**18**	**OK03**
E2ØZDS	**M**	**12,292**	**439**	**14**	**OK03**
E22ZW	**M**	**11,070**	**369**	**15**	**OK03**
E22JA	**M**	**8,500**	**250**	**17**	**OK03**
E21LZP	**M**	**6,408**	**267**	**12**	**OK03**
E22TH	**M**	**6,200**	**310**	**10**	**OK03**
HS8KFW	**M**	**5,600**	**280**	**10**	**NJ99**
E21QQQ	**M**	**4,662**	**259**	**9**	**OK03**
HS9PSU	**M**	**1,990**	**199**	**5**	**OJ06**
E2ØRUZ	**R**	**4,140**	**138**	**15**	**3**
HS3PMT	**R**	**3,424**	**107**	**16**	**2**
HS8TRY	**R**	**2,280**	**95**	**12**	**5**

EUROPE

AUSTRIA

OE1SOW	**2**	**768**	**24**	**16**	**JN88**
OE1CWA/3	**Q***	**98**	**7**	**7**	**JN88**

BALEARIC IS.

EH6SA	**6**	**20,874**	**213**	**98**	**JM19**

BOSNIA & HERZEGOVINA

T90T	**6**	**16,366**	**167**	**98**	**JN84**
T96C	**Q***	**2,898**	**57**	**42**	**JN84**

BULGARIA

LZ2ZG	**6**	**25**	**5**	**5**	**KN23**

CRETE

SV9/1K2MLS	**Q***	**130**	**13**	**10**	**KM25**

CROATIA

9A1DL	**A**	**1,177**	**56**	**11**	**JN95**
9A4K	**6**	**437**	**23**	**19**	**JN86**

CZECH REPUBLIC

OK1DC	**A**	**19,764**	**154**	**81**	**JN69**
OK1KZ	**A**	**1,176**	**50**	**14**	**JO70**
OK2PQS	A	616	23	14	JN89

ENGLAND

M3RCV	**A**	**826**	**38**	**14**	**JO01**
G3CWI/P	**Q***	**1,404**	**54**	**13**	**IO93**

FINLAND

OH3FEH	**2**	**2**	**1**	**1**	**KP11**

FRANCE

F4DZF	**Q**	**180**	**15**	**12**	**JN16**

GERMANY

DA2A	**2**	**19,136**	**208**	**46**	**JO31** (Op: DK5DQ)
DO1DXX	Q	2	1	1	JO31

GREECE

J48IM	**Q***	**64**	**8**	**8**	**KN07**

HUNGARY

HA7UL/P	**A**	**580**	**27**	**20**	**JN96**
HA1ZH	**6**	**2,112**	**64**	**33**	**JN86**
HG4GGV	6	378	21	18	JN97
HG3IPD	**2**	**1,600**	**40**	**20**	**JN86**
HA2MN	2	28	7	2	JN97
HA5CQZ/P	**Q***	**1,352**	**52**	**13**	**JN97**
HA9MCQ/P	Q*	480	24	10	JN97
HA4FY/P	Q*	168	21	4	JN97
HA7SZA/P	Q*	72	9	4	JN97
HA1DTQ/P	Q*	40	10	2	JN86

IRELAND

EI2JD	**6**	**20**	**5**	**4**	**IO63**
EI7IW	**2**	**888**	**37**	**12**	**IO63**

ITALY

IW1QN/1	**2**	**7,326**	**111**	**33**	**JN44**

LATVIA

YL2PJ	**6**	**260**	**20**	**13**	**KO36**

MACEDONIA

Z36W	**M**	**9,315**	**135**	**69**	**KN11**

POLAND

SP9BNM	**6**	**208**	**16**	**13**	**JO90**
SP9CVY	6	192	16	12	JN99
SP9EWM/9	2	2	1	1	JN99

ROMANIA

YO5KUC	**6**	**56**	**8**	**7**	**KN27**

SWEDEN

SM6WET	**6**	**6,572**	**106**	**62**	**JO68**
SMØEPO	6	320	20	16	JO89
SM3PZG	6	100	10	10	JP93
SA1A	6	3	3	1	JO97

SWITZERLAND

HB9JAQ	**Q**	**1**	**1**	**1**	**JN36**

SPAIN

EA3AKY	**6**	**8,384**	**131**	**64**	**JN11**
EA2CLU	**6**	**6,441**	**113**	**57**	**IN92**
EB3TC	6	572	26	22	JN01
EB1EHO	6	99	11	9	IN73
EB1EVX	6	81	9	9	IN63
EA1ASC/P	**2**	**672**	**24**	**14**	**IN71**
EA2ARD	**Q**	**2,479**	**67**	**37**	**IN93**

