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Amateur Radio

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

COMMUNICATIONS & TECHNOLOGY

JANUARY 2013

CQ

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On the Cover:
Mike Warren, WØWG,
of Eden Prairie, Minnesota.
Details on page 26



2013 CQ WW
160-Meter
CW Contest
Jan. 25-27

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ADS#43412

Cushcraft R8 8-Band Vertical

Covers 6, 10, 12, 15, 17, 20, 30, and 40 Meters!

The Cushcraft R8 is recognized as the industry gold standard for multi-band verticals, with thousands in use worldwide. Efficient, rugged, and built to withstand the test of time, the R8's unique ground-independent design has a well-earned reputation for delivering top DX results under tough conditions. Best of all, the R8 is easy to assemble, installs just about anywhere, and blends inconspicuously with urban and country settings alike.

Automatic Band Switching: The R8's famous "black box" matching network combines with traps and parallel resonators to cover 8 bands. You QSY instantly, without a tuner!

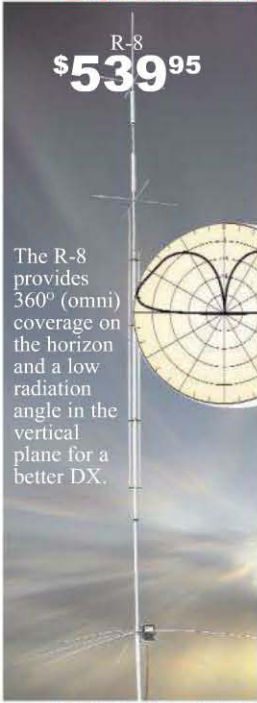
Rugged Construction: Thick fiberglass insulators, all-stainless hardware, and 6063 aircraft-aluminum tubing that is double or triple walled at key stress points handle anything Mother Nature can dish out.

Compact Footprint: Installs in an area about the size of a child's sandbox -- no ground radials to bury and all RF-energized surfaces safely out of reach.

Legal-Limit Power: Heavy-duty components are contest-proven to handle all the power your amplifier can legally deliver and radiating it as RF rather than heat.

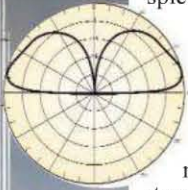
The sunspot count is climbing and long-awaited band openings are finally becoming a reality. Now is the perfect time to discover why Cushcraft's R8 multi-band vertical is the premier choice of DX-wise hams everywhere!

R-8GK, \$56.95. R-8 three-point guy kit for high winds.



R-8
\$539⁹⁵

The R-8 provides 360° (omni) coverage on the horizon and a low radiation angle in the vertical plane for a better DX.



MA-5B 5-Band Beam Small Footprint -- Big Signal



MA-5B
\$499⁹⁵

The MA-5B is one of Cushcraft's most popular HF antennas, delivering solid *signal-boosting directivity* in a bantam-weight package. Mounts on roof using standard TV hardware. Perfect for exploring exciting DX without the high cost and heavy lifting of installing a large tower and full-sized array. Its 7 foot 3-inch boom has less than 9 feet of turning radius. Contest tough -- handles 1500 Watts.

The unique MA-5B gives you 5-bands, automatic band switching and easy installation in a compact 26-pound package. On 10, 15 and 20 Meters the end elements become a two-element Yagi that delivers solid power-multiplying gain over a dipole on all three bands. On 12 and 17 Meters, the middle element is a highly efficient trap dipole. When working DX, what really matters are the interfering signals and noise you *don't hear*. That's where the MA-5B's impressive side rejection and front-to-back ratio really shines. See cushcraftamateur.com for gain figures.

R8 Matching Network



R8's Rugged Design



Cushcraft 10, 15 & 20 Meter Tribander Beams

Only the best tri-band antennas become DX classics, which is why the Cushcraft World-Ranger A4S, A3S, and A3WS go to the head of the class. For more than 30 years, these pace-setting performers have taken on the world's most demanding operating conditions and proven themselves every time. The key to success comes from attention to basics. For example, element length and spacing has been carefully refined over time, and high-power traps are still hand-made and individually tuned using laboratory-grade instruments. All this



A-4S
\$699⁹⁵



A-3S
\$599⁹⁵

It goes without saying that the World-Ranger lineup is also famous for its rugged construction. In fact, the majority of these antennas sold years ago are still in service today! Conservative mechanical design, rugged over-sized components,

stainless-steel hardware, and aircraft-grade 6063 make all the difference.

The 3-element A3S/A3WS and 4-element A4S are world-famous for powerhouse gain and super performance. **A-3WS, \$499.95,** 12/17 M. **30/40 Meter add-on kits** available.

Cushcraft Dual Band Yagis One Yagi for Dual-Band FM Radios



A270-10S
\$169⁹⁵

Dual-bander VHF rigs are the norm these days, so why not compliment your FM base station with a dual-band Yagi? Not only will you eliminate a costly feed

line, you'll realize extra gain for digital modes like high-speed packet and D-Star! Cushcraft's A270-6S provides three elements per band and the A270-10S provides five for solid point-to-point performance. They're both pre-tuned and assembly is a snap using the fully illustrated manual.



A270-6S
\$129⁹⁵

Cushcraft Famous Ringos Compact FM Verticals



AR-2
\$64⁹⁵



AR-6
\$99⁹⁵



AR-10
\$109⁹⁵

WIBX's famous Ringo antenna has been around for a long time and remains unbeaten for solid reliability. The Ringo is broad-banded, lightning protected, extremely rugged, economical, electrically bullet-proof, low-angle, and more -- but mainly, it just plain works! To discover why hams and commercial two-way installers around the world still love this antenna, order yours now!

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CQ Highlighted on "Conan"

There's an old saying in politics: "I don't care what they say about me as long as they spell my name right." The same sentiment applies here as well. ... At the end of October, comedian and talk show host Conan O'Brien did a segment on his TBS show "Conan" called "Real Magazines that Outlasted 'Newsweek'" " ... and guess which magazine was featured first? Yes! CQ!

Of course he was making fun of us (that's his job), but our October cover was still splashed across national television! And the serious point of the whole segment (that he probably didn't realize he was making) was that even though general-interest magazines such as *Newsweek* are in trouble, niche magazines—such as this one and the others he featured—are still going strong. There is a future for print magazines and niche magazines are that future. The entire segment may be viewed on YouTube at <http://bit.ly/RsXRpV>.



Talk show host Conan O'Brien holds up the October issue of CQ to lead off a segment on "Real Magazines that Outlasted 'Newsweek'" on his program "Conan," which airs weeknights at 10 PM eastern on TBS. (Internet screen grab)

One Ham Killed, Another Rescued, in Sinking of HMS Bounty

One of the first casualties of Superstorm Sandy was the tall ship *HMS Bounty*, a replica of the British sailing vessel made famous when a band of crew members mutinied on a 1789 voyage to the South Pacific. Fourteen of the 16 crew members were rescued safely. However, the captain—Robin Walbridge, KD4OHZ—was never found and is presumed to have gone down with the ship. The second casualty was Claudene Christian, a descendent of mutineer Fletcher Christian.

A second ham on the crew, Ship's Electrician Doug Faunt, N6TQS, was rescued. He told the *ARRL Letter* that the ship's crew used various methods, including HF amateur radio, to try to get help but met with little success. Finally, they were able to use *Winlink* to e-mail a distress message to the Coast Guard. Faunt told the *Letter* that "ham radio got me into my position on the *Bounty*, and ham radio got me out alive!"

There was also a closer-than-comfortable link between the *Bounty* and the CQ "family." Former CQ Youth Editor Brittany Decker, KB1OGL, crewed aboard the ship last summer. Her father, Paul Decker, KG7HF, told CQ she had considered staying on through the fall, but thankfully decided to head off to college instead.

Post Office Wants to Phase Out IRCs

If the U.S. Postal Service has its way, International Reply Coupons (IRC)s will no longer be available for sale after January 27. According to the *ARRL Letter*, the postal service

published a notice of its plans in the *Federal Register* on October 28, citing insufficient demand to continue providing the service. Comments were being accepted through November 23. Even if IRCs are no longer offered for sale by the postal service, Universal Postal Union (UPU) regulations require that post offices honor and redeem IRCs that have been purchased in other countries. IRCs are a form of pre-paid postage, redeemable for a single unit of airmail postage in any UPU member country. Hams have long used them to provide return postage for QSL cards from DX countries.

W7EQI Re-Elected to Congress

Oregon Congressman Greg Walden, W7EQI, easily won re-election in the 2012 election. *Newsline* reports that Walden, who was chairman of the Communications Subcommittee of the House Energy and Commerce Committee in the 112th Congress, polled nearly 70% of the vote in his district. At press time, the 113th Congress had not yet convened, so it is not yet certain whether Walden, a Republican, will retain his subcommittee chairmanship or move up in the House hierarchy.

China Revamping Amateur Radio Regulations

Revised regulations on amateur radio are working their way through the bureaucracy of China's government and are expected to open the door for widespread licensing of individuals and clubs in the world's most populous nation. The new rules are also expected to expand recognition of amateur radio organizations in China from only the Chinese Radio Sports Association (CRSA) to include the relatively new Chinese Radio Amateurs Club (CRAC). [See PY2QI's article, "Inside a Chinese Contest Station—B1Z in the WPX SSB Contest," on page 13 of this issue.] According to *Newsline*, the CRAC is expected to become China's official representative to the International Amateur Radio Union.

New Data Mode Uses Chinese Characters

As the use of amateur radio grows in China, a new digital mode has been developed that uses Chinese characters rather than the Western European/American alphabet. *Southgate Amateur Radio News* reports that the new mode is called CP-16 and is based on the 16x16 dot-matrix display used to generate Chinese characters on computer screens. It uses 16 on-off keyed audio characters spaced at 17-Hz intervals, resulting in a total signal bandwidth of less than 400 Hz. Transmission speed is two-to-five characters per second and it can be received on any software defined radio (SDR) receiver or SSB receiver/computer combination running waterfall-display software. The characters will appear directly on the waterfall display. More information is available at www.iaru-r3.org/15r3c/docs/056.doc.

DX to be 2013 Hamvention® Theme

The Dayton Amateur Radio Association has decided on DX and DXing as the theme for the 2013 Hamvention®, calling this year's show "DX Hamvention." According to the *ARRL Letter*, General Chairman Charles Kaiser, KD8JZR, noted that Dayton "is often an important DX destination for amateurs from all over the world," adding in a message on the Hamvention website that "possibly nowhere on Earth can one experience first-hand the incredible diversity and worldwide reach of amateur radio as during this event." This year's Hamvention will be held May 17–19 at Hara Arena in Dayton, Ohio.

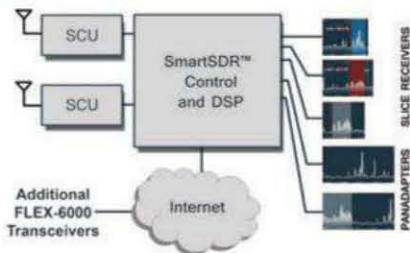
Additional and updated news is available on the Ham Radio News page of the CQ website at <http://www.cq-amateur-radio.com>. For breaking news stories, plus info on additional items of interest, sign up for CQ's free online newsletter service. Just click on "CQ Newsletter" on the home page of our website.



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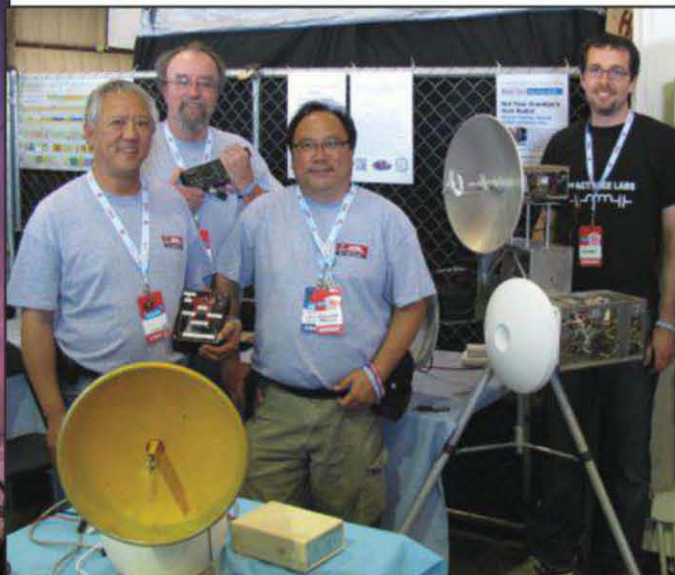
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Ameritron 1200 Watts Solid State Amplifier

1200 Watts PEP SSB/CW Output, 1.5-30 MHz. No Tune, Instant-On, Instant Bandswitching, Super Reliable, Whisper Quiet, Remote Controllable, QSK, Fully Protected, Fully Metered ...



Just select the band and transmit!
Ameritron's new solid state no-tune, instant-on, instant bandswitching ALS-1300 desktop linear amplifier gives you 1200 Watts PEP SSB/CW with less than 100 Watts drive. Covers 1.5 to 22 MHz (10/12 Meters with optional MOD-10MK). You'll bust through weak band conditions, heavy QRM and QRN because the ALS-1300 is less than 1 dB down from a full legal limit 1500 Watt amplifier.

Super Reliable!
Eight conservatively rated MRF-150 FETs mounted on two huge heat sinks spreads heat evenly. Four whisper quiet temperature controlled fans keep the FETs at a safe temperature. You get unparalleled Ameritron reliability and trouble-free service. Competing amplifiers using a single expensive device concentrate heat at a single hotspot that greatly reduces reliability.

50-Volt operation gives you highly linear operation with a superbly clean signal.

Put out-of-the-way and Remote Control
The ALS-1300 amplifier and its matching power supply can be placed out-of-the-way and controlled remotely. *Remote Control Head, ALS-500RC, \$49.95*, lets you monitor data and manually switch bands. *Radio Interface, ARI-500, \$119.95*, reads band data from your transceiver and

New!

ALS-1300
\$2899

Suggested Retail

automatically bandswitches the ALS-1300 as you change bands on your transceiver.

Features Galore!

An Operate/Standby switch lets you run "barefoot" and instantly switch to full power when you need it.

Fast 5 millisecond T/R relays (10 million operation lifetime specs) give you full QSK operation. The T/R relay sub-board is easily replaced if the relays ever fail.

Ameritron's exclusive front-panel ALC control prevents overdriving your transceiver.

The ALS-1300 can be keyed by any transceiver that can sink 15 mA at 12 VDC without requiring a special interface.

Super-clean modular construction makes service quick and easy.

Fully Protected!

The ALS-1300 is fully protected to prevent amplifier damage if you: switch to a band different from your transceiver, use the wrong antenna or have overly high SWR, if the heat sink temperature exceeds a safe level, if the dual 600 Watt modules are significantly RF unbalanced. Whenever the amplifier faults, it is automatically bypassed.

If output forward or reflected power exceeds a safe level, output power is auto-

matically reduced to prevent amplifier damage by controlling ALC to the transmitter.

Fully Metered!

Two accurate Cross-Needle meters use LEDs with adjustable brightness for backlighting -- no more burned-out meter lamps.

The left meter continuously monitors DC current of both 600 watt amplifier modules.

The right meter is a multi-meter. Read antenna SWR, forward, reflected output power simultaneously (has adjustable PEP meter hold time) ... amplifier balance ... ALC between amplifier and transceiver ... DC drain voltage of each power amplifier.

LEDs show which band is selected (manually bandswitched or automatically with optional ARI-500 Radio Interface) ... ALC activity ... when the amplifier is keyed ... high SWR ... power amplifier fault.

The desktop size amplifier is a compact 10½Wx6¾Hx19D in. Weighs just 23 lbs.

Hash-Free Switching Power Supply!

The hash-free fully regulated 50 VDC, 50 Amp switching power supply is wired for 220 VAC but can be rewired for 110

VAC. Includes six foot cable to ALS-1300. Draws 12 Amps at 220 VAC, 25 Amps at 110 VAC. Has inrush current protection, current-limited outputs, exceptional filtering and RFI suppression. Works on 50-400 Hz, 200-260/ 100-135 VAC making it ideal for remote DX-peditions. 10Wx6½Hx9½D inches. 12 pounds.

Options

MOD-10MK \$39.95, low-pass filter assembly gives you 12 and 10 Meter operation. Requires FCC ham license.

QSK-5, \$359.95, pin-diode T/R switch gives lightning fast silent QSK operation.

Here's what they say ...

I have had my amp now for a few days and WOW! I picked the amp up at the factory and Mike was very helpful in showing me the ins & outs of the amp. Mine is S/N 8 and these amps are in high demand. It will truly talk 1200 watts all night long and never get warm. Thanks to Ameritron for the way they treat their customers and taking time that I was satisfied. N5SBZ

I've been using SN3 for about six weeks now. No processors or digital read-outs, but very easy to use and it puts out 1200 watts on most bands with no problem. I have been operating QSK as the internal relays are plenty fast enough. AD5X

I have had this fine amp now for a week and have made a number of QSO's (20). It can make the difference, and has in a number of occasions, getting thru the QRN and making a contact. Some of my QSO's have lasted up to 1 hour and there has not been a single problem...runs cool and gives me excellent results. KB4KKX

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- 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)

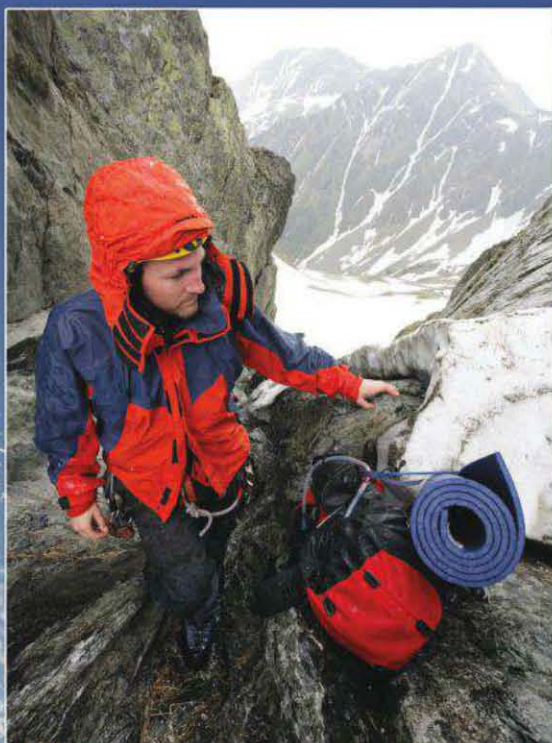
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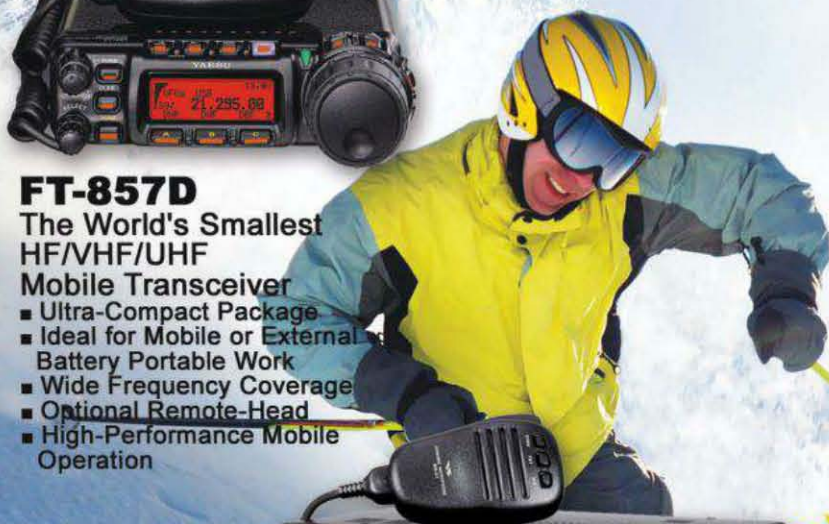


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The Ultimate Backpack, Multi-Mode Portable Transceiver

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Of Power and Propagation

Life is beginning to return to normal in most parts of New York and New Jersey affected last October by Hurricane Sandy. I am writing the first draft of this column on a train to New York City from my home in New Jersey—the first day of normal operations for my train line—three weeks to the day after the storm struck.

CQ's offices are right in the middle of the storm zone and all of us here were affected to one degree or another. All of our Long Island-based staff members were without power in their homes, some for as long as two weeks. Our office was closed for three days after the storm, knocking everything off schedule. Even when power began to return, though, things were hardly normal. First, there were long lines for gasoline, with many stations offline due to lack of power, closed ports for bringing oil and gas into the region, closed roads making it difficult for delivery trucks to reach gas stations, long lines of people with gas cans for their generators, and panic buying for cars wherever fuel was available.

The lines have disappeared now, thanks to a combination of more power coming back and odd/even rationing. Mail delivery continues to be erratic, even three weeks out. At home, we had no mail at all last Wednesday, then a ton on Thursday. My November issue of CQ arrived on November 17, as we were preparing to close this January issue. And these disruptions and inconveniences are absolutely nothing compared with the total devastation faced by families and businesses on the Jersey Shore, Staten Island, and many other parts of New York City and Long Island. Our prayers are with those families as they try to rebuild their homes, businesses, and lives. (Among those suffering considerable flooding damage was CQ Contesting Editor George Tranos, N2GA. He hopes to be able to resume his column next month.)

When All Else Failed (Yet Again)...

From our perspective as hams, all of this again points up the frailty of our society's wired and wireless lifestyle, as well as the resilience of the ham radio network. Without power, Wi-Fi didn't work, cell phones couldn't be charged. Cell sites that did work were often overloaded during the peak of the storm or ran out of battery backup power as the electrical outages dragged on.

For the first time in my memory, businesses that did have power offered "emergency charging stations" for cell phones and laptops. A society that is increasingly dependent on "mobile devices" grinds to a halt when none of those devices, be they electronic or mechanical, are able to function. (See AA6JR's "Magic in the Sky" column on page 62 of this issue for Jeff's take on our society's "addiction" to electrons in motion.)

But as always, that "old-fashioned" ham radio with its "outdated" analog transceivers kept on working, providing backup communications throughout the areas hit by the storm. As we prepared this issue, many of those support nets were still operating, so we haven't yet received detailed reports on activity in the New York-New Jersey area. Public Service

Editor Richard Fisher, K16SN, begins our coverage this month (page 54) with a report from Massachusetts. We hope to have reports from New Jersey and New York by the next issue.

The Joys of Unpredictability

One of the signs of returning normalcy was that I was able to spend much of this past Sunday afternoon and evening on the radio, operating Sweepstakes. As a casual contester, one of the things I most enjoy about contest operating is a high enough level of activity on multiple bands to actually observe differences and changes in propagation.

It was a delight to hear 10 meters open across the country (with a little bit of DX thrown in for good measure), and 15 meters accounted for more of my contacts than any other band. What surprised me, though, was how short the skip was on 20 meters in the middle of the afternoon, allowing me to work states I'd expect to hear on 40 at that time of day. I couldn't work California on 20 that afternoon, but I could (and did) work Ohio and Tennessee. I haven't checked yet, but I'm sure I picked up at least a few new, close-in states on 20 meters if I ever decide to pursue single-band states awards.

To me, this unpredictability of propagation is one of the most enduring appeals of ham radio. Propagation Editor Tomas Hood, NW7US, says to expect good conditions this year (see page 98), but predictions by their nature are general and a matter of percentages. About as precise as you can get is that, for example, there's a 60% chance that this band will be open to this location on this day, with the best chance at this time of day. But the bottom line is that you cannot know with certainty which band will be open to where from your location at a specific time until you turn on the radio. And you never know when Mother Nature will throw a curveball and present you with a delightful propagation surprise.

In This Issue

In addition to our Hurricane Sandy coverage, this issue begins our transition to the new contest reporting schedule that we announced in October (see full schedule on page 96 of this issue). The SSB results of last year's CQ WPX Contest appear in this issue (p. 18), along with a report (p. 13) by the editor and publisher of our Brazilian edition on operating the WPX Contest from China at B1Z.

In addition, Riley Hollingsworth, K4ZDH, takes a close look at the FCC's recent proposal to, among other things, allow former hams to be relicensed without retesting. We've also got a preview of this year's "Take it to the Field" special with articles on operating from Route 66 as well as the middle of New York City, a project to update a vintage Heathkit VTVM (Vacuum Tube Volt Meter), and the intriguing topic of "Marshmallows and DX."

Happy New Year

Best wishes from all of us at CQ to all of our readers for a very happy and healthy 2013. And may the weather this year be less exciting than the propagation.

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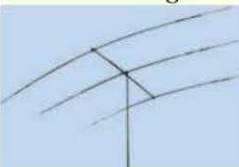
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WAUKESHA WISCONSIN — West Allis Radio Amateur Club, Inc. 41st Annual Midwinter Waukesha Swapfest, Saturday, January 5, Waukesha County Expo Center. Contact: WARAC Swapfest, P.O. Box 1072, Milwaukee, WI 53201. Phil, W9NAW, (414) 425-3649. Website: <<http://www.warac.org>>. (VE exam the AMF Waukesha Lanes 9 to 11:15 a.m.)

LOCUST FORK, ALABAMA — Blount County Amateur Radio Club FreezeFest 2013, Saturday, January 5, Locust Fork High School. Contact: Bill Pond, AE4IE, (205) 647-5705. Website: <<http://freezefest.w4blt.org/>>. (Talk-in 146.700—[PL 91.5; exams t10 a.m.)

SPRINGFIELD, MISSOURI — Ozark Mountain Amateur Radio Ozark Mountain Hamfest, Saturday, January 5, Faith Lutheran Church. Contact: James, KC0TQD, (417) 425-9962; e-mail: <kc0tqd@gmail.com>; <<http://www.w0omd.org>>. (Talk-in: 147.015—[PL 162.2]; exams 10 a.m.)

WHITE PINE, TENNESSEE — Lakeway Amateur Radio Club 2013 Winter Hamfest, Saturday, January 5, Smoky Mountain Expo Center. Contact: Lakeway ARC, P.O. Box 1138, Morristown, TN 37887-1138. Website: <<http://lakewayarc.org/2013-hamfest>>.

GREENWOOD, SOUTH CAROLINA — Greenwood Amateur Radio Society Greenwood South Carolina Hamfest, Saturday, January 12, Piedmont Technical College Multipurpose Building. Contact: GARS, P.O. Box 2404, Greenwood, SC 29646 or Tedd Davison, AI4WN, phone: (864) 377-1872; <ai4wn@arri.net>; <<http://www.w4gwd.org>>. (Talk-in 147.165+ or 443.900+ [PL 107.2]; exams 10:30 a.m.)

MARATHON, NEW YORK — Skyline Amateur Radio Club January Winterfest 2013, Saturday, January 12 at the Lovell Field Civic Center. Indoor flea market, prizes. Contact: SARC, P.O. Box 5241, Cortland, NY 13045. E-mail: <k2iwr@arri.net>. Website: <<http://www.skylineradioclub.org>>. (Talk-in 147.180 +0.600; exams 9 a.m.)

PHOENIX, ARIZONA — Thunderbird Amateur Radio Club & Amateur Radio Council of Arizona Thunderbird Hamfest 2013, Saturday, January 12 at the Northwest Community Church. E-mail: <hamfest@w7bc.org>. Website: <<http://www.w7bc.org>>. (Talk-in 146.700—600 [PL 162.2] or 446.150—5 [PL 100]; exams 10 to 11:30 a.m.)

QUARTZSITE, ARIZONA — Annual RV Campout Quartzfest, January 15–25 at the Bureau of Land Management campsite located 10 miles south of Quartzsite on US 95 at La Paz Valley Road. Contact: Steve Weed, KO4QT, <organizer@quartzfest.org>; website: <<http://www.quartzfest.org>>. (Exams)

FORT WORTH, TEXAS — Lockheed Martin Recreation Association & W5SJZ Radio Club Cowtown Hamfest 2013, January 18 and 19 at the Lockheed Martin Recreation Area. Contact: David Forbes, KC5UYR, e-mail: <KC5UYR@compuserve.com>. Website: <<http://www.cowtownhamfest.com>>. (Talk-in 147.28 [PL 110.9]; exams).

FORT MYERS, FLORIDA — Fort Myers Amateur Radio Club Southwest Florida Hamfest & Computer Show 2013, January 19, Southwest Florida Public Service Academy. Contact: FMARC, P.O. Box 061183, Fort Myers, FL 33906. Drexel Turner, W4DHT, 7670 Eaglet Court, Fort Myers, FL 33912-1828. Phone: (239) 225-0826 or (239) 464-1350. E-mail: <dtturner@embarqmail.com>. Website: <<http://www.fmarc.net/hamfest.htm>>. (Talk-in 147.345 [PL 136.5]).

HAMMOND, LOUISIANA — Southeast Louisiana Amateur Radio Club 32nd Annual Hammond Hamfest, January 19 at the Quality Inn & Conference Center. Contact: SELARC, P.O. Box 1324, Hammond, LA 70404. E-mail: <wb5net@arri.net>. Website: <<http://www.selarc.org/selarchamfest.htm>>. (Talk-in 147.000-600 [PL 107.2] or 145.130-600 [PL 107.2] or 444.250 +5 [PL 107.2]; exams).

KANSAS CITY, MISSOURI — North Kansas City Hamfest & Emergency Communications Expo, January 19, Hillside Christian Church. Website: <<http://www.northkchamfest.com>>. (Exams)

ST. CHARLES, ILLINOIS — Wheaton Community Radio Amateurs Mid-Winter Hamfest, January 20, Kane County Fairgrounds. Contact: WCRA, P.O. Box QSL, Wheaton, IL 60187-1055. Phone: (630) 604-0157. E-mail: <info@w9ccu.org>. Website: <<http://www.w9ccu.org>>. (Talk-in 145.31—[PL 107.2] or 146.52.; exams)

JACKSON, MISSISSIPPI — Jackson Amateur Radio Club 2013 Capital City Hamfest & Mississippi State ARRL Convention, January 25 and 26 at the Trade Mart Building, Mississippi State Fairgrounds. Website: <<http://hamfest.msham.org/>>. (Exams Saturday 8 a.m.)

COLINSVILLE, ILLINOIS — The St. Louis & Suburban Radio Club, Inc. Winterfest 2013, Saturday, January 26 at the Gateway Convention Center. Contact: Jim Glasscock, W0FF, (636) 584-888 or Bill Coby, KB0MWG, (314) 504-1104. E-mail: <bcoby@sbcglobal.net>. Website: <<http://slsrc.org>>. (Talk-in 146.760)

PALM SPRINGS, CALIFORNIA — Desert RATS Palm Springs Hamfest, January 26 at KD6QLT's ranch. Contact: Peter Reinzuch, VE7REZ/W6, (760) 318-0186. E-mail: <palmsprings.hamfest@gmail.com>. Website: <<http://desertrats.x.am>>.

STRASBURG, OHIO — Tusco Amateur Radio Club 23rd Annual Tusco A.R.C. Hamfest, Sunday, January 27 at 965 North Wooster Avenue. Contact: Janice Green, KB8YDK, (740) 922-4454. E-mail: <k8wfn@tusco.net>. Website: <<http://www.tuscoarc.org>>. (Talk-in 146.730—)

Please submit hamfest and special event announcements at least three months in advance by e-mail to <hamfest@cq-amateur-radio.com> or <specialevent@cq-amateur-radio.com>, or by postal mail to: CQ Magazine, Attn: Hamfests (or Special Events), 25 Newbridge Rd., Hicksville, NY 11801. In addition, CQ's sister publication WorldRadioOnline has extensive information on hamfests and special event stations months in advance of the events; go to <www.worldradioonline.com>.

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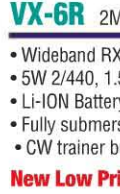


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If you were lucky enough to work B1Z in last year's WPX SSB Contest (results in this issue), here's a look at the operation from the other side, courtesy of CQ Brazil Editor PY2QI...

Inside a Chinese Contest Station

B1Z in the WPX SSB Contest

BY ERWIN HÜBSCH NETO,* PY2QI/KK4CGD, with JOSE MARTINS DA ROCHA
TRANSLATED BY THAIS CONDOLO HÜBSCH

This article originally appeared in the March/April 2012 issue of CQ Radioamadorismo, the Portuguese-language edition of CQ, published in Brazil.

In my childhood, licensed as PY2RNJ, I remember that making and confirming a contact with a ham radio station in China was very difficult. The few who could confirm a QSO with this mysterious and closed country were treated as real amateur heroes. That's because until the beginning of the 1990s, amateur radio activity was tightly controlled by the government, which would not allow free access by its citizens to the rest of the world. This is a little bit like what the Chinese government currently does with websites such as YouTube, Google, and Facebook, which are censored and blocked.

In my trip to China last March with my business partner Martins, I had the opportunity to verify that at least regarding amateur radio activity the situation is completely different today in that giant and prosperous country. After visiting many cities in China and Taiwan, I couldn't contain my excitement over meeting members of the CRAC—Chinese Radio Amateurs Club. I had made some earlier contacts with Chen, BA1HAM, and we agreed to meet on Saturday, March 24th, in a rural area about 18 miles east of Beijing. Many Chinese hams would be there on that weekend at the B1Z station to operate the 2012 CQ WPX SSB Contest.

There could not have been a better time to visit these ham buddies. We arrived in Beijing on a flight from Taipei (Taiwan) at about 12 pm. I called Chen, BA1HAM, to inform him we were on our way to meet him. He told me that the B1Z station was out of town and it wouldn't be so easy to get there. We spoke with a lot of taxi drivers in front of the hotel, but

none wanted to drive us there. Because of the difficulty of the different language, without understanding the reason, we started to be a little bit suspicious that the place was unsecured, just as we see in Brazil.

A Scary Ride

After several tries, an old and badly preserved private car driven by a Chinese man wearing sunglasses stopped by.



Photo A— Author Erwin Hübsch Neto, PY2QI/KK4CGD, with his business partner, Jose Martins Da Rocha, outside the B1Z contest station in China. (All photos courtesy of the author)

*Editor/Publisher, CQ Brazil
e-mail: <erwin@cqmagazine.com.br>



Photo B— Author PY2QI with his Chinese ham hosts, Fan, BA1RB (left) and Chen, BA1HAM (center), at the 40-meter "run" station.



Photo C— Hams from around China were invited to B1Z to observe as well as participate in the WPX Contest.

The man read the B1Z address that had been written in Chinese on a little piece of paper and started to gesticulate frantically telling us to get into the car. He would charge 150 Renminbis, something like \$25.00 US, to take us there. After we closed the deal with the driver, we realized we were in an old car, driven by a stranger who couldn't speak anything in a language other than his own.

Without knowing where we were going, we tried to situate ourselves using a map (written in Chinese) that Mr. Chen had sent by e-mail, and looking at some reference points such as rivers, bridges, and roads. Everything indicated that the driver was taking us to the right place. After ten minutes, on a kind of sinister and lonesome road, he called someone and then sharply stopped the car and quickly opened the glove



Photo D— One of five towers at B1Z. The station is located outside Beijing, on the grounds of a business owned by Mr. Lee, BG1BYV.



Photo E— Another one of B1Z's five towers. Each tower supports one or more monband Yagis.



Photo F— If you've ever been to the ARRL Headquarters Station, W1AW, this should look familiar. Each operating position at B1Z is in a separate glass room, to minimize interference between stations. This is the 20-meter station.

compartment. We immediately thought that he was going to pull a gun and we were going to be kidnapped or robbed.

With our hearts beating quickly (something like 200 wpm in CW...) we breathed a sigh of relief when we saw that all our driver took from the glove compartment was a GPS. Martins calmed down when he realized that he wouldn't have to use his "martial arts techniques." After another hour, I saw one of the big B1Z towers.

A Warm Reception

I couldn't hide how happy I was in that situation, seeing a ham radio station in China, especially on a special day: the 2012 WPX SSB Contest day (photo A). After a warm reception by Mr. Chen and Fan, BA1RB, we started our visit to the contest station (photo B).

At the moment we arrived there were more than 30 hams there (photo C), all curious about meeting a PY buddy from so far away. I gave them some *CQ Radioamadorismo* magazines (the Brazilian version of *CQ* magazine) and said that I was there not only as a ham, but also with the goal of writing a special article about amateur radio in China. I received a beautiful CRAC pin, a key holder from B1Z, and a VIP badge with my callsign.

The Station at B1Z

The station has an antenna farm for 160–10 meters and is set up a big rural area in space provided by the company of Mr. Lee, BG1BYV. This station has five big towers, each with monoband beams (photos D and E). One of the hams in the group coordinated each station that was operating during the WPX, working in a closed studio with glass to isolate each group (photo F). There are four studios: Three share one room, and the fourth is in a bigger room inside the company. The station can be used by many hams on weekends and was used as a special event station during the Olympic Games in 2008. It is also prepared to be used in emergency



Photo G— Operators at the 80-meter run station. Note that most of the ops at B1Z were considerably younger than typical contesters in other parts of the world.



Photo H— Another group of young ops at the 40-meter run station.

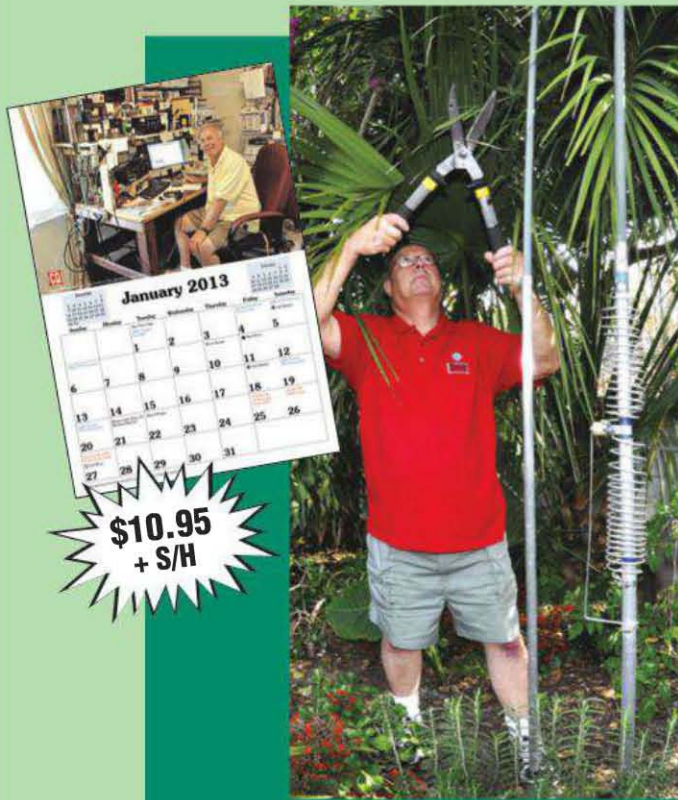
situations. For the contest, each studio contained a "run" station and crew for a specific band. (In a large contest operation, a "run" station spends a good deal of time on one frequency, calls CQ, and works stations that answer, as opposed to a "search-and-pounce" station that tunes the bands in search of "run" stations calling CQ.—ed.)

Ham Radio in China

Our Chinese buddies gave me a real lesson in organization and partnership. According to Chen's information, amateur radio activity appeared in China in the 1920s, and in 1947 there were around 400 ham stations. In 1949, ham activity was prohibited, and in 1958, only BY1PK was allowed to

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Photo I— The 20-meter ops were intently focused on pulling copyable signals of the cacophony of the pileups.

operate. In 1966, all stations were suspended and amateur radio activity was again prohibited. In the 1970s, 30 ham stations controlled by government entities and schools were allowed and kept active until 1992. At the end of 1992, the government authorized individual amateur stations, and since then more than 40,000 hams have become licensed and active.

There are currently four license classes in China, each with different privileges:

Class 1: All bands (1kW HF); Class 2: All bands (100W HF); Class 3: VHF/UHF and part of the 10 meter band; and Class 4: VHF/UHF only.

Officially, amateur radio activity is represented by CRSA (Chinese Radio Sports Association), but as it is becoming more popular, it was necessary to have a new association, the CRAC. The Ministry of Industry and Information is the leading authority that regulates amateur radio activity in China, and it's working on the formulation of a new regulation in order to give more power to CRAC.

There are a lot of DX groups as well, such as B1Z, B4R, and B7P. The DX club B1Z started in 1997 and its organizer is Fan, BA1RB, who works for IBM in China. The club has two stations in Beijing, BY1TX and BY1RX (the one we visited). The contest group invited ham radio operators from all Chinese provinces to visit the WPX operation. According to Mr. Chen, the goal is to motivate more operators (of any class) to get active in DXing and contesting (photos G through I). The hams at B1Z did very well, finishing #2 in Asia in the multi-operator/multi-transmitter (multi/multi) category with more than 7.5-million points (*see contest report elsewhere in this issue for details—ed.*).