UKRAINE

UT5EU	**A**	**13,260**	**163**	**78**	**KN78**
UR5QU	**6**	**26,775**	**255**	**105**	**KN77**
UT7QF	**6**	**14,196**	**169**	**84**	**KN77**
UZ7U	**6**	**9,581**	**143**	**67**	**KO50**
UY5QQ	**6**	**8,174**	**122**	**67**	**KN77**
UT2II	**6**	**7,004**	**103**	**68**	**KN98**
US0YW	**6**	**1,960**	**56**	**35**	**KN27**
UT7U	**6**	**1,426**	**46**	**31**	**KO40**
UT2UB	6	1,040	40	26	KO50
UT2UZ	6	190	19	10	KO50
UT8IM	6	4	2	2	KN87
UT7E	**2**	**900**	**25**	**18**	**KN78**
UR6EC	2	198	11	9	KN78
UZ5Q	**Q***	**88**	**11**	**8**	**KN77**
US3IVT	**Q**	**152**	**19**	**4**	**KN98**
UT3IZ	Q	145	15	5	KN87
UR4IHV	Q	144	18	4	KN98
US5IQU	Q	144	18	4	KN98
UT9IO	Q	144	18	4	KN98
UR5IFM	Q	136	17	4	KN88
US3ITU	Q	136	17	4	KN88
US5IVZ	Q	136	17	4	KN87
US3ITA	Q	128	16	4	KN87
UT3IB	Q	112	14	4	KN98
UY7IO	Q	100	13	4	KN88
US5IPH	Q	90	15	3	KN88
UT2IA	Q	88	11	4	KN88
US4IUR	Q	80	10	4	KN97
US5ILC	Q	80	10	4	KN97
US7IA	Q	48	8	3	KN88
UT1IC	**M**	**40,959**	**266**	**123**	**KN98**
UW3E	**M**	**10,224**	**132**	**72**	**KN78**

WALES

GW8ZRE/P	**Q***	**1,470**	**49**	**15**	**IO83**

SOUTH AMERICA

ARUBA

P43JB	**6**	**210**	**15**	**14**	**FK42**

Oops...

It appears that the web address provided at the end of N4JDU's November article on visiting the Beijing Radio Sports Association ("Dah-Dit-Dah-Dit Dah-Dah-Dit-Dah...") is no longer working. We cannot find another one; however, the national Chinese Radio Sports Association (CRSA) shares its headquarters with the local BJRSA, and CRSA has an English webpage at <http://www.crsa.org.cn/english.php>. If you can read Chinese, the association's main page is at <http://www.crsa.org.cn/index.php>.

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our readers say

CW *is* Digital

Editor, *CQ*:

CW is "digital" (see "Our Readers Say," December 2007) because it is sent with the fingers. In Latin, finger is "digitus." Calling CW a "digital" mode is little more than an old joke.

Ian Pearson, N4BSE
via e-mail

Christmas Cheer

Editor, *CQ*:

Page 18 of the December 2007 issue of *CQ* magazine had a fictional short story called "Christmas Cheer," written by Kimberly L. Elmore, N5OP. You prefaced the article by stating that *CQ* magazine does not normally publish works of fiction. This piece was well written, thoughtful, and interesting enough to hold my attention. What more can an editor want! Please consider allowing more written pieces of this type in your magazine.

Richard Kessler, W7SV
via e-mail

The following letter was addressed to author Kim Elmore, N5OP:

Dear Kimberly,

Just finished reading your well-written and very interesting article, "Christmas Cheer," in the 2007 December issue of *CQ* magazine. Thank you for this theater-in-the-mind radio piece. As a young reader of books like *Radio Boys* and John T. Frye's "Carl and Jerry" in *Popular Electronics* during the 1950s and '60s, it was a pleasure to again read some radio fiction.

It was these kinds of fascinating stories that helped lead me into ham radio years ago. Perhaps your stories will do the same for others. Therefore, I encourage you to write more of them. Best Regards.

Bob Kirby, K3NT
Plano, Texas

Open the CW Bands Completely

Editor, *CQ*:

I read your November editorial ("Where is Everybody?") with interest and a bit of sadness. As to activity, I was thinking of the "good ole days" (1957–1967) when the low end of 40 was so crowded with CW signals on an average week night that one would think there was a contest! It was really difficult to find an open frequency

As a CW-only operator, I believe it's time to return the CW bands to all of the licensees. Now that RTTY seems to have moved down as low as 7.035, everyone would get a bit more breathing room if General and Advanced, as well as Novice and Tech, ticket holders could operate in the lower CW band segments. Perhaps a bit more activity would take place when not having to compete with RTTY. The restrictions on operating CW in the lower parts of the bands should be removed on all of the HF bands.

Greg Andracke, W2BEE
New York City & Pine Plains, NY

"Here We Go Again"

Editor, *CQ*:

Great editorial (December 2007 issue), as was the "Secret Society" editorial last June! Somebody needs to keep the ARRL on their toes, their "good ole boy" network needs to be kept in check from time to time. Reading these two editorials has convinced me to subscribe to *CQ*.

John Rehak, N6HI
via e-mail

Editor, *CQ*:

I think it is tragic that the secretive actions of the once admirable ARRL have forced you, for the second time in six months, to point out that organization's pursuit of an agenda that the majority of its members and the majority of U.S. amateurs oppose. I agree with you that some aspects of regulation by bandwidth are necessary and make sense. But the backdoor tactic the League has used to try and implement it is worse, from the perspective of credibility, than its previous ill-fated NPRM's on the same subject.

I was once a proud and active ARRL member, having held the majority of positions within the field organization, including that of elected Section Manager. No longer. I remain a member of the League by virtue of having become a Life Member years ago. But I find fewer and fewer reasons to support that organization's actions. Of greater import, at least to me, is the integrity of the organization's leadership. It is that I find to be the most lacking.

Jerry Boyd, N7WR
Baker City, Oregon

Looking Ahead in CQ

Here are some of the stories we're working on for upcoming issues of *CQ*:

- "*CQ* Interviews: Eric Haseltine, AB3DI, former Associate Director of National Intelligence," by W2VU
- "CW Results, 2007 CQ WW WPX Contest," by K6AW & K5ZD
- "Talk is Cheap!" by W4UW
- "Six Meters at Last," by W4YO

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