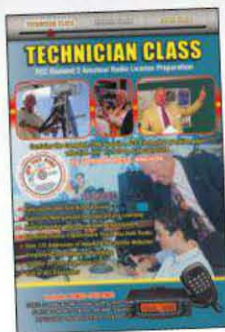
We left feeling satisfied because of this completely new experience, and feeling that we can still find some honest people in the world... We ended up contracting with the same mysterious driver to take us back to the hotel.

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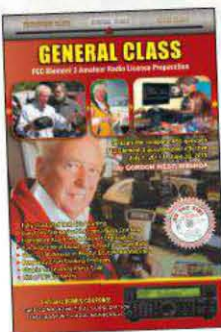
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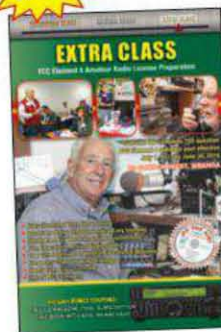
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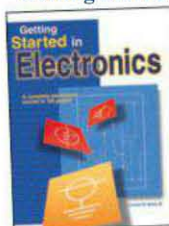
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Results of the 2012 CQ WW WPX SSB Contest

BY RANDY THOMPSON,* K5ZD

Expanded Results on the Web

As usual, QRM and operator lists accompany this article on the WPX Contest page of the CQ website <www.cq-amateur-radio.com>. In addition, this year the top scores for the U.S. and Europe are also on the web in order that we can once again provide you with a full “top-ten” list of world high scores in each category. —W2VU

After a few weeks of disappointing conditions, expectations were hopeful for the 54th running of the CQ WPX SSB Contest in March 2012. Entrants watched the solar forecasts, plotted their strategies, and tried to anticipate which category would produce the most fun, highest score, or a new all-time record.

At the starting gun, the rates were excellent. Many stations reported more than 400 QSOs in the opening hours. Fifteen meters was best from the western USA, while 20 and 40 were the hot bands back east and in Europe. Something happened to the sun on Saturday, though, and the spell was broken. Conditions dropped to only fair, and squeezing most of the activity into 40, 20, and 15 meters made for a rough-and-tumble experience.

QRM was a popular topic in the chatter after the contest. Scott, K7ZO, said, “I am not sure I have ever heard 15 as packed as I heard it this weekend. It sounded like 20 at the bottom of the solar cycle.” From Matija, S53MM, “QRM was killing me almost all of the time.” Ed, K6CTA, enjoyed his experience: “Heavy rain on Saturday kept me inside, and what better way to spend the day than on the radio fighting QRM on SSB!”

Those who stuck it out saw conditions improve on Sunday. More than one entrant commented on having their best rates at the end of the contest! You just never know how a contest will play out, so it is important to stay in the chair all the way to the end, or maybe, like Dave, K6LL, you just can’t resist: “I didn’t plan to put in much time in this contest, but I had fun on Friday night and kept coming back to the radio like a moth to the flame.”

In the end, much of the enjoyment of contesting is about the experience. Bill, K2PO, described it this way: “It’s always fun to have an exotic station come back to a CQ when you’re working US stations. 5X1D was the highlight in that category this time.” Roberto, CE4CT, had some memorable moments, too: “...in the middle of the contest there were two earthquakes, 5.9 and 7.2, but in neither stop transmitting for no lose the rate.”

“WPX is like a worldwide costume ball. You never know who may be behind the mask!”—Jim, AD1C

The WPX Contest counts prefixes as multipliers. This encourages activation of interesting special call signs and some stations “borrowing” call signs that have a less common prefix. The result is more fun, but never knowing to whom the voice behind the microphone belongs. Many Croatian stations added “20” to their prefix to celebrate the 20-year anniversary of the 9A prefix. LY22A was in honor of the 22nd anniversary of independence of Lithuania. The team at EI7M used EI100T to commemorate the 100th anniversary of the last (and first!) sailing of the *S.S. Titanic*. IY4FGM was the Marconi Memorial Station operating from the villa where young Guglielmo Marconi made his first experiments in wireless communications.

*e-mail: <k5zd@cqww.com>

Solar Indices During WPX SSB Contest 2009–2012

Year	Solar Flux Index	A Index	K Index
2012	103	10	2
2011	114	1	0
2010	88	7	2
2009	71	3	1



Steve, GW4BLE, operated single band 75 meters. You can listen to your QSO with him at <www.gw4ble.dxlxt.co.uk>.

The top prefix count among all entries was once again achieved by the big German multi-multi station DR1A, with 1841. This is 68 fewer prefixes than their record set one year ago. The best prefix total by a single-operator was CN2R with 1424. Special thanks to those stations who provided some of the more interesting prefix multipliers, including: 4G0LD, 5P12EU, 8J10SAI, 9A22P, HU0A, L59D, L60S, LZ12FDAY, LZ1784SIB, LZ40YE, SZ6P, TM22P, TM38O, TO7BC, UE85DRK, V55V, VP52V, YB8Y, and YE3J. Harley, K8BI, commented, “Some of these calls were so weird I had no idea what I was working and where to point the beam!”

Single-Operator All Band

The race for top Single-Operator All Band score was once again between perennial champions Jim, W7EJ, at CN2R, and Tom, W2SC, at 8P5A. Jim used his proximity to Europe to gain double QSO points on the low bands and set a new all-time record. Tom made 800 more contacts, mostly on 20 and 40, but it just wasn’t enough. Andy, AE6Y, was close behind from P49Y. After wrestling with pulling QSO numbers out of the QRM all weekend, Andy suggested a new way of saying numbers: “...we should all use: zero, uno, due, tres, quattro, cinco, six, siete, otto or ocho, nova or nueve ... doing so would lessen necessary repeats and up the scores considerably.” Should contesters create their own set of phonetic numbers?

Who says the guys in New England win everything? There was a battle of superstations with super ops for the top USA score. Kevin,

2012 WPX SSB TROPHY WINNERS AND DONORS

SINGLE OPERATOR ALL BAND

WORLD: Stanley Cohen, W8QDQ Trophy. Won by: **CN2R** operated by James P Sullivan, W7EJ
WORLD Low Power: Caribbean Contesting Consortium Trophy. Won by: **P40W** operated by John Crovelli, W2GD
WORLD QRP: Phil Krichbaum, N0KE Trophy. Won by: **T15N** operated by Bill Parker, W8QZA

USA: Atilano de Orms, PY5EG Trophy. Won by: **NN5J** operated by Kevin Stockton, N5DX
USA Low Power: Terry Zivney, N4TZ Trophy. Won by: **NV1N** operated by Edward Sawyer, N1UR
USA QRP: Doug Zwiebel, KR2Q Trophy. Won by: **Randy Shirbroun, ND0C**
USA Zone 3 High Power: Lauri "Mac" McCreary, KG7C Trophy. Won by: **KW7Y** operated by Mitch Mason, K7RL
USA Zone 3 Low Power: Buz Reeves, K2GL Memorial Trophy. Won by: **AD7JP** operated by Bill Conwell, K2PO
USA Zone 4 High Power: Society of Midwest Contesters Trophy. Awarded to: **George A. Demontrond III, NR5M**
USA Zone 4 Low Power: Society of Midwest Contesters Trophy. Won by: **Dave Cockrum, N5DO**
USA Zone 5 High Power: Paul Obert, K8PO Trophy. Won by: **K1LZ** operated by Markovic Milovan, N8BO

EUROPE High Power: Jim Hoffman, N5FA Trophy. Won by: **E7DX** operated by Emir Memic, E77DX
EUROPE Low Power: Ed Sawyer, N1UR Trophy. Won by: **UU7J** operated by Andy Kotovsky, UUAJMG
EUROPE QRP: Rick Williams, VE9HF Trophy. Won by: **TM9K** operated by Gerard Gendron, F5BEG

AFRICA: Peter Sprengel, PY5CC Trophy. Awarded to: **TO7BC** operated by Hartwig Kauschat, DL7BC

ASIA: Chris Terkla, N1XS Trophy. Won by: **Vladimir Vinichenko, UP0L**
NORTH AMERICA: Albert Crespo, F5VHJ Trophy. Won by: **8P5A** operated by Tom Georgens, W2SC
NORTH AMERICA QRP: Phil Krichbaum, N0KE Trophy. Won by: **No entrant**
OCEANIA High Power: Phillip Frazier, K6ZM Memorial Trophy. Won by: **WH7M** operated by Lou Cohen, K1YR
OCEANIA Low Power: YB Land DX Club Trophy. Awarded to: **Holger Hannemann, ZL3IO**
SOUTH AMERICA: Andrew Faber, AE6Y Trophy. Won by: **P49Y** operated by Andrew Faber, AE6Y
SOUTHERN CONE (CE, CX, LU) Low Power: LU Contest Group Trophy. Won by: **Esteban Asenjo, XQ7UP**

CANADA High Power: Saskatchewan Contest Club Trophy. Won by: **VY2ZM** operated by Jeffrey T. Briggs, K1ZM

CANADA Low Power: Paul Cassel, VE3SY Memorial Trophy. Won by: **Dan M. Lazar, VE6EX**

JAPAN: Hamad Alnusif, 9K2HN Trophy. Won by: **Masaki Okano, JH4UYB**

SINGLE OPERATOR, SINGLE BAND

WORLD: Steve Merchant, K6AW Trophy. Won by: **PX5E** operated by Sergio Lima de Almeida, PP5JR
WORLD 28 MHz: Jorge Taboada, EA9LZ Trophy. Awarded to: **CE3CT** operated by Roberto Ramirez, CE4CT
WORLD 28 MHz Low Power: Six Stars Contest Station LS1D Trophy. Won by: **Guilherme Vaz, PU2LEP**
WORLD 21 MHz: Stuart Santelmann KC1F Memorial (W3UA/RA3AA sponsor) Trophy. Won by: **D44AC** operated by Fabio Schettino, I4UFH
WORLD 14 MHz: Jorge Taboada, EA9LZ Trophy. Won by: **Andreas Kretzschmar, 9Y4W**
WORLD 7 MHz: Jorge Taboada, EA9LZ Trophy. Won by: **Salim Gechem, HK1T**
WORLD 7 MHz Low Power: Neal Campbell, K3NC Trophy. Won by: **UZ7M** operated by Yuri Prokhorov, UT9MZ
WORLD 3.7 MHz: D4C Contest Team Trophy. Won by: **YT4A** operated by Miroslav Vemic, YT1AA
WORLD 1.8 MHz: UA2 Contest Club Trophy. Won by: **Tomislav Polak, 9A2AJ**

USA 28 MHz: Maurice Schietecatte, N4LZ Trophy. Won by: **WN1GIV/4** operated by Bob Patten, N4BP
USA 21 MHz: Maurice Schietecatte, N4LZ Trophy. Won by: **KJ3X/4** operated by Bill Kollenbaum, K4XS
USA 14 MHz: Charles Wooten, NF4A Trophy. Won by: **Carol Richards, N2MM**
USA 7 MHz: Yankee Clipper Contest Club Trophy. Won by: **Fred Reed, KK1KW**
USA 3.7 MHz: Bernie Welch, W8IMZ Memorial (WB8MRU sponsor) Trophy. Won by: **Steven Sussman, W3BGN**

EUROPE 28 MHz High Power: SKY Contest Club Trophy. Won by: **CR2T** operated by Eduardo M. F. S. Machado, CU2AF

EUROPE 21 MHz High Power: SKY Contest Club Trophy. Won by: **CS2C** operated by Jiri Pesta, OK1RF
EUROPE 14 MHz High Power: SKY Contest Club Trophy. Won by: **OH0X** operated by Pertti Simovaara, OH2PM
EUROPE 7 MHz High Power: SKY Contest Club Trophy. Won by: **YT8A** operated by Dusan Ceha, YU1EA
EUROPE 3.7 MHz High Power: SKY Contest Club Trophy. Awarded to: **Mikael Reijer, SM3M**
EUROPE 1.8 MHz High Power: SKY Contest Club Trophy. Awarded to: **Kurt Kawasch, OM7RU**

SINGLE OPERATOR ASSISTED

WORLD: Emir-Braco Memic, OE1EMS Trophy. Won by: **P41P** operated by Helmut Mueller, DF7ZS
USA: Alabama Contest Group Trophy. Won by: **Rick Davenport, K1IG**
EUROPE: Martin Huml, OL5Y Trophy. Won by: **YP9W** operated by Tiberiu Tebeica, YO9GZU

OVERLAY CATEGORIES

WORLD Tribander/Single-Element: Helmut Mueller, DF7ZS Trophy. Won by: **NX0X/4** operated by Paul H. Newberry, Jr., N4PN

USA Tribander/Single-Element: Paul Newberry, N4PN Trophy. Awarded to: **Charles Wooten, NF4A**

USA Tribander/Single-Element Low Power: Al Josza, KG1E Trophy. Won by: **NR3X/4** operated by Nate Moreschi, N4YDU

Europe Tribander/Single-Element: Roger Miner, K1DQV Trophy. Won by: **Igor Vachevsky, RT4RO**

WORLD Rookie: Val Edwards W8KIC Memorial (K3LR sponsor) Trophy. Won by: **UA5A** operated by Oleg Prelovsky, RA3AKT

MULTI-OPERATOR, SINGLE-TRANSMITTER

WORLD: Latvian Contest Club Trophy. Won by: **5D5A** operated by IK2QEI, IK2SCG
USA: Steve Bolla, N8BJQ Trophy. Won by: **WW2DX** operated by W2RE, WW2DX, KB2HZI, K2TR
AFRICA: Rhein Ruhr DX Association Trophy. Won by: **6V7Z** operated by UA9CDC, RA9FW, 6W7RV
ASIA: W2MIG Memorial (NX7TT Sponsor) Trophy. Won by: **P33W** operated by 5B4AIE, RV3BA, RG6G, R3DCX, RW4WR, RA3AUU
EUROPE: Tonno Vahk, ES5TV Trophy. Won by: **RL3A** operated by RA3CO, UA3ASZ, RL3FT, RU3RQ, RT3DX, RN3DNM, RV3MA
NORTH AMERICA: North Pole Contest Group Trophy. Won by: **WP2Z** operated by K8MJZ, KP2MC, K9VV, NQ6N

MULTI-OPERATOR, TWO-TRANSMITTER

WORLD: Ken Adams, K5KA Memorial Trophy. Won by: **PJ4Z** operated by K4BAI, WW4LL, N4OO, W4DXX
USA: Florida Contest Group Trophy. Won by: **KE3X** operated by KE3X, K3RA, W2CDO, N8II, K2YWE
AFRICA: Walter Skudlarek, DJ6QT Trophy. Won by: **CR3A** operated by CT3BD, CT3DL, CT3DZ, CT3EE, CT3EN, CT3IA, CT3KU, CT3KY, CT1EEB, CT1FFU, CT1FJO
EUROPE: Bernd Och, DL6FBL Trophy. Won by: **EI100T** operated by EI8IR, EI3JE, EI3JZ, EI3KD, EI4HQ, G4CLA, G3ZVW, G3TWC

MULTI-OPERATOR, MULTI-TRANSMITTER

WORLD: Gail M. Sheehan, K2RED Trophy. Won by: **EB8AH** operated by EA4BQ, EA5DY, EA8AH, EA8CAC, EA8S2, ES2RR, ES7GM, ES5RW, IK1HJS, OH1MA, OH6RX
USA: Dale Hoppe, K6UA Memorial Trophy. Won by: **NX5M** operated by NX5M, KU5B, N5XJ, KJ5T, K5RT, AB5K, K5END, W5SE
EUROPE: Rick Dougherty, NQ4I Trophy. Won by: **DR1A** operated by DB5JG, DF6JC, DJ7EO, DK2CX, DL1QQ, DL5LYM, DL6FBL, JF3GAD, PA1TX, PC5A

CONTEST EXPEDITION

WORLD: C6APR Memorial (PT7ZZ sponsor) Trophy. Won by: **V55V** operated by V51W, DH1TW, DJ2HD, DK6XZ, DK9IP, DL3DXX, DL9NDS

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N5DX, was operating as NN5J from the K5GO/N5DX hilltop in Arkansas, and George, NR5M, was blasting away from his big station outside Houston. Both had almost identical multiplier totals. Kevin had 184 fewer contacts, but made up for it with extra DX on 40 meters to take the win. Markovic, N8BO, drove the big station at K1LZ to a close third-place finish. Mitch, K7RL, posted a very impressive fourth-place score from the Pacific Northwest using the callsign KW7Y.

The top 100 single-operator all band entrants in the world averaged more than 33 hours of operating time. Their average score reduction was only 6.5% after the log checking. No doubt many of them were chasing qualifying points for WRTC 2014.

Single-Operator Single Band

After winning the 15-meter single band category four out of the last five years, Sergio, PP5JR, moved up to 10 meters this year. Instead of his usual ZX5J callsign, he used PX5E to earn the highest of any single-band score with 17.7-million points. Imagine over 4500 contacts just on 10 meters! Sergio's effort set a new all-time record for the band by breaking the 10-year-old record of D44AC (op 4L5A).

The D44AC callsign was also active this year. Fabio, I4UFH, visited the Cape Verde Islands to go for a new record on 15 meters. Murphy had other plans, as Fabio experienced a generator failure just before sunrise. It took three hours to get someone up the mountain to diagnose and fix the problem—dirty gasoline. That short outage probably cost him the record.

Twenty meters is always a challenge, but even more so this year. During the day, all of the activity was on the higher bands. At night, everyone was on the low bands looking for double points. The competition was from South America with Andreas, 9Y4W, getting the win over Fernando, PY2LED, at ZV2V.



Carlos, PT7ZT, enjoyed operating as PV7M during the contest.

The third highest single band score in the contest was by Sal, HK1T, operating from the "Jumaji" antenna farm with stacked full-size 3-element Yagis. Dusan, YT8A, did his usual fine job to win Europe. Averaging the highest miles per QSO was third-place finisher Laurie, VK7ZX, all the way from Tasmania.

With propagation so good on the high bands, it was difficult for the challengers on 75 and 160 meters. Vemic, YT1AA, used six different Beverage listening antennas to earn the high score over Mikael, SM3M. Tomislav, 9A2AJ, fought the QRN for over 27 hours to win 160 meters. Ouch.

Single-Operator Low Power

The winner for the low power all-band trophy always seems to come from Aruba. This time it was John, W2GD, operating barefoot from P40W with his sights set on setting a new category record. The solar disturbance

on Saturday was just enough to prevent that from happening, but still left him with a big lead. It was an intense competition for second place and top European score between UU7J, operated by Andy, UU4JMG, and IR4X, operated by Matteo, IZ3EYZ. Another perennial high scorer is Ed, N1UR, operating as NV1N. Ed's 5.4-million points pushed the USA all-time record up another 10%.

Single-Operator Assisted

With multipliers seemingly coming with each new QSO, there isn't as much advantage to using the DX Cluster in WPX compared to other contests. Even so, the competition in the Assisted category continues to increase as top operators enjoy the ability to run and still not miss anything that's happening on the bands.

After four years of operating from Madeira, Helmut, DF7ZS, headed to the magical WPX island of Aruba to chase the prize from the

Log Checking Honor Roll

There were 2,866,408 total QSOs recorded in the 5,365 logs received for the 2012 edition of the WPX SSB Contest. More than 2.2 million, or 78%, of these contacts could be cross-checked against another log. An incredible 95.5% of the cross-checked QSOs were made without errors. That's rather amazing when you consider all of the QRM, QSB, and other distractions of a phone contest. The average score reduction for all logs was 11.6%. Score reductions usually are higher in WPX because many busted calls often have the added impact of being lost multipliers.

Everyone who submitted a log to the WPX Contest should have received an e-mail with a link to their log checking report. The report shows all errors found in the logs and how the final score was calculated. The report also shows how others may have miscopied your callsign or exchange. This is a great tool for learning how to improve your operating skills. If you did not receive the message with the link, send an e-mail to <director@cqwp.com> to request your report.

There were 347 "Golden Logs" with no score reductions at all! Top golden logs (with QSOs made) include VR2XLN (487), WN2O (341), KI0I (300), VA5LF (270), and G6NHU (244). Nice work!

Interestingly, there were 339 entries that were Golden on the transmitting side. They caused no busted calls, no exchange errors, and no Not-In-Log busts. This elite group included KT2G (100), W4EF/6 (66), OL7Y (56), AA4KD (54), and N3GJ (52).



Sunrise at the antenna farm of ED1R.

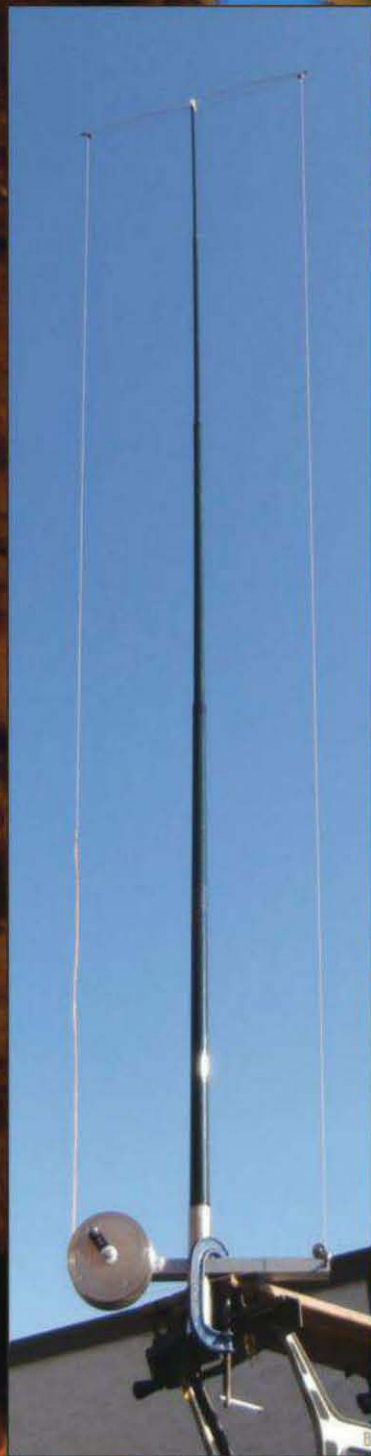
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2012 WPX SSB WORLD TOP SCORES

SINGLE OPERATOR HIGH POWER ALL BANDS

CN2R (W7EJ)	27,280,992
8P5A (W2SC)	24,809,505
P49Y (AE6Y)	22,182,251
VY2ZM (K1ZM)	18,863,406
UP0L	18,541,055
E7DX (E77DX)	16,982,770
C4W	16,750,800
T1F1 (LU1FAM)	16,704,753
PT5T (PP5XX)	16,578,468
CW5W (CX6VM)	15,933,607

28 MHz

PX5E (PP5JR)	17,785,368
CE3CT (CE4CT)	8,812,826
PJ2T (AC8AP)	4,853,292
PY5QW	4,643,936
H2T (5B4XF)	3,839,844
ZY5Y (PP5BS)	3,215,668
CR2T (CU2AF)	1,621,312
J03JIS	1,540,045
ZS6EE	1,283,660
TM4W (F5HRY)	1,272,700

21 MHz

D44AC (I4UFH)	17,356,864
PR5B (PY2LSM)	11,236,625
KJ3X/4 (K4XS)	8,588,114
CS2C (OK1RF)	8,004,231
YT5W (YT7AW)	6,010,788
E77A	5,608,691
TM1W (F1HAR)	5,601,827
NH6P (KH7Y)	4,121,650
XE1L	3,636,370
CX2DK	3,551,292

14 MHz

9Y4W	9,177,904
ZV2V (PY2LED)	7,101,512
D4C (I24UEZ)	6,534,990
VG7R (VA7RR)	5,664,204
OH0X (OH2PM)	5,195,988
R15Z	4,914,560
S50K	4,833,312
EA5DFV	3,898,378
LZ0U (JY5ZZ)	3,250,640
YL2BJ	2,611,614

7 MHz

HK1T	14,512,230
Y78A (YU1EA)	6,557,886
VK7ZX	4,303,684
YL3FT	2,824,356
KK1KW	2,407,000
R8MC	2,329,002
PS2T (OH2MM)	1,977,880
9A8DX	1,854,949
OD7T	1,454,976
IK3UNA/1	738,700

3.7 MHz

YT4A (YT1AA)	1,243,200
SM3M	1,001,151
S54K	849,420
IG8WIC	834,968
W3BGH	808,920
4M5W (YV5MSG)	491,301
SP3GTS	390,375
RU4SS	370,596
UX1VT	243,168
EA1AAW	199,867

1.8 MHz

9A2AJ	465,864
OM7RU	340,599
UT5UGR	299,882
L2Y0U	228,285
SP4JCP	172,500
IR1A (IK1PGP)	97,709
EA6SX	41,340
RN4HQJ	40,125
RW3SY	30,193
UT5ECZ	19,950

SINGLE OPERATOR LOW POWER ALL BANDS

*P40W (W2GD)	13,062,600
*UU7J (UU4JMG)	6,531,670
*IR4X (I23EYZ)	6,328,036
*ZL3IO	6,182,904
*NV1N (N1UR)	5,451,950
*RW0A (RADAM)	5,171,096
*LY1R (LY9A)	4,803,825
*S50A	4,732,052
*H8LAM/3	4,354,011
*KU2M	4,318,160

28 MHz

*PU2LEP	5,134,649
*LW8DQ (LW7DX)	3,011,602
*LU6FOV	2,837,100
*LU7EC	2,525,888
*PY2MTS	2,242,880
*CX1DP	1,510,083
*PUSFJR	1,463,405
*AY8A (LU8ADX)	1,070,913
*CA3S0C	1,056,088
*RV9DC	1,016,880

21 MHz

*5K3R (HK3R)	2,819,245
*V55KG	2,177,872

*HI3K	2,070,445
*JR3RIY	1,203,184
*4M1F (YV1JGT)	978,040
*LZ2JA	918,517
*R9RA	856,215
*C02CW	804,804
*UA0SOX	798,930
*VESZC	634,920

14 MHz

*PY1ZV	1,287,453
*SP5GRM	1,255,130
*EA8VD	990,416
*UA6LUQ	867,064
*YB9WZJ	675,540
*S52WW	674,245
*LR1H	665,660
*LY80	618,838
*YL5W	569,016
*I2ZACD	559,035

7 MHz

*UZ7M (UT9MZ)	2,561,598
*S57DX	2,270,452
*UY2UQ	1,214,292
*UU2CW	1,042,317
*Z33F	651,651
*UA6YE	641,079
*E16JK	625,820
*F4GTD	592,724
*LY5J	488,824
*PV2P (PY2DY)	325,040

3.7 MHz

*DF2DJ	923,832
*Y78WW	683,648
*YL2GUV	336,980
*SP4SHD	274,920
*R3LC	224,548
*S53N (S58G)	220,792
*OM0CS	213,030
*US2IZ	169,596
*HK6P	164,104
*HG8YKO	155,350

1.8 MHz

*EU2EU	74,304
*OK1JOK	60,060
*ER2RM	33,408
*SM6FJY	20,592
*VE6EDY	8,140

SINGLE OPERATOR ASSISTED HIGH POWER ALL BANDS

P41P (DF7ZS)	23,229,884
RC90	17,536,244
H22H (5B4MF)	13,617,600
Z22T (PY2MNL)	12,663,156
K1G	11,971,296
YF9W (Y09GZU)	11,956,764
HA8JV	9,654,390
EC2DX	9,440,957
IW2HAJ	9,061,152
VE9HF	8,789,700

28 MHz

LR2F	7,746,093
LU3HS	4,503,842
K66DX	4,406,832
4X0A (4X1VF)	2,609,750
PP5JN	1,398,132
CT3HF	1,351,396
IY9X (IT9SPB)	1,243,772
PY1EW	1,078,740
XV1X	857,190
RX0AE	833,316

21 MHz

NS1L/4 (W4SV0)	5,364,639
5B4KH	5,336,788
LY5E (LY2LJ)	5,203,000
DF92P	4,976,624
OQ4U	4,685,949
YT7Z (YT5M)	4,608,128
EI2CN	4,331,998
YU5A (YU1EW)	4,178,944
9A5Y (9A3NM)	4,054,290
OH1F (OH1NOA)	3,683,488

14 MHz

SO2R (SP2FAX)	7,181,838
GW9T (MW0ZZK)	6,915,090
US1I (UX2IO)	6,520,784
S53F	5,149,956
OL9Z	5,014,488
PT2CM (PT2IC)	4,830,602
RJ3FF	4,334,240
E03Q (UR30CW)	3,768,498
DA2C (DK3DM)	3,441,925
S50G (S57AW)	2,891,904

7 MHz

YW5T (YV5JBI)	6,849,684
4L50	5,963,804
S56X	3,454,297
OK1UG	1,742,959
R3KM	1,600,225
LR9D (LU9ESD)	1,296,297
RA6XV	595,059
EC72K	582,400
J42T (SV2DCD)	303,222
K4KZ	299,184

3.7 MHz

SN2M (SP2XF)	1,740,188
IQ4RA (I4AVG)	1,693,584
DM50UEA (DL38QA)	1,358,934
E73ESP (E72SIE)	1,094,100
YU1ARC (YU1YV)	968,856
OH9W (OH2FPK)	966,264
UW5ZM	853,461
YL6W	852,867
9A2R	784,665
EA7EU	622,566

1.8 MHz

IO4C	688,170
LY7M	376,957
EU3AR	328,308
IZ5MOQ	253,968
UA6AIW	35,916

SINGLE OPERATOR ASSISTED LOW POWER ALL BANDS

*RV9UP	4,626,720
*S50XX	3,156,849
*RL6M	3,010,144
*IB1B (W10N)	2,966,194
*UN7MMM	2,947,204
*YT0Z (YU1ZZ)	2,597,188
*UA9AL	2,556,440
*YV8AD	2,390,775
*RW4WA	2,349,000
*LZ12FDAY (LZ1UJ)	2,213,099

28 MHz

*PR3A	4,639,460
*LU8ET	4,400,685
*YV5JF	1,330,662
*P3JFJ	1,323,552
*PB8WWW	1,248,566
*PU2STZ	853,549
*PY2HT	839,300
*PY2TKB	774,204
*HG0R (HA0NAR)	469,080
*PU1KGG	396,198

21 MHz

*HA4XH	2,442,462
*PY9MM	1,069,932
*N9TGR	1,001,616
*ED8D (EA8MT)	935,520
*R9MC	925,688
*UA0WY	831,833
*IR8M (IZ0EYP)	650,886
*UT5LO	526,128
*SP4DZT	511,936
*Y3AGV	318,763

14 MHz

*YT5CT	1,511,433
*YT8T	1,142,580
*KG1E	1,036,630
*ZM3T (W3SE)	1,036,074
*UT7Y (US0YV)	724,895
*Y08SSB	640,920
*NP4G	497,377
*EF7W (EC7KW)	425,898
*OK6RA	371,840
*RA6GW	357,840

7 MHz

*EI4FC	892,012
*EN1C	845,435
*VY2MGY/3 (VE3MGY)	685,640
*NY6DX/2	632,818
*Z2E1FVS	419,692
*EA5HSI	345,779
*VE9ML	255,387
*UA2FT	128,554
*YT6A	112,658
*DS5TOS	110,522

3.7 MHz

*9A1JSB (9A7ZZ)	527,050
*LY7Z	521,968
*S53NW	243,837
*DR2K (DL50CR)	163,226
*IT9JDH	139,200
*EA3AKA	94,500
*YB1AR	15,386
*EA1GWM	4,988
*UR8IDX	552

1.8 MHz

*E7CW (E74WN)	320,458
*Z36N	205,905
*SP8LBK	121,208
*UR5IFB	96,114
*W2MF	54,730

SINGLE OPERATOR QRP ALL BANDS

TI5N (W8QZA)	1,449,725
TM9K (F5BEG)	953,680
LU7HR	756,646
DL8LR	749,700
NB0CC	641,600
IZ8JFL	541,250
OQ4O	500,148
RN4HAB	496,353
H66C (HA6IAM)	485,204
EG7TA	482,466

28 MHz

LU3HFA	120,330
ON6NL	92,105
ISKAP	79,977
R2AD	30,680
Y050HY	27,730

21 MHz

EI4II	117,898
EA1CJJ	109,068
SP4LVK	92,571
WA6FGV	91,455
JH3DMQ	79,325

14 MHz

YT1CS	131,108
SP3DRM	81,468
ON3DI	50,220
RU4SM	43,792
UA0A	38,350

7 MHz

S57SU	609,329
9A209L (9A9L)	217,722
SP200T	180,576
SP4GFG	172,125
HA8V	57,961

3.7 MHz

UX9Q (UR90Q)	36,010
K9JWV/7	4,272

3.8 MHz

9A4AA	1,984
R3VA	91

MULTI-OPERATOR SINGLE TRANSMITTER

5D5A	38,510,454
P33W	37,798,352
RF9C	29,872,318
6V7Z	27,788,120
UP2L	27,522,568
3V8BB	26,263,647
RL3A	22,523,280
C09T	21,845,680
ES9C	21,585,315
WP2Z	21,335,538

MULTI-OPERATOR TWO-TRANSMITTER

PJ4Z	57,741,867
CR3A	50,282,186
PW7T	44,052,624
V55V	36,092,544
E100T	33,721,072
ED9Z	31,118,395
OL4A	29,159,072
A73A	28,885,818
C03L	28,737,382
9A7A	25,898,786

MULTI-OPERATOR MULTI-TRANSMITTER

EB8AH	76,018,024
DR1A	51,608,753
LP1H	47,996,898
9A1A	38,960,724
OT5A	34,489,028
LZ9W	34,413,120



N5AW at his operating station.

station of P40V. You can get a feel for the experience by watching Helmut's excellent video blog (see WPX Activity on the web). Rick, K11G, continued his mastery of WPX and the Assisted category by dominating the competition in the USA.

One of the closest races was for world high on 15-meter single band assisted high power. Mark, W4SVO, operated as NS1L and got by George, 5B4KH, by just 0.5%. There was another competitive race on 75 meters between SN2M (operated by Mac, SP2XF) and Franco, I4AVG, at IQ4RA.

Things really tighten up on low power. Look at the 20-meter scores of KG1E and ZM3T—just 500 points apart for third place in the world. Niall, EI4CF, and Maxim, EN1C, had a spirited battle for tops on 40 meters. Niall was enjoying his new SteppIR DB36 antenna at 75 feet.

Single-Operator QRP

You have to admire the spirit and determination it takes to wade into heavy QRM with just 5 watts. It seems that Bill, W8QZA, does so every year with very good results. This year he visited T15N to take the world high score for all bands. Gerard, F5BEG, did a very nice job from TM9K to finish second. Randy, ND0C, did a fantastic job to win the USA from his modest station in the propagation "black hole" of Minnesota.

Overlay Categories

We had 228 entries in the Rookie category (for operators who have been licensed less than three years). The entries are divided into high and low power. Oleg, RA3AKT, and Vito, S56AA, battled it out for the top spot in high power. The top two Rookies on low power were operating single band 10 meters with Fernando, CX1DP, coming out ahead of Fabio, PU8WWW. It is always great to see the Rookie operators improve their skills each year.

In the Tribander/Single-Element category, the top high power score went to Paul, N4PN, operating as NX0X from near Atlanta.

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WPX Activity on the Web

In addition to the cqwp.com website, there are other places on the Internet where you can enjoy the contest. Join the nearly 3000 people who have "liked" the contest on the Facebook fan page at <www.facebook.com/cqwp.com>; follow the latest announcements on Twitter at <www.twitter.com/cqwp.com>.

Many operators and groups like to share their contest experiences on YouTube. Visit <<http://www.youtube.com>> and type "CQ WPX 2012 SSB" into the search box.

We asked Facebook fans to recommend some videos and received the following suggestions:

- EB8AH MULTI MULTI: <http://youtu.be/l_MzDkdRRxY>
- DF7ZS at P41P: <<http://youtu.be/pSkxQHEnzrl>>
- IY4FGM: <http://youtu.be/YuD_vPlunY0>
- DP6T: <<http://youtu.be/xZ18-IFdDel>>
- PQ5B by 12-year-old PU5DCB: <<http://youtu.be/eUnBUvkCxZ0>>
- EI4GYB: <<http://youtu.be/jKfByhms77M>>
- LN8W contest audio: <<http://la8w.com/contestaudio/wp-x-ssb-2012/>>

**CQ WW WPX SSB CONTEST
ALL-TIME RECORDS**

The contest is held each year on the last full weekend of March. The All-Time Records will be updated and published annually. Data following the calls: year of operation, total score, and number of prefix multipliers.

WORLD RECORD HOLDERS

Single Operator		
1.8	CN2R('07)	1,613,955 399
3.5	CN2R('06)	11,849,076 894
7.0	CN2R('05)	14,724,696 931
14	CN2R('08)	15,778,840 1199
21	CN2R('11)	20,704,164 1443
28	PX5E('12)	17,785,368 1368
AB	CN2R('12)	27,280,992 1424
QRP/p	HC8A('94)	7,520,562 714
Assisted	P41P('12)	23,229,884 1303

Multi-Operator Single Transmitter

5D5A('12)	38,510,454 1601
-----------	-----------------

Multi-Operator Two Transmitter

EB8AH('11)	68,072,520 1765
------------	-----------------

Multi-Operator Multi-Transmitter

EB8AH('12)	76,018,024 1784
------------	-----------------

U.S.A. RECORD HOLDERS

Single Operator		
1.8	K1ZM('95)	327,712 308
3.5	K1UO('10)	2,161,782 602
7.0	WU3A('11)	4,731,424 796
14	KQ2M('09)	7,034,082 1082
21	KQ2M('11)	9,591,670 1210
28	NY4A('00)	6,006,573 877
AB	K1LZ('11)	15,921,388 1246
QRPp	KR2Q('00)	2,688,158 649
Assisted	K1IG('11)	13,075,616 1268

Multi-Operator Single Transmitter

WW2DX('12)	19,167,080 1373
------------	-----------------

Multi-Operator Two Transmitter

K1LZ('10)	30,393,480 1560
-----------	-----------------

Multi-Operator Multi-Transmitter

KM3T('00)	29,338,460 1355
-----------	-----------------

CLUB RECORD

Contest Club Finland ('00)	250,320,141
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QRPp RECORD

HC8A('94)	7,520,562
-----------	-----------

WPX (Prefix) RECORD

DR1A('11)	1909
-----------	------

CONTINENTAL RECORD HOLDERS

AFRICA

1.8	CN2R('07)	1,613,955 399
3.5	CN2R('06)	11,849,076 894
7.0	CN2R('05)	14,724,696 931
14	CN2R('08)	15,778,840 1199
21	CN2R('11)	20,704,164 1443
28	D44AC('02)	15,707,401 1123
AB	CN2R('12)	27,280,992 1424

ASIA

1.8	*YM0T('05)	486,846 222
3.5	H2T('10)	3,067,296 534
7.0	5B/KC2TIZ('10)	6,761,872 754
14	P33W('10)	8,004,130 1030
21	JA6GCE('11)	7,055,664 996
28	H22H('00)	9,092,146 931
AB	UP0L('12)	18,541,055 1235

EUROPE

1.8	SN3R('07)	835,884 434
3.5	EI7M('10)	3,527,075 731
7.0	EI7M('11)	10,787,690 1054
14	TM77M('10)	8,271,768 1046
21	CS2C('11)	9,479,430 1245
28	GM7V('00)	8,305,756 982
AB	E7DX('11)	20,438,120 1322

NORTH AMERICA

1.8	VA1A('99)	535,225 271
3.5	ZF1A('08)	2,269,344 462
7.0	TI4CF('05)	8,057,479 751
14	KP2A('95)	7,088,976 912
21	VP2EH('11)	14,899,185 1305
28	KP2A('00)	11,385,710 1046
AB	8P5A('12)	24,809,505 1385

OCEANIA

1.8	KH6ND('07)	26,432 59
3.5	WH7Z('03)	1,208,900 308

7.0	ZL3A('08)	8,200,800 816
14	KH6ND('03)	6,493,727 887
21	AH7DX('00)	7,645,990 890
28	TX0DX('00)	12,049,422 847
AB	KH7X('11)	20,676,524 1244

SOUTH AMERICA

1.8	HK1KYR('10)	44,814 77
3.5	P40A('96)	1,715,076 426
7.0	HK1T('12)	14,512,230 1062
14	HK1X('11)	13,783,532 12599
21	ZX5J('10)	16,746,977 1369
28	PX5E('12)	17,785,368 1368
AB	HC8A('01)	25,180,199 1199

MULTI-OPERATOR SINGLE TRANSMITTER

AF	5D5A('12)	38,510,454 1601
AS	P33W('12)	37,798,352 1556
EU	TM6M('11)	28,016,921 1541
NA	VP2EC('92)	24,409,580 1115
OC	KH7X('12)	19,038,120 1180
SA	HC8A('93)	32,502,677 1107

MULTI-OPERATOR TWO TRANSMITTER

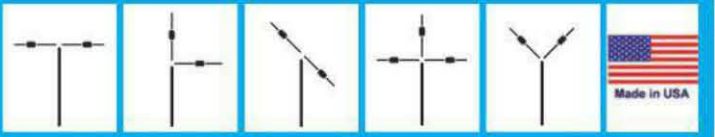
AF	EB8AH('11)	68,072,520 1765
AS	A61AJ('04)	30,157,650 1255
EU	EI100T('12)	33,721,072 1616
NA	K1LZ('10)	30,393,480 1560
OC	VK4KW('11)	26,528,482 1369
SA	PJ4Z('12)	57,741,867 1641

MULTI-OPERATOR MULTI-TRANSMITTER

AF	EB8AH('12)	76,018,024 1784
AS	P3A('00)	53,554,592 1456
EU	DR1A('11)	63,397,890 1909
NA	WL7E('00)	42,013,215 1395
OC	KH7R('02)	32,806,032 1304
SA	HC8N('03)	60,703,452 1476



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Jojo, DU1VHY, watches over Art, DV1SOV, and Rey, DV1SUT, as they make their first contest QSOs from DU1HR.



Helmut, DF7SZ (left), and Carl, AI6V/P49V, are showing the spirit of ham radio contesters worldwide.

Both Paul and Igor, RT4RO, managed over 3200 contacts with simple antennas. On low power it was Holger, ZL3IO, taking the top spot.

Multi-Operator

The Multi-Operator Single-Transmitter category continues to grow, with 249 entries, and this year offered one of the most exciting races. The team at P33W has developed a very sophisticated switching scheme that allows multiple stations to share the same band without transmitting at the same time. They are very effective at weav-

ing running QSOs and searching for QSOs at the same time. The two-operator team at 5D5A in Morocco pursued a more traditional operating style. P33W was way ahead at the halfway point, but it was extra 6-point contacts on 40 meters that ultimately earned the victory for 5D5A. 5D5A also had the extra satisfaction of taking the all-time record from P33W! RL3A had the highest score that wasn't from Africa or Asia. The WW2DX team in eastern New York completely demolished the USA record set in 2011.

The winning team in the Two-Transmitter category was PJ4Z in Bonaire. You can hear what a great signal this station has by searching for PJ4Z on YouTube and listening to some of the recordings!

On the Cover



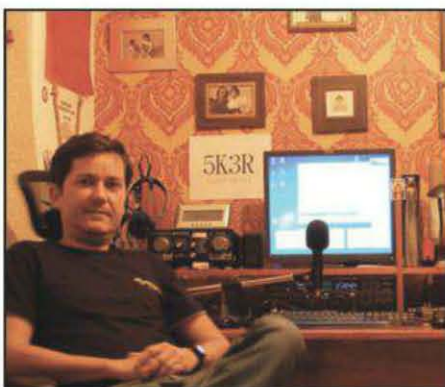
Snowy Minnesota winters will soon be a thing of the past for Mike Warren, WØWG, of Eden Prairie. Since the passing of his wife last fall, Mike has decided to begin selling off his extensive collection of “boat-anchors”—heavy tube-type radios from the mid-20th century—and prepare to move to Virginia to be closer to his daughter. Mike has lived in Minnesota since 1979, where he moved to begin a second career with Control Data after spending 20 years in the Navy repairing radios and other electronic gear and becoming a repair instructor for cryptography equipment. At Control Data Mike was a repair depot manager until his retirement at the end of 2000.

Repairing, restoring, and operating “boat-anchors” has been a longtime passion for Mike, who has kept his soldering gun warm even after retirement, working on old tube gear for himself and his friends. He keeps some of the old gear on the air, working locals on 75 meters most mornings and running AM phone on weekends. Most of Mike’s on-the-air time, though, is devoted to DXing, mostly using single sideband. He also enjoys interfacing modern rigs with computers for logging and spotting. Mike says he’d also like to learn more about remote station control but says he “hasn’t quite gotten (his) arms around it yet.”

In our cover photo, Mike is in his front yard and over his shoulder is his 38-foot tower with a Tennadyne T6 log-periodic for 20–10 meters on the top, as well an off-center-fed dipole for both 80 and 40 meters. Anyone interested in knowing more about Mike’s boat-anchor collection can find his contact information on his page on QRZ.com. (Cover photo by Larry Mulvehill, WB2ZPI)



The operating team of world high Multi-Multi entry EB8AH. Left to right: ES2RR Toivo; EA8EW (OH1MA) Jakko; EA8AH Pekka; EA8CAC Juan; ES5RW Rein; OH6DX Jusy Pekka; IK1HJS Carlo; EA8ZS Manolo; ES7GM Kristijan; and EA5DY Salva.



Anibal, 5K3R, operated single band 15 meters low power.

The group at EI100T set a new European record score.

The highest score in the history of the contest was accomplished by EB8AH in the Multi-Multi category. Over 11,000 QSOs and a final score over 76-million points will be hard to beat. DR1A outscored the other challengers from Europe. The third-place finish by LP1H was also very impressive, being so far from the major contesting population centers.

Final Thoughts

One interesting score was the single operator all band effort of CQ8X by Toni, OH2UA/CU2KI. Toni worked over 4300 contacts and 1200 prefixes from the Azores, but he did it from 4500 kilometers away while watching the Northern Lights outside of his operating position in Finland!

This is one of the top contest efforts ever using a remote station. It should be noted that regulations covering remote operation vary from country to country. The WPX accepts remote scores based on the location of the station. Please be sure that your operation meets the local regulations and the rules of the contest.

Once again there were plenty of comments about poor signals and splatter. One of the biggest threats to the health and future of contesting is the disrespect shown by certain high-power stations that do not follow the doctrine of fair play. Please use peer pressure to help these operators see how they are hurting our sport.

It takes a team to compile the results of so many logs. We could not have done it without the software development efforts of Ken, K1EA. The 48 paper logs received by mail were converted into Cabrillo format by AL1G, EA4KD, K1PX, K2DSL, K8PO, KN3A, N1XS, N2ZN, VA3UG, and W2JU. Log checking help was provided by Jim, WI9WI. Thanks to Barry, W5GN, for printing and mailing the nearly 1900 certificates that were earned. Doug, K1DG, coordinates the plaque sponsors and distribution.

The 2013 WPX SSB Contest will be held on March 30 and 31. The log deadline is now only **five days** after the contest, on **April 6**. Please read the rules carefully, as there are some changes. Rules can be found in the February issue of CQ, on the CQ website <www.cq-amateur-radio.com>, and on the CQ WPX Contest website <www.cqwp.com>. Hoping to see everyone again in 2013!

73, Randy, K5ZD

(Continued on page 101)



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A Close Look at the FCC's Newest Licensing Proposal



In this column I will summarize the Notice of Proposed Rule Making and Order (NPRM) released by the FCC, published in the Federal Register October 24, 2012. The date of Federal Register publication is crucial because comments were due December 24, 60 days later, and reply comments are due on January 22, 2013. If you did not file comments and still want to, you have the opportunity to reply to comments already filed. Please read the instruction for doing so starting on page 12 of the NPRM (WT Docket No. 12-283).

When you stand back and look objectively at the entirety of the rules applying to the Amateur Radio Service, the thing that stands out is how streamlined they are in comparison to all our privileges in frequency, power, modes, and activities. I think it's amazing that such a small number of rules can handle a service as broad as ours and last so long before amendment. Of course, the rules folks realize that stupid can never be regulated, and they don't even try to do that; but there are several reasons why we are gifted with such a practical set of rules.

One is the care and concern that the rule writers have for the service and the talent they have for writing sound rules that last such a long time. Another is the fact that they periodically tweak and update the rules, either on their own motion or pursuant to petitions asking for rule changes or additions. At the FCC I worked on a couple of rule-making projects in the land mobile services, and I can tell you that such a job is far more difficult than most people realize.

I urge you to read the NPRM even if you didn't file comments and don't anticipate any reply comments. Countless hours go into these things. They are very well written and far more interesting than you might think. This NPRM, like most, in itself is a little history of amateur radio. At least read the introduction. I won't go over it in much detail since the comment period is over, but let's review what the NPRM proposes and why.

It proposes changes to the amateur rules in the areas of: (1) credit for examinations and validity of Certificates of Successful Completion of Examination (CSCEs); (2) credit for expired licenses; (3) grace period for license renewal; (4) waiting period for vanity call signs; (5) administration of examinations—i.e., the required number of Volunteer Examiners (VEs) and remote testing; and (6) emission types. It also accomplishes a little housecleaning by amending the rules to eliminate the requirement for a Morse code examination. Those rule changes, or most of them, were adopted in the Morse code order but were inad-

vertently omitted from the Federal Register summary and never took effect. Lastly, it dismisses a petition filed by the ARRL requesting a blanket waiver of certain rules regarding emission types pending the outcome of this rule making.

A Little Background

Why are these changes proposed? The Anchorage Volunteer Examiner Coordinator (Anchorage VEC) filed a petition for rule making to grant examination credit for expired licenses (instead of requiring former licensees to retest). The Anchorage VEC argued that it is unfair that after the grace period for renewal ends a licensee loses all credit for having passed an examination and would have to start over to get back in to amateur radio.

The Anchorage VEC argues that since a person who continuously renews his license is not required to take an examination, it cannot be argued that the passage of time invalidates the knowledge of that person. The Anchorage VEC therefore argues that the same reasoning should apply to people who just haven't renewed their licenses. Comments already make the point that allowing credit for old licenses would encourage former licensees to become involved in amateur radio again.

The NPRM goes a step further and proposes to extend the validity of CSCEs, which now expire after a year. Here, however, the FCC is concerned that since a CSCE provides temporary operating authority, it may be confusing to create a difference between the period during which a CSCE allows temporary operating authority and the period during which it is valid for examination credit. The FCC asks for comments on whether there should be a limit on how long an applicant should receive credit for a CSCE.

As a logical extension of that proposal, the FCC on its own proposes to shorten the grace period during which a license may be renewed and to revise the vanity call system accordingly. In addition the FCC seeks comments on amending the rules to allow remote testing administration. "Seeking comments" is different from proposing a rule. In this instance the FCC wants to gather information to determine if a rule making to allow remote testing administration may be a good idea.

The section of the NPRM about emission types is in response to a petition for rule making filed by the ARRL. The present rules do not appear to allow the transmission of single-slot TDMA (Time

*C/O CQ magazine

e-mail: <k4zdh@cq-amateur-radio.com>

Domain Multiple Access) emissions on amateur service frequencies above 30 MHz—i.e., Part 97 does not authorize any phone or data emission designators with X as the second symbol. Was all that on my test? I wish I could remember, but TDMA most likely hadn't been invented then!

Grace Period

The FCC reasons that since the principal purpose of a two-year grace period is to allow amateur licensees to restore their operating privileges without having to pass an examination, then the two-year grace period may no longer be necessary if an amateur gets permanent credit for having passed an examination. Thus, it proposes a six-month grace period, and since it is doing that, it proposes that the waiting period for a vanity call sign also be reduced from two years to six months. The FCC seeks comment on those proposals and on whether the grace period should be shorter than six months (such as sixty or thirty days) or even be eliminated altogether.

The NPRM also seeks comment on whether to simply extend the grace period for a much longer time, such as ten years, instead of amending the rules to allow examination credit for all expired licenses. Extending the grace period to a substantially longer period would provide the same relief, the FCC suggests, but points out that extending the grace period could also affect the vanity call sign system.

Examination Procedures

The NPRM also proposes to reduce the number of VEs required for a testing session from three to two and seeks comments on whether to permit remote testing administration. The FCC explains that the reason for the requirement of three VEs was to provide cross checking to assure correctness of answers, to ensure proper completion of applications and to minimize the likelihood of fraud.

It further explains that since the VE system was established, VEs have developed procedures that have almost eliminated examination grading and application errors, and that fraud and abuse have been minimal. From an enforcement perspective, I would have to agree with that, although there were a couple of spectacular exceptions in my tenure. Overall, however, the VE system is splendid. Of course, those of us who took the examination in a federal building never forgot it and remem-

ber what the weather was, where we parked, and what we wore, but that is a thing of the past. It sure made a permanent impression, though, on those of us for whom the examination was our first experience in a federal building. However, all that went the way of rotary switches for TV channels and carbon paper. On the other hand, when I was last in the Carolinas I did go by the old federal building. The parking place I used when I took the Morse code exam was still there.

Dropping the requirement of three VEs to two would increase the availability of examination opportunities without compromising the examination process, the FCC says, as would allowing remote testing supervision. It seeks comments on whether VEs may comply with the rules by being "present and observing" through an audio and video system that can assure the necessary supervision. Such a system would provide more licensing opportunities for potential amateurs in remote locations. The FCC points out that in the years since the VE system was established, methods such as audio and video links—either hard wired, wireless, or through satellite—have been developed and are commonly used by colleges to provide courses and businesses for teleconferencing.

I have to admit that I'm concerned about expanding the universe of potential opportunities for fraud. Technology changes, operating habits change, and rules change, but does human nature change? Although I felt the VE system was great, I saw too many cases of fraudulent "former call sign" requests. Is it reasonable to assume that the VEs are equipped to help prevent or seriously suppress identity theft? Is enforcement ready to do it, either through random audits or on a case-by-case basis? Maybe those instances of fraud are so minimal that it would not be a factor in all this, but I hope someone is thinking about it. Every week in the news we see that rules don't enforce themselves.

I hope that if you filed comments you read the proposed rule making thoroughly, but regardless of that there is still time to review it and file replies to comments already sent if you want. It is difficult to do justice to the NPRM in the space allowed here. The main thing is to read the proposed rule making carefully and see both the petitioners' and the FCC's reasoning behind the proposed changes. At least read it to enhance your knowledge of the history of our amateur radio heritage. ... -:- K4ZDH

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Announcing:

The 2013 CQ World-Wide WPX RTTY Contest

February 9–10, 2013

Starts: 0000 UTC Saturday Ends: 2359 UTC Sunday

I. Objective: For amateurs world wide to contact as many amateurs and prefixes as possible during the contest period.

II. Period of Operation: 48 hours. Single Operator stations may operate 30 of the 48 hours—**off times must be a minimum of 60 minutes** during which no QSO is logged. Multi-operator stations may operate the full 48 hours.

III. Bands: Only the 3.5, 7, 14, 21, and 28 MHz bands may be used. **Observance of established band plans is strongly encouraged.**

IV. Terms of Competition for All Categories:

(a) All entrants must operate within the limits of their chosen category when performing any activity that could affect their submitted score. Only the entrant's call-sign may be used to aid the entrant's score.

(b) A different call-sign must be used for each entry.

(c) Do not exceed the total output power limitation of your chosen category on any band. Total output power on any band at any time is measured at the output of the active amplifier(s).

(d) Self-spotting or asking other stations to spot you is not allowed.

(e) Use of QSO alerting assistance is permitted in all categories.

(f) All operation must take place from one operating site. 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. Use of any IP network for remote receiving, including web-controlled receivers, is not permitted.

(g) The entry location of a remote station is determined by the physical location of the transmitters, receivers, and antennas. A remote station must obey all station and category limitations.

(h) When two or more transmitters are present on a band, a hardware device **MUST** be used to prevent more than one

signal at any one time. Using two or more transmitters on a band with alternating CQs (soliciting contacts) is not allowed.

(i) Post-contest correcting of call signs by using any database, recordings or other method of confirming QSOs is not allowed.

V. Entry Categories:

A. Single Operator Categories: All operating and logging functions are performed by one person (the operator). Only one transmitted signal is permitted at any time.

(a) **Single Operator High (All Band or Single Band):** Total output power must not exceed **1500 watts**.

(b) **Single Operator Low (All Band or Single Band):** Total output power must not exceed **100 watts**.

(c) **Single Operator QRP (All Band or Single Band):** Total output power must not exceed **5 watts**.

B. Single Operator Overlay Categories: Single Operator entrants may **also** submit their log for **one** of the categories shown below by adding an additional line in the Cabrillo log file header called CATEGORY-OVERLAY. All Overlay entries are grouped into high power and low power in the results.

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

(b) **Rookie (ROOKIE):** To enter this category the operator must have been licensed as a radio amateur three (3) years or less on the date of the contest. Indicate the date first licensed in the SOAPBOX field.

C. Multi-Operator Categories (All Band, High power only): More than one person can contribute to the final score during the official contest period. Select category based on number of transmitted signals. Total output power of each transmitted signal must not exceed **1500 watts**.

(a) **Single-Transmitter (MULTI-ONE):** Only one transmitted signal is permitted at any time. A maximum of ten (10) band changes may be made in any clock hour (00 through 59 minutes). For example, a change from 20 meters to 40 meters and then back to 20 meters counts as two band changes. Use a single serial number sequence for the entire log.

(b) **Two-Transmitter (MULTI-TWO):** A maximum of two transmitted signals is permitted at any time on two different bands. Both transmitters may work any station. A station may only be worked once per band regardless of which transmitter is used. **The log must indicate which transmitter made each QSO** (column 81 of CABRILLO QSO template for CQ contests). Each transmitter may make a maximum of eight (8) band changes in any clock hour (00 through 59 minutes). Use a separate serial number sequence for each band.

(c) **Multi-Transmitter (MULTI-UNLIMITED):** A maximum of five transmitted signals, one per band, at any one time. Five bands may be activated simultaneously. Use a separate serial number sequence for each band.

VI. Exchange: RS(T) report plus a progressive contact serial number starting with 001 for the first contact. Note: Multi-Two and Multi-Unlimited entrants use separate serial number sequences on each band.

VII. 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 and 3.5 MHz.

(b) Contacts between stations on the same continent, but different countries, are worth two (2) points on 28, 21, and 14 MHz and four (4) points on 7 and 3.5 MHz.

(c) Contacts between stations in the same country are worth 1 point on 28, 21, and 14 MHz and two (2) points on 7 and 3.5 MHz.

VIII. Prefix Multipliers: The prefix multiplier is the number of valid prefixes worked. Each PREFIX is counted only

MFJ Speech Intelligibility Enhancer

... makes barely understandable speech highly understandable!



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

As we get older, high frequency hearing loss reduces our ability to understand speech. Here's why...

Research shows that nearly half the speech intelligibility is contained in 1000 to 4000 Hz range, but contains a miniscule 4% of total speech energy.

On the other hand, the low frequencies, 125 to 500 Hz have most of the speech energy (55%) but contribute very little to intelligibility -- only 4%.

To dramatically improve your ability

to understand speech, you must:

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

Second, drastically reduce speech energy below 500 Hz where only 4% of speech intelligibility lies.

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 2 1/2 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!

MFJ-616
\$189⁹⁵

MFJ Contest Voice Keyer

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



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

MFJ-434B halted by the **\$199⁹⁵** 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. 6 1/2"Wx2 1/2"Hx6 1/2"D in.

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

60 dB Null wipes out noise and interference



MFJ-1026
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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 blander! 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 frequencies 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. 6 1/2"Wx1 1/2"Hx6 1/4" in.

MFJ-1025, \$179.95. Like MFJ-1026 less built-in active antenna, use external noise antenna.

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

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once regardless of the band or 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, LY1000, etc. Any difference in the numbering, lettering, or order of same shall count as a separate prefix. A station operating from a DXCC entity different from that indicated by its call sign 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, AD8, 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 other license class identifiers do not count as prefixes.

(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.

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

(a) Single-Operator:

(i) All-Band score is total contact points from all bands multiplied by the number of different prefixes worked.

(ii) Single-Band score is total contact points on the band entered multiplied by the number of different prefixes worked on that band only.

(b) Multi-Operator: Scoring is the same as Single-Operator, All-Band.

X. Awards: Only logs submitted in electronic format are eligible for awards. A single-band log will be eligible for a single-band award only.

To be eligible for an award, a Single Operator station must show a minimum of 4 hours of operation. Multi-operator stations must operate a minimum of 8 hours.

(a) Plaques are awarded to recognize top performance in a number of categories. View the current list of plaques and sponsors at <<http://www.cqwprrty.com/plaques.htm>>.

Only one plaque will be awarded per entry. A station winning a World plaque will not be considered for a sub-area award. That award will be given to the runner-up for that area if the number of entries justifies the award.

(b) Certificates will be awarded to the

highest scoring station in each category listed under Section V . . .

(i) In every participating country.

(ii) In each call area of the United States, Canada, Russia and Japan.

(iii) At the discretion of the contest director second- and third-place awards may be made.

XI. Club Competition: A plaque will be awarded each year to the club that has the highest aggregate score from logs submitted by its members. To be listed in the results, a minimum of three logs must be received from a club.

(a) The club must be a local group and not a national organization (e.g., ARRL or DARC).

(b) Participation is limited to members residing in or operating from a local geographic area (except for DXpeditions conducted by members living within the defined club geographic area). Club contributions from DXpedition scores are a percentage of the number of club members on the DXpedition.

(c) Single-operator entries can only contribute to one club. Multi-operator scores may be allocated to multiple clubs as a percentage of the number of club members participating in the operation. Please spell out the full club name in your entry.

XII. Instructions for Submission of Logs: We would appreciate receiving all logs in electronic format. Electronic submission of logs is **required** for anyone competing for an award and for all who use a computer to log the contest or prepare contest logs.

(a) The log MUST show the following for each contact: correct time in UTC, frequency (or band), call, exchange sent, and exchange received. A log without all required information may be reclassified to checklog.

(b) Single band entrants are required to include all contacts made during the contest period, even if on other bands. Only contacts made on the band specified in the Cabrillo header or summary sheet will be considered for scoring purposes. Logs with contacts only on one band will be classified as single band entries.

(c) The CABRILLO file format is the standard for logs. For detailed instructions on filling out the CABRILLO file header, see the WPX RTTY Contest Web site <www.cqwprrty.com>. Failure to fill out the header correctly may result in your entry being placed in the wrong category or reclassified as a checklog. Note: U.S. stations must indicate the location of where you operated from in the CABRILLO header (e.g., LOCATION: OH).

(d) E-mail or Web upload is the expected method of log submission. Logs in CABRILLO format should be sent

to <rtty@cqwprrty.com>. Include only your call sign in the "Subject:" line of your e-mail. Web upload of logs is available on the CQ WPX RTTY Web site at <www.cqwprrty.com>. All logs received via e-mail will be confirmed via e-mail. A listing of logs received can be found on the CQ WPX RTTY Web Site.

(e) Instructions for NON-CABRILLO electronic logs: If you are not able to submit a CABRILLO format log, please contact the Contest Director for assistance with submitting another format.

(f) Instructions for paper logs: All paper logs should be sent to Paper Logs, P.O. Box 481, New Carlisle, OH 45344 USA. Each paper log 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.

XIII. Rule Violations: Violation of amateur radio regulations or the rules of the contest; unsportsmanlike conduct; taking credit for excessive unverifiable QSOs or multipliers; use of any non-amateur means of communication to SOLICIT, ARRANGE, or CONFIRM any contacts during or after the contest will be deemed sufficient cause for disqualification.

An entrant whose log is deemed by the Contest Committee to contain rule violations may be issued a Yellow or Red card depending on the seriousness of the infraction. If the entry is in a multi-operator category, all listed operators, the station owner, the station and the callsign are so affected.

YELLOW card: Any entrant or operator issued a yellow card is not eligible for an award and will be listed at the end of the published results.

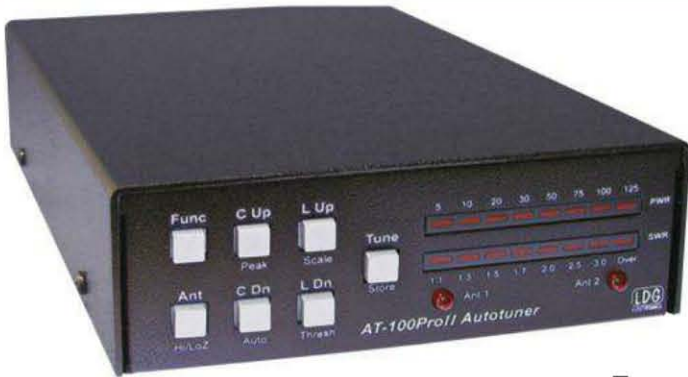
RED card: Any entrant or operator issued a red card is not eligible for an award, will be listed at the end of the published results, and will be ineligible for any CQ-sponsored contest award for a period of one year beginning with the publication of the violation in CQ magazine.

XIV. Declaration: By submitting an entry in the CQ WPX RTTY Contest you agree that: (1) you have read and understood the rules of the contest and agree to be bound by them, (2) you have operated according to all rules and regulations of your country that pertain to amateur radio, (3) your log entry may be made open to the public, and (4) all actions and decisions of the WPX RTTY Contest Committee are official and final.

XV. Deadline: All entries must be emailed or postmarked NO LATER than February 15, 2013. Logs emailed or postmarked after the deadline may be ineligible for any awards.

Questions pertaining to the WPX Contest may be e-mailed to the CQ WPX RTTY Contest Director, Ed Muns, WØYK, at <w0yk@cqwprrty.com>.

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AT-100Proll

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 with LEDs, allowing you to switch instantly between two antennas. The AT-100Proll requires just 1 watt for operation, but will handle up to 125 watts. Includes six foot DC power cable. **Suggested Price \$229.99**

- RF Sensing
- Tunes Automatically
- No Interface Cables Needed



Z-817

The ultimate autotuner for QRP radios including the Yaesu FT-817(D). 2000 memories cover 160 through 6 meters. Also functions as a general purpose antenna tuner with other QRP radios. Powered by four AA internal Alkaline batteries (not included), so there are no additional cables required. **Suggested Price \$129.99**



IT-100

Matched in size to the IC-7000 and IC-706, for either manual or automatic tunes, and status LEDs. Control the IT-100 and its 2000 memories from either its own button or the Tune button on your IC-7000 or other Icom rigs. For your Icom radio that is AH3 or AH-4 compatible. **Suggested Price \$179.99**

AT-200Proll

The AT-200Proll now includes LEDs to show antenna position and if the tuner is in bypass. A two position antenna switch stores 2000 memories per switch. Handles up to 250 watts SSB or CW on 1.8 to 30 MHz and 100 watts on 54 MHz. Rugged and easy to read LED bar graphs simultaneously show RF power and SWR. Includes a six foot DC power cable. **Suggested Price \$259.99**



AT-1000Proll

LDG Electronics' new flagship 1KW tuner features: 5 to 1,000Watts PEP; RF Sensing; Auto and Semi Tuning Modes; 1.8 to 54 MHz range; 6 to 800 ohm range (15 to 150 on 6M); simplified operation; and an optional external 4.5" analog meter. With the two position antenna switch, there are 2,000 memories that store tuning parameters for almost instantaneous memory recall whenever you transmit on or near a frequency you've used before. Includes six foot DC power cable. **Suggested Price \$539.99**

Optional M-1000 external analog meter \$129.99



AT-897Plus 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-897Plus Autotuner mounts on the side of your FT-897 just like the original equipment and 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 \$199.99**



NEW! AT-600Proll

Building on the success of the AT-600Pro, we refined and expanded the model with an optional external 4.5" analog meter. The new AT-600Proll keeps many of the same features of the previous model, but simplifies the operation. With the two-position antenna switch, there are 2,000 memories that store tuning parameters for almost instantaneous memory recall whenever you transmit on or near a frequency you've used before. Includes six-foot DC power cable. **Suggested Price \$369.99**

Optional M-600 external analog meter \$129.99



Z-100Plus

Small and simple to use, the Z-100Plus sports 2000 memories that store both frequency and tuning parameters. It will run on any voltage source from 7 to 18 volts; six AA batteries will run it for a year of normal use. Current draw while tuning is less than 100ma. The Z-100Plus now includes an internal frequency counter so the operating frequency is stored with tuning parameters to make memory tunes a blazingly fast 0.1 seconds; full tunes take an average of only 6 seconds. Includes six foot DC power cable. **Suggested Price \$159.99**

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Take It to The Field

Operating ham radio from “the open road” has a special appeal for many amateurs. And no highway is more emblematic of “the open road” than Historic Route 66, where KW7I and N7VF spent a week and a half on the air last September.

Route 66 on the Air The 2011 “Whiskey-Six-Tango” Adventure

BY LARRY FRANCIS,* KW7I, and NORMAN VANDIVER,† N7VF



Photo A— KW7I's motor home all set up at Memorial Point on Old Route 66 in Arizona.

For the past dozen years, the Citrus Belt Amateur Radio Club of San Bernardino, California has been sponsoring an annual amateur radio event each September commemorating Historic Route 66, the iconic highway from Chicago to Los Angeles. In 2011, there were 18 stations operating along Route 66 between September 10 and 18, with 17 of them operated by members of various clubs along the route. The special event one-by-one callsigns began with Whiskey-Six-Alpha (W6A) in Santa Monica, California, and ran through Whiskey-Six-Quebec (W6Q) in Chicago, Illinois;

our assigned call was Whiskey-Six-Tango (W6T). We were the “Lone Rover” station, operating from a motor home in Arizona (photo A).

Our operating location was right on Old Route 66, about 25 miles west of Kingman and four miles east of the old mining town of Oatman. The place where we parked is called Memorial Point and is right at the summit of Sitgreaves Pass in the Black Mountains. About nine miles east of the pass is a tourist place named Cool Springs; in years gone by this was a service station stop (photo B).

In order to last the full ten days in moderate comfort, I (KW7I) brought my motor home down from Oregon. We made it up the steep grade, navigating the 10-mile-an-hour switchbacks from Cool Springs to Sitgreaves Pass by having Norman, N7VF, go ahead with our car and use the mobile radios to let me know of any oncoming traffic.

*1315 Joplin St. S., Salem, OR 97302

†1862 Arena Del Loma, Camp Verde, AZ 86322

A longer version of this article, with many more photos, can be found online at <http://www.w6jbt.org/public_html/images/route66photos/2011/W6TStory.pdf>.

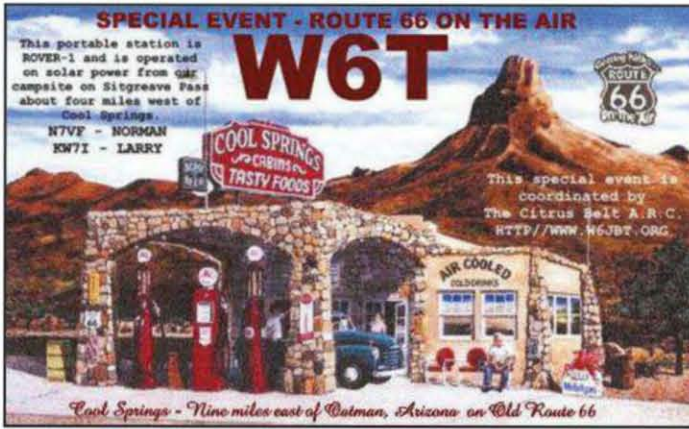


Photo B- The W6T QSL card. (Photos courtesy of the authors)

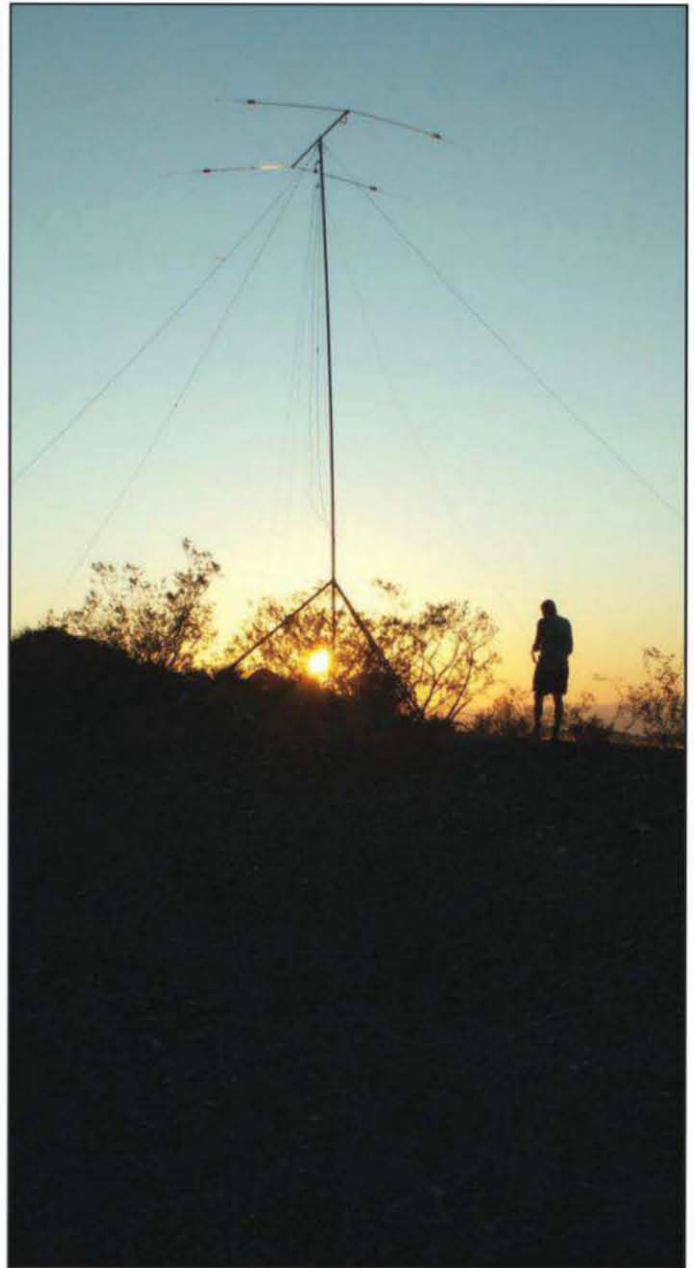


Photo D- Our main antenna mast with co-author Norman Vandiver, N7VF, doing a final visual inspection at sunset.



Photo C- Co-author Larry Francis, KW7I, adjusting the portable solar panels.

The panoramic view from Memorial Point was extraordinary, as we could look down across the Colorado River and see Laughlin, Nevada to the northwest and Needles, California to the southwest. Due west we could look out across the Mojave Desert. At night we could see the lights of the towns along the river between Laughlin and Needles, but they weren't bright enough to disturb the wonderful night-time view of the sky.

We arrived on Thursday, September 9, the day before the event officially began, and then set up the radio station under the awning to shade us from the sun. We basically ran the station on emergency power. Small arrays of solar panels (photo C) were used to charge our gel cell batteries, and with the solar panels on the motor home we had plenty of power for the radio, miscellaneous peripherals, and the computer. We called this our "Mini-DX Expedition and International Field Day."

On Friday we erected our little antenna farm which included Norman's homemade 20-meter directional antenna

(photo D), and wire antennas for 10, 15, 17, 20, 40, and 80 meters. Everything seemed to be in order... or so we thought. During the night we had a strong wind storm that caused a couple of the wire antennas to come loose, twisting them together like we had run them through an eggbeater.

By 9 o'clock Saturday morning we were untangled and on the air, with our first contact being K6RPM in California on 80 meters. At this point we discovered that the computer and radio were not talking to one another, which forced us to use a paper log for several days. We had over 600 contacts on paper before I got the computer logger going. We never did determine the problem. Then on Sunday evening we had another logging problem: A strong wind gust came through just ahead of a big thunderstorm, ripping several pages out of our paper log! We thought those pages were gone forever, but several days later we spotted them scattered along the mountainside below us. Norman carefully worked his way down and retrieved the wrinkled, water-faded, but still usable pages.



Photo E— Norman logs while Larry operates from inside the motor home during the heavy rainstorm. (The outlet under the table is connected to the inverter that runs off the batteries.)

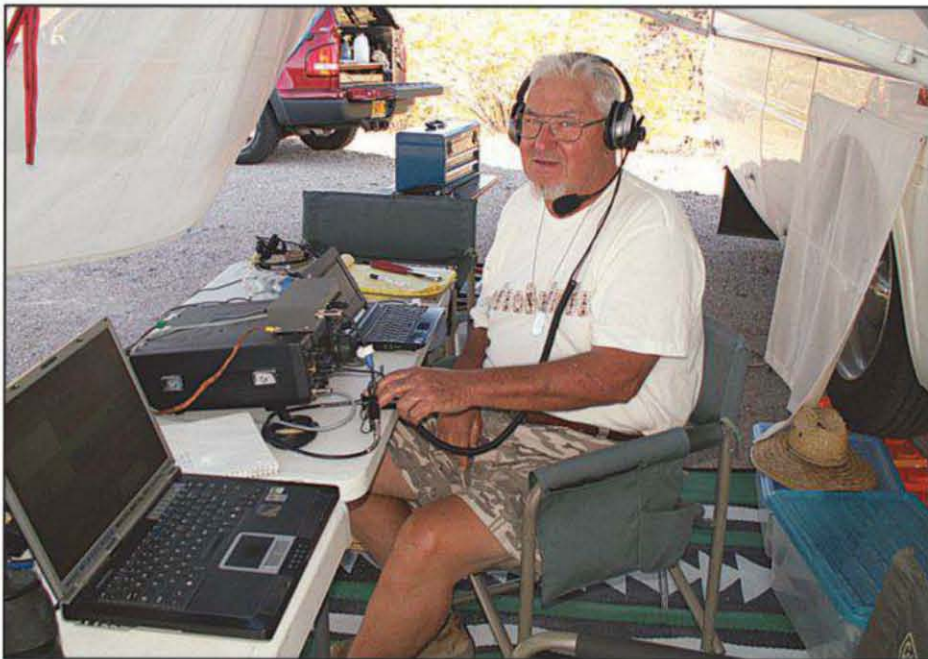


Photo F— Larry operating W6T outside under the awning after the weather cleared.

The thunderstorms were quite spectacular as seen from the mountaintop. They were very slow-moving and pounded us with lots of rain. It was good that we routinely brought all of the electronic equipment into the motor home at night, because by daylight everything outside was soaked, even leaving a small river running under the motor home.

All day Monday the rain came down, while wild winds rocked the motor home. By nightfall there were some pretty good ruts washed out in the parking area. The river under the motor

home was sometimes six inches deep and six feet wide as the water ran towards the road. Needless to say, we moved the radio station inside (photo E). Due to the lack of sun we ran the motor-home generator to keep the batteries charged.

The storm finally blew itself out overnight and Tuesday was a better day, although the 65°F temperature was much cooler than the 100° we had expected! As the week progressed, our outside temperatures climbed back to closer to normal for Arizona, and by

Saturday and Sunday it was near 95°F with clear blue skies.

We did lose nearly two full days while Norman was in the hospital at Kingman. Fortunately, it turned out to be nothing serious, but it kept us off the air for most of Thursday and Friday.

Saturday morning we had bright sun and full batteries, and we were raring to go on the radio (photo F). We had a good day, everything went well, and we logged over 180 contacts. The people playing the "Route 66 On The Air" had been looking for us, so for the remainder of the event we tried to be as available as we could, operating on the most productive bands. By Sunday evening our count totaled 1534, including 14 of the other "Whiskey-Six" 1x1 stations. Overall, we contacted all 50 states plus the District of Columbia, seven Canadian provinces, three Mexican states, and nine other DX countries.

Getting Personal

The "Mini International Field Day" part of this event included numerous visitors who stopped by. Many expressed great interest in our amateur radio adventure, and for these people we provided demonstrations such as the bands would allow (photo G). People from all over the world come to the United States to travel Route 66, and they found our location at Memorial Point a good viewing area. People stopped to look at the scenery and gave us a great opportunity to visit with them. Thankfully, most spoke English well enough that we could carry on an enjoyable conversation.

We also had many groups of motorcycles come through, ranging from a single bike to over forty bikes, most with pillion riders (passengers sitting behind the driver). Many of them had started at one end or the other of Route 66 and were riding the entire route. The larger groups were accompanied by support teams and were well organized. Some of the smaller groups were just a few folks out enjoying the world, such as the five hearty fellows from Finland who looked like they were from the credit-card advertisement on TV with the band of Vikings. At times we would hold up on radio contacts because of the noise made by passing motorcycles. There were also several car clubs driving their vintage cars through the area.

One young couple from Switzerland stopped by for a rest and very nice visit. They were doing the entire route *on their bicycles!* They were headed west to Santa Monica, having left Chicago

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two months earlier, enduring the summer heat as they traveled through the heartland of North America.

One of our more unusual visitors was Leon Zhang from Shanghai, China. He was involved with *AutoCar* magazine in China and was doing research for an article on Route 66. Leon's companion was the trip photographer. They spent an hour interviewing Norman about Route 66 and the amateur radio connection. Leon said he was amazed at the number of visitors from around the world who were here touring Route 66.

On Monday, after "Route 66 On The Air" was over, we had another couple

stop by to admire the view. Their vehicle (photo H) was very interesting; it was an off-road thing with tandem axles and looked like European military surplus. It turned out that they were from Austria and were traveling the world with their vehicle. They had come from South America and were headed generally for Alaska. They had traveled all over Africa, Asia, and Australia in this compact and very specialized motor home. The lady, Johanna, asked if she could look in our bigger motor home, thinking maybe she would talk to Guenther about one like ours for some of their travels. However, Guenther said he still

preferred theirs, because they could go anywhere they desired with it. Guenther, by the way, is also an amateur radio operator, OE5NMM.

As Norman and I were finishing breaking camp, another couple from Berlin, Germany drove in. I introduced them to Gunther and Johanna, gave them chairs and water, and the four of them carried on a nice visit in German while Norman loaded the last of our equipment and prepared to head back east on Route 66 for Kingman, Congress, and Camp Verde, Arizona. And that's how another of our memorable adventures came to an end.



Photo G— Norman demonstrating our station to some ladies who stopped by. We had visitors from all over the world during our 10-day stay at Memorial Point.

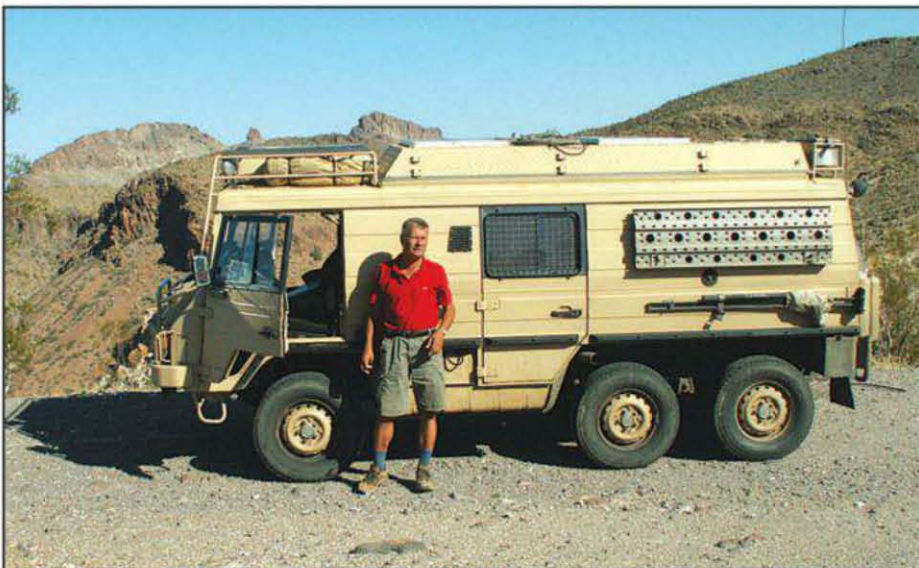


Photo H— One of our visitors, Guenther Wurm, OE5NMM, and his multi-use vehicle from Austria. He and Johanna were on a road trip from South America to Alaska.



Getting Your Kicks . . . on Route 66

U.S. Route 66 is the iconic American highway. Officially, it no longer exists, but its heritage is being preserved by groups including California's Citrus Belt Amateur Radio Club <<http://www.w6jbt.org/index.html>>, which sponsors the annual Route 66 On The Air event.

The road between Chicago and Los Angeles was officially opened in 1926, running through eight states and covering nearly 2500 miles. It was immortalized in a song written in 1946 by Bobby Troup and turned into a hit by Nat King Cole the same year. **[Watch and listen:** Video of Nat King Cole performing "Route 66": <<http://www.youtube.com/watch?v=dCYApJtsyd0>>; video with photos along the road today, over audio of Nat King Cole: <<http://www.youtube.com/watch?v=kbQXaITGu-8>>] and by a TV show that aired between 1960 and 1964.]

Construction of the Interstate Highway System eventually turned Route 66 into more of a byway than a highway (in fact, parts have been designated as National Scenic Byways—see <<http://byways.org/explore/byways/2489>>), and the route was formally decommissioned by the federal government in 1985.

The Citrus Belt Amateur Radio Club has sponsored the Route 66 On The Air event each September since 2000; the 2012 event is scheduled for September 8–16. See <<http://www.w6jbt.org/index.html>>.

Announcing:

2013 Nominations Open for the CQ Amateur Radio, DX, and Contest Halls of Fame

Each year CQ recognizes those who have made significant contributions to amateur radio in general, and to DXing and contesting in particular, creating three categories of awards. Nominations are now open and will close on **March 1, 2013 for all three Halls of Fame.**

CQ Amateur Radio Hall of Fame

Amateur radio operators have been responsible for many advances in communications technology, and entire industries have been built on the foundation of amateur radio experimentation and activity. In an effort to recognize outstanding amateurs and their achievements, and help the public appreciate the far-reaching and long-standing value of amateur radio in our society, we have established the CQ Amateur Radio Hall of Fame. Nominations for the 2013 "class" are now open.

The CQ Amateur Radio Hall of Fame honors those whose technical or other accomplishments have helped propel amateur radio forward, or whose achievements in other areas of life have helped improve ham radio's reputation simply through association. Nominees for the CQ Amateur Radio Hall of Fame will be judged on the basis of qualifying in one of two broad areas: those individuals—whether licensed amateurs or not—who have made significant contributions to the amateur radio hobby; and those radio amateurs who have made significant contributions to society in general. Nominees must have made *significant* contributions of nationwide or worldwide impact.

In order to be consistent with the nomination deadline for the CQ Contest and DX Halls of Fame, the nomination deadline for the CQ Amateur Radio Hall of Fame is March 1. Nominations received after that date will be considered for future selection. Nominations for the Amateur Radio Hall of Fame may be made by clubs, organizations, or individuals. State your candidate's name, where to contact him/her if still living, for which category you are nominating him/her, and a brief one- to two-paragraph description of this person's accomplishments. Please include your name and contact information as well. E-mail to

<hall-of-fame@cq-amateur-radio.com> or mail to CQ Amateur Radio Hall of Fame, 25 Newbridge Rd., Hicksville, NY 11801. The official nomination form is on the CQ website <www.cq-amateur-radio.com>. If you feel someone has earned this recognition, please submit a nomination. Please *don't* assume that someone else will nominate the person you may have in mind.

We will announce this year's selections at the Dayton Hamvention® in May 2013. Please help us recognize these "ham radio heroes" whose contributions have helped shape our hobby, our nation, or our world.

CQ DX and Contest Halls of Fame

Nominations for the CQ DX Hall of Fame and the CQ Contest Hall of Fame recognize those amateurs who have made

major contributions to DXing and contesting, respectively. The activities and accomplishments that qualify one for membership in these elite groups involve considerable personal sacrifice and can usually be described by the phrase "above and beyond the call of duty." Nominations for the Contest and DX Halls of Fame are made **by contesting or DX clubs or national organizations**, and must be submitted by **March 1** of each year to be considered.

A maximum of two (2) people may be inducted into each hall of fame (DX and contest) each year. Nominations for the CQ Contest and DX Halls of Fame should be directed to CQ (Contest or DX) Hall of Fame, c/o CQ Communications Inc., 25 Newbridge Rd., Hicksville, NY 11801; or via e-mail to <hall-of-fame@cq-amateur-radio.com>. Please specify to which hall of fame the nomination is submitted.

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What You've Told Us...

Our October survey asked about your recent hamfest experiences. Hamfests remain popular with *CQ* readers, as eight in ten of our survey respondents attended at least one last year. Nearly half of you (47%) attended 2–5 hamfests, while 27% went to just one and 5% visited six or more. Asked how last year compared to recent years, 56% said it's about the same, 31% said they've cut back on hamfests, and 10% said they'd been to more than usual. Local hamfests continue to be big, as 62% of you went to at least one last year, followed by small regional hamfests (37%), large regionals (29%), none (20%), large national hamfests (such as Dayton) (19%), and specialty conventions (8%).

Your hamfest purchases reflect the country's overall economic uncertainty, as 41% of you spent less than usual at hamfests last year, while 36% held the line and only 9% spent more. Flea market bargains continue to be the biggest hamfest draws (32%), followed by socializing (20%), used gear (19%), forums (15%), new gear (13%), and other (5%).

Finally, we asked how you feel hamfests have changed in recent years. One third of you think attendance is generally down (13% say "up," leaving 54% at about the same); 36% feel the number of vendors is down (vs. 5% up and 59% the same); 20% say flea market offerings are generally worse than in the past (vs. 9% better and 71% the same); 15% say fewer good deals vs. the Internet (5% say more, and 80% see no change).

This month's free subscription winner is Howard Pepper, AC4FS, of Palm Coast, Florida.

Reader Survey January 2013

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*.

We still have Hurricane Sandy on our minds as we wrap up this issue, so our questions this month will be about your personal emergency preparedness.

Please answer by circling the appropriate numbers on the reply card or by going to the following web link <www.surveymonkey.com/s/CQJan13> [From the digital edition, just click on the link].

1. How would you rate your level of personal and family emergency preparedness?

Complete.....	1
Excellent.....	2
Good.....	3
Poor.....	4

2. Do you have a power generator at home?

Yes, whole house, with automatic transfer switch.....	5
Yes, permanently wired for key circuits (e.g., refrigerator, ham station).....	6
Yes, portable, with outdoor extension cords.....	7
No.....	8

3. What is the fuel source for your generator?

Diesel.....	9
Gasoline.....	10
Liquid propane.....	11
Natural gas.....	12
Other.....	13
No generator.....	14

4. How many days' fuel supply do you have on hand for your generator?

Less than one day.....	15
1–3 days.....	16
3–5 days.....	17
More than 5 days.....	18
No generator.....	19

5. Do you have backup power for your home ham station?

Yes, generator.....	20
Yes, batteries.....	21
Yes, solar.....	22
No.....	23

6. Do you have a backup method of recharging handheld batteries?

Yes, generator.....	24
Yes, car battery.....	25
Yes, other batteries.....	26
No.....	27

7. For how many days do you have food, water, batteries and candles on hand in the event of a prolonged power outage?

Less than 1.....	28
1–3.....	29
3–5.....	30
More than 5.....	31

8. Do you have a family emergency plan including a predetermined contact person and meeting point in case you become separated?

Yes.....	32
No.....	33

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

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Of course, nothing can clean up and copy a sloppy fist, especially weak signals with lots of QRM/QRN.

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MFJ-461 to your receiver with a cable. A battery saving feature puts the MFJ-461 to sleep during periods of inactivity. It wakes up and decodes when it hears CW.

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MFJ-5161, \$16.95. MFJ-461 to computer serial port cable (DB-9).

MFJ-5162, \$7.95. Receiver cable connects MFJ-461 to your radio's external speaker 3.5 mm jack.

MFJ-5163, \$10.95. Cable lets you use external speaker when MFJ-461 is plugged into radio speaker jack. 3.5 mm.



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MFJ-464
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Many owners of Heathkit VTVMs have, at times, probably wished that they did not have the bother of needing to change tubes and the battery. Plus, 12AU7 tubes are getting scarcer these days. Realizing this, I thought it might be of interest to some hams to suggest a solid-state modification (or four), thereby eliminating the tubes and battery.

Heathkit VTVM V7, V7A, IM-18 Solid-State Modifications

BY BURL B. ROGERS,* K4VYL

I have read some articles in magazines that portrayed projects of new construction, or upgrading of older circuits, which left me ... uninspired? That was somewhat because while the finished item might look nice and function properly, it often seemed it had been built with a number of esoteric components that the average ham would be unlikely to have in his junk box. I thought it might be nice to build these modifications as much as possible with common parts that one might already have, using some of the existing VTVM (Vacuum Tube Volt Meter) parts and using parts that are easily available if you must resort to purchasing. Here's hoping, of course, that you have a good ham friend who is also an expert scrounger.

I have included four different circuits (Mark I–Mark IV) so that you may have some choice of components, depending on what's easiest for you to get. I chose to use the original power transformer supplied with the VTVM along with the input filter and rectifier diode (see fig. 1), then to build onto that.

Most VTVMs utilize the differential amplifier circuit in some form as the input circuit. Since the input resistor stack must be ten times the possible load resistance, then to be of good use the stack resistance should be about ten megohms. That being the case, the actual meter movement resistance must be about one-hundred megohms. Therefore, if you were to choose to build a circuit with bipolar transistors or a transistorized op-amp, the differential amplifier would require a higher input impedance.

A junction FET (JFET) will provide the necessary impedance between the resistor stack and the amplifier input. I built one amplifier circuit with bipolar transistors and one with a 2N2902 (2N124 series) op-amp. The FET I had in house was a 2N5638 made by National Semiconductor. It worked well with a source resistor providing a self-bias of approximately one half the drain voltage.

Note: The 2N5638 FET I was able to order from Mouser Electronics was of Fairchild construction. When received and tested in the breadboard, it showed a much higher value of source voltage bias. That is the reason for the two source resistors using the Fairchild FET transistor in modifications Mk I and III. This allows for an output voltage within the transistors' operating range.

In the Mark I schematic (fig. 2), the amplifier transistors should have betas closely matched. The 2N2222 transistors will suffice if you so match. Please note the pair of 2N2222 transistors reverse-connected with open bases. These are for the protection of the input units.¹ While it is hoped that a



The Heathkit IM-18 is one of three models for which the modifications in this article are designed to work. (Photo courtesy Hans Gatu, SA7AUY, from his website, <<http://www.heathkit.nu>>, used by permission)

*c/o CQ magazine

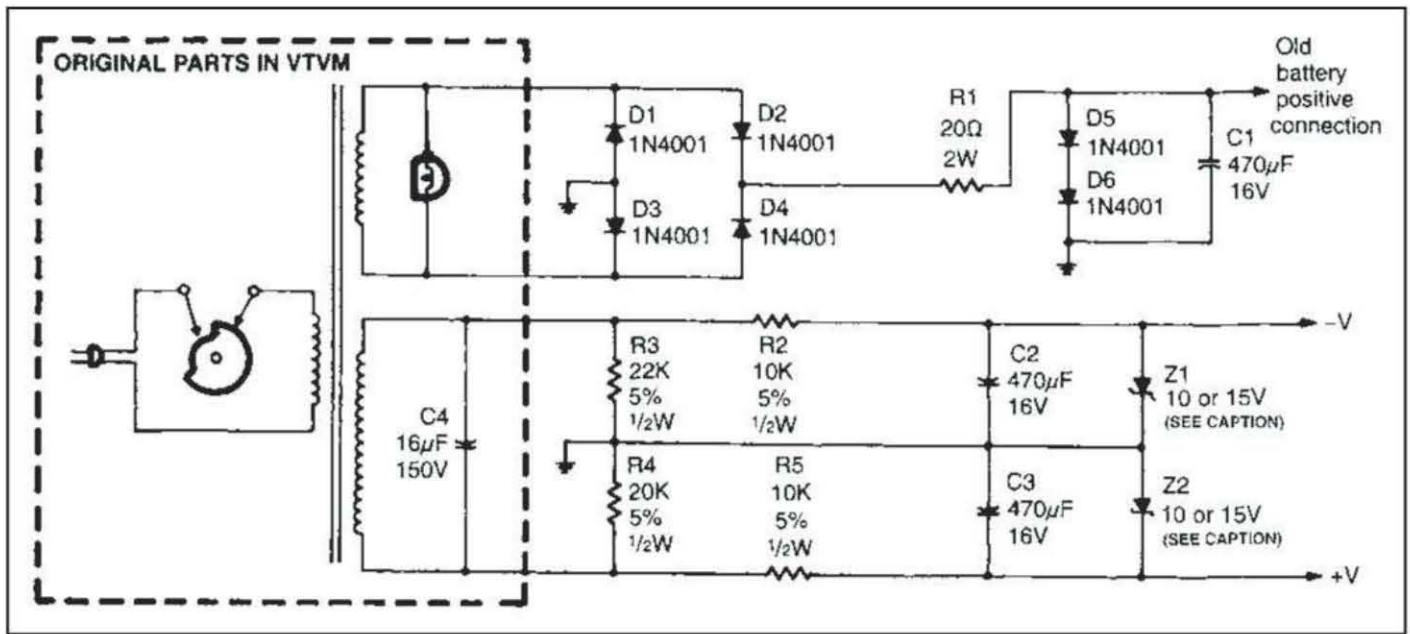


Fig. 1— Modified Heathkit VTVM power supply unit, to be used with any of the four possible circuit modifications in this article. Note: The Zener diodes should be 15V for modifications Mark I, II, and III; 10V for Mark IV.

person will always put the voltage range knob in the proper range position for the voltage being measured, it is not chiseled in granite that one will always be that careful. The reason why the VTVM circuit did not provide that protection was because of the very high impedance of the vacuum tube.

Alternative options are in figs. 3, 4, and 5 (Mk II, III, and IV). For the Mk IV modification, I chose the LF-353N FET op-amp. It might prove helpful to provide an eight-pin socket for this unit in case you want to remove the chip for any reason.

I have constructed the four different circuits into four VTVMs and all showed comparable accuracies.

Tips on Assembly

You will need to refer to the original VTVM schematic as well as those included with this article.

1. Remove the tubes and battery. Commend them for their past service and say goodbye.

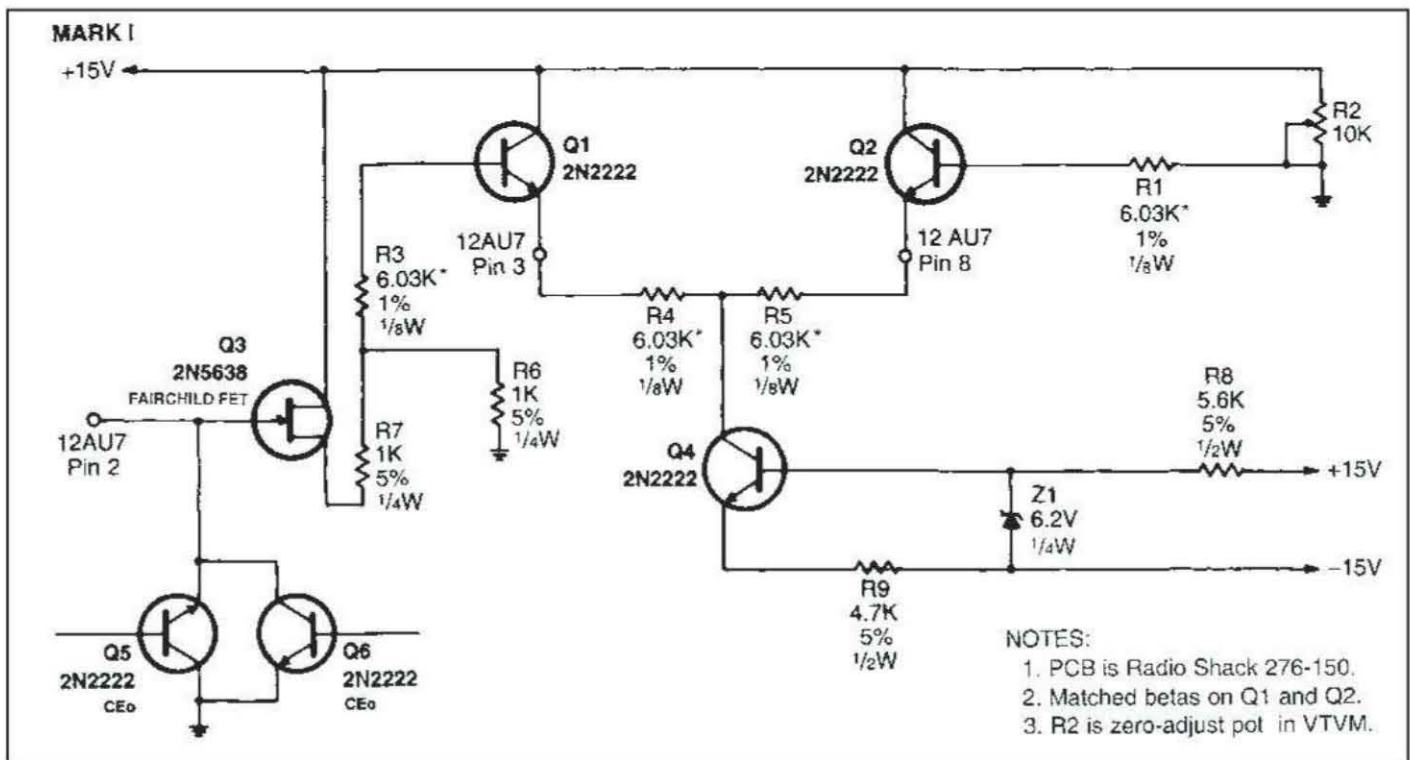
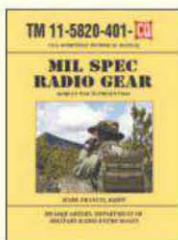


Fig. 2— Schematic of the Mark I option (see text). Notes: See footnote 1 for explanation of "CEo" designation on Q5 and Q6 if you are not familiar with it; the 6.03k value on R1, R3, R4, and R5 is not critical. Any 1% 1/8-watt resistor value between 5k and 9k should work (but make them all the same value).

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2. Remove the metal bracket. Remove the two 150k and the 220k resistors from the zero potentiometer area of the VTVM PCB. Remove the 27k, 10k, and 100-ohm resistors from the power supply area near the AC BAL pot. Disconnect the leads from the AC BAL pot.

3. Unscrew the nuts from the meter's

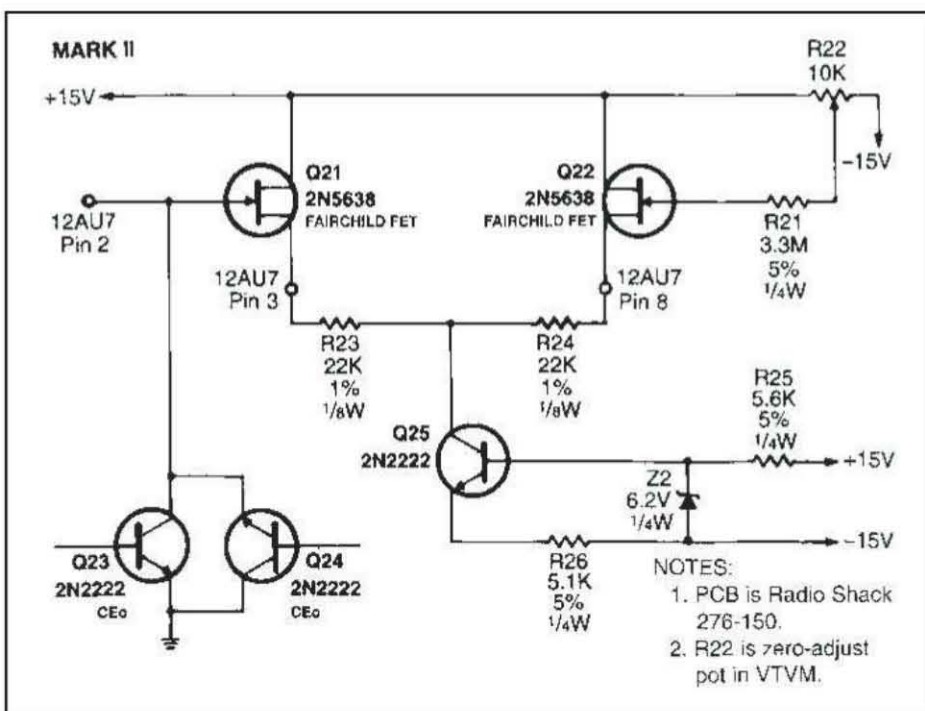


Fig. 3— Mark II schematic. All of the different options will produce the same results. The different choices are provided by the author to help you make best use of parts you may already have available.

positive and negative terminals so the VTVM PCB can be examined from both sides.

4. It might be helpful to preassemble the new circuits on a pegboard where you could test them before assembling them on the Radio Shack 276-150 PCB. Assemble the power supply circuit first, and when it checks out to be good, assemble it onto one end of the PCB.

5. Install a 3/4-inch to 1-inch through-hole standoff insulator in the old battery hole of the VTVM PCB. If none is readily

available in your "someday" box, you can make one by cutting a section out of an old, used BIC® pen.

6. Sever the VTVM PCB filament trace (yellow wires connection) just beyond the lamp. Solder new leads from the lamp connection to diode bridge per schematic. Make the leads long enough to be able to work on both sides of the PCB.

7. Solder a ground lead to pin 8 of the 12AU7 socket.

8. Sever the lead between the .01-μF

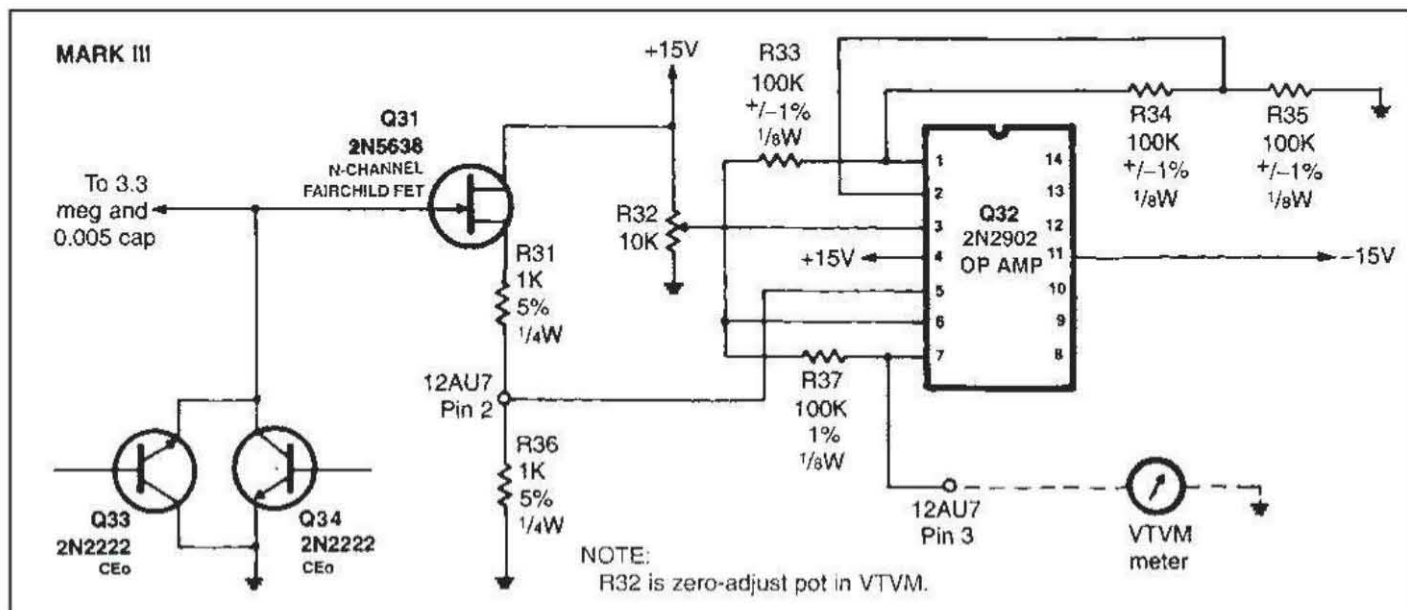


Fig. 4— Schematic of option Mark III. This circuit uses an op-amp, as does Mk IV.

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1600-volt capacitor and the range switch. Remove lead from pin 4, #1 deck (F) on the original PCB.

9. Assemble the chosen amplifier circuit on your breadboard and test for performance. If satisfactory, assemble circuit on other end of the PCB. Attach leads to zero pot as per schematic.

10. Reconnect VTVM PCB to meter terminals. Assemble the PCB to stand-off terminal using one of the corner holes on board. Make all necessary connections as per schematic.

11. Set voltage range knob to +1.5 DCV position. Clip a test lead from the DC test lead to ground. Adjust the zero adjust pot for zero output on the meter.

12. Adjust calibrations of plus and minus voltage on the 1.5-volt range using a variable voltage supply input. Monitor the voltage with a known accurate voltmeter, either VTVM or digital. Calibrate the AC on the 150-volt range using your AC line voltage.

13. Assemble total unit and forget about tubes and batteries.

Note

1. If you are not familiar with the "CEo" designation on certain of the 2N2222 transistors in the schematics, that refers to "Collector to Emitter, base open circuited

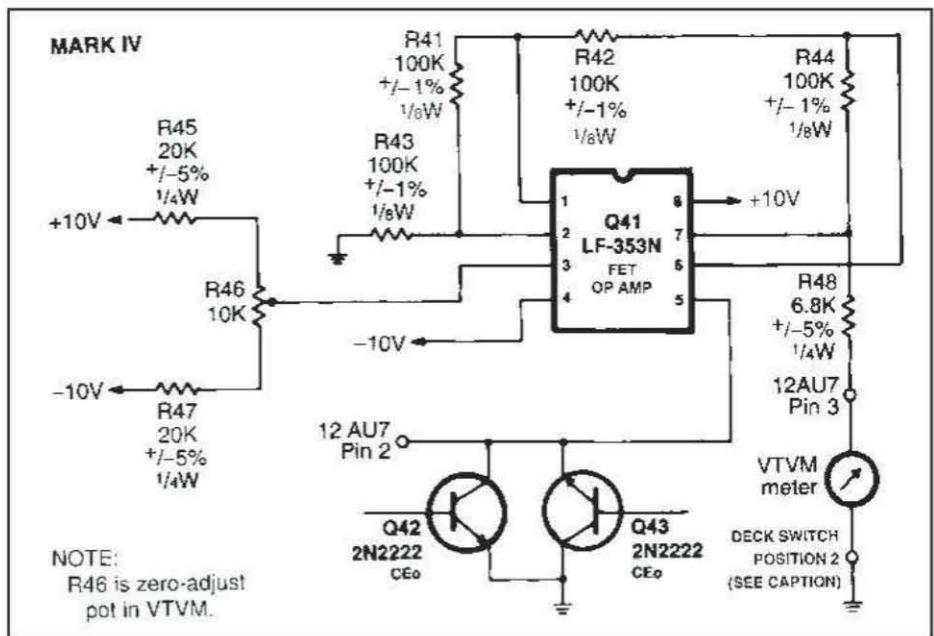


Fig. 5— Mark IV schematic. Note that the output of the meter (lower right) connects to the #2 deck switch position on the VTVM schematic.

configuration." When the NPN, for example, is connected that way it will be using the base-to-emitter junction in reverse as a Zener diode. The current will then pass through the base to collector junction with little voltage drop added to the base-to-

emitter breakdown voltage. Ergo, Zener action, and when you connect another similar transistor in reverse parallel, you now have a negative Zener as well. It's a nice way to inexpensively get matched Zeners for input voltage protection.

You don't need grass and trees to take ham radio to the field. This entirely self-contained operation was 38 stories above the streets of New York City.

Taking it to the Field in Midtown Manhattan

BY RICH MOSESON,* W2VU

Most of our “take it to the field” stories involve some sort of actual *field*, whether it's a grassy park or a field of boulders on top of some remote mountain. But the N3Y special event station last November was about as *unremote* as you could get ... smack in the middle of midtown Manhattan (New York, not Kansas), on a balcony 38 floors above the street at the New Yorker hotel (photo A), across from Macy's, Penn Station, and Madison Square Garden. However, the operation was fully self-contained and “off the grid,” just as it might have been on some mountaintop.

Members and friends of NYC Resistor, the New York maker/hacker group, put together three separate stations for the event, including two HF stations and one VHF/UHF satellite station (for more on the special event, see “TeslaGRAM: A Multinational Special Event for a Nearly-Forgotten Laboratory,” in the February 2012 issue of *CQ*). Here's a rundown of the equipment at each station:

HF Station #1

The main HF station for the operation was provided by Alain DeCarolis, WW3WW, who described it as follows: “The HF setup I operated for N3Y is the usual setup I have “on call” here under my desk. I usually operate from the NYC parks and the entire station is designed to be easily transported on my bicycle. (I have no car). When I decide to go QRP I use my FT-817ND, but when I feel like going stronger, I take out my inseparable TS-50S (I have had it since high school).”

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

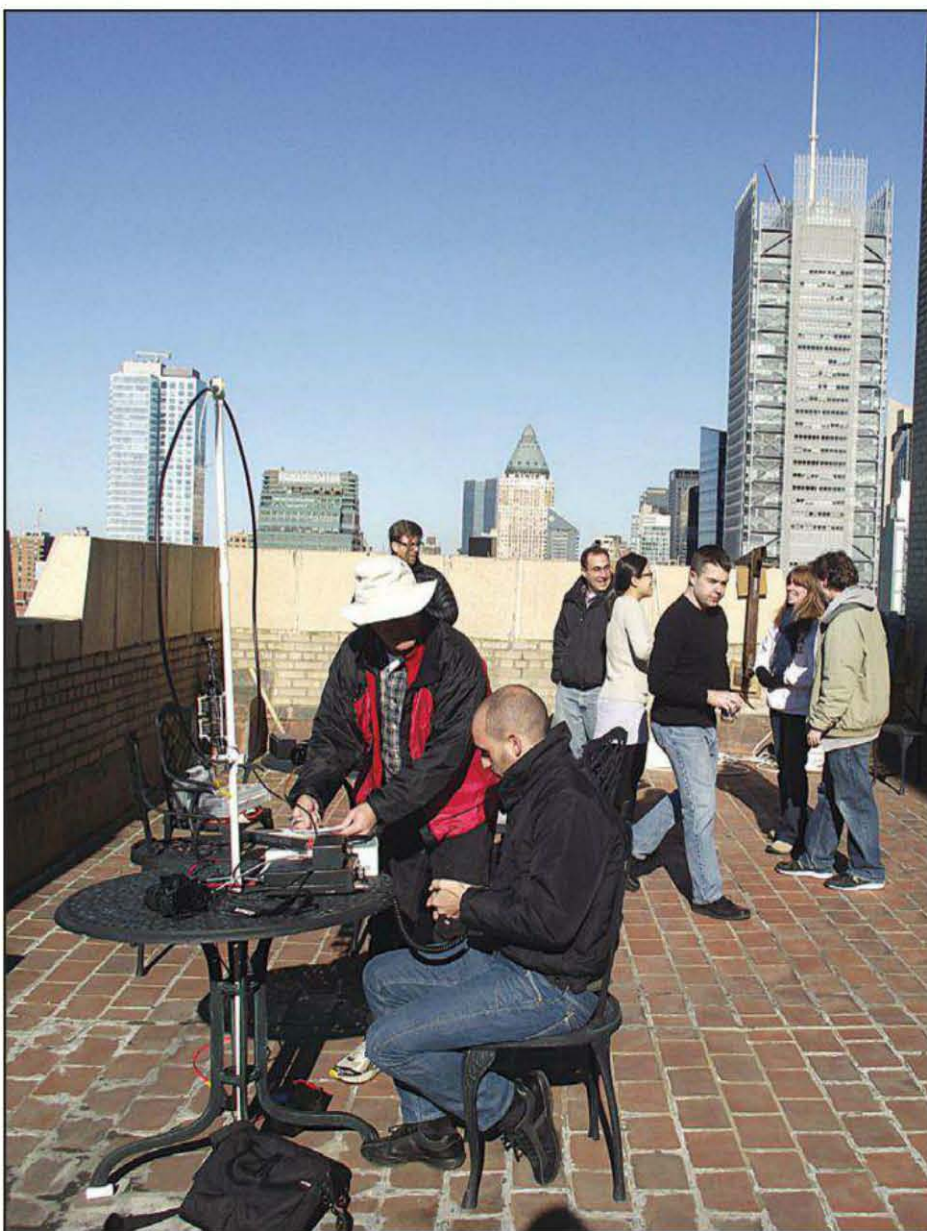


Photo A— The N3Y “field” operation was conducted entirely on a 38th-floor balcony of the New Yorker hotel in the middle of New York City.

The TS-50 was the rig of choice for the N3Y operation, running at about 30 watts PEP on single sideband through an MFJ travel tuner. Alain's antenna was a homebuilt magnetic loop, about three feet in diameter (photo B). It's designed to operate on 20 and 15 meters, but Alain says it also works on 40, although with some loss of efficiency. Alain added: "Some portable antennas of the same sort are also being sold commercially, but I believe that mine has two important advantages: The first is that if you need to you can go full power on it (100W CW), and the second is that my antenna costs only \$20 to build (much, much less than the commercial counterparts). Since I built it with a rudimentary toolset inside a New York City apartment, at first it might seem a bit 'Spartan.' However, the antenna performs great and it's giving me tremendous satisfaction."

Alain's battery was a sealed acid 12Ah purchased on eBay "for probably \$10 or \$15."

"I know it's heavy," he noted, "but given the price difference between an old-style battery and a new one (including the necessary charger), I decided it's not time yet for me to switch to something more exotic."

Alain was somewhat displeased with the results, which he noted were more a function of propagation than his equipment. "Unfortunately," he said, "the short skip propagation of Saturday afternoon only made it possible to contact North American stations ranging from California to Prince Edward Island to New Orleans. Normally I have much better luck but ... what can you do: This is exactly what makes shortwaves and QRP so special."

HF Station #2/Satellite Station #1

The second HF station—which was also pressed into service for satellite contacts and is seen in photo C—was built around a Yaesu FT-857D provided by Diana Eng, KC2UHB, and her husband, Dave Clausen, W2VV. For HF work it was hooked up to a Buddipole dipole (set up for 10 meters) and mast, which was mounted on a tripod, and the satellite antenna was a homebuilt WA5VJB "Cheap Yagi" with two elements on 2 meters and five elements on 70 centimeters.

Power was supplied by Tom Tumino, N2YTF, in the form of a Lithium Iron Nanophosphate Polymer custom battery, which allowed the FT-857 to run a full 100 watts out on HF as well as 50 watts to the FM satellites.

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"I prefer lithium cells for mountaintopping, where low temperatures can be tough on other chemistries," Tom explained, "and the iron nanophosphate cells are supposedly more stable than the regular lithium ion cells. The pack I brought along," he added, "is good for sustained current draws above 20 amps."

Tom also pointed out that the 20Ah battery has built-in protection and separate connections for charging, discharging, and balancing. Plus, he said, he always uses a "Watt's Up" wattmeter to keep track of power usage.

Satellite Station #2/ APRS Station #1

A Yaesu VX-8GR VHF/UHF handheld provided by Bill Ward, KD4ISF, wrapped

up the setup on the 38th floor. It was used alternatively as a backup satellite rig (photo D) and for an APRS beacon provided by Tom to alert nearby hams and anyone monitoring the worldwide APRS map website (<http://aprs.fi>) of the special event operation.

The original plan was to have the satellite station be the focus of the operation, since it was assumed that the station's location so close to so many strong RF sources in midtown Manhattan would make HF a QRM nightmare. Plus, the 38th-floor balcony had an unobstructed sky view to the west, so any satellite pass west of New York City should have been fair game. As it turned out, the hotel building itself provided a significant amount of shielding and QRM was never much of a problem on HF. Plus, the satellite contacts were not easy to come by.

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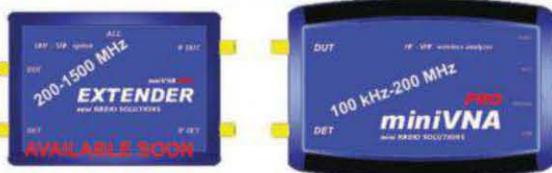
Photo B— The prime operating position at N3Y was a Kenwood TS-50, MFJ travel tuner, and a homemade magnetic loop antenna, provided by Alain De Carolis, WW3WW, center, adjusting the antenna. Watching at the right is Tom Tumino, N2YTF, while Bill Ward, KD4ISF (left), talks with other group members at the second operating position.



Photo C— NYC Resistor member and ham radio blogger Diana Eng, KC2UHB, listens as author W2VU calls CQ on the second station (see text for details).

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Photo D- Dave Clausen, W2VV, uses a "Cheap Yagi" satellite antenna to listen for signals from SO-50 on the VX8R handheld, while Bill Ward, KD4ISF, stands by to log any contacts and Chuck Pettis, W7AUM, listens. (Additional photos are at <http://bit.ly/tbQPbh>, courtesy of KD4ISF)

An attempt while I was there to work SO-50 with the VX-8GR handheld was unsuccessful (too much competition from stations with stronger signals, and FM's "capture effect" assures that a weak signal will not be heard when stronger signals are present). A later effort using the FT-857 netted a half-dozen contacts on the late AO-51. Several dozen contacts were made on HF using Alain's station full-time and the 857 in between satellite passes.

Fun On and Off the Air

Overall, I would say that enough contacts were made for everyone to feel the effort had been worthwhile. However, like any radio operation "in the field" (with or without an actual field), what happens on the radio is only half the fun. Whether it's the splendor of the natural world in a forest clearing or on a mountaintop, or the splendor of the manmade world as you gaze at skyscrapers all around you from a New York hotel balcony, getting out "in the field" connects you with your world in a way that just doesn't happen while sitting in your attic or your basement. And if you happen to do it with a bunch of fellow hams, all the better...

More for the New Home Brewer

You will remember that last month we tried to entice you to build something and actually gave you enough information so that you would not have an excuse to not do so. Well this month we would like to continue in that vein. Last month the simple field strength meter was intended to let you know when you were transmitting. Now it is time to build something that will allow you to check on your receiver so this month we will show you a simple signal generator that should enable you to do just that.

Fig. 1 is a circuit using a low cost color-burst crystal based oscillator at 3.58 MHz which is right in the 80-meter band. The crystal is connected as the feedback element for two of the gates in a common 7400 TTL Quad NAND IC and results in a TTL level square wave output signal. The other two gates are used as output amplifiers. This arrangement produces a square wave signal with enough harmonics to be heard all the way up to the 10 meter band. Power is supplied by a common 6 volt lantern battery and a series 1N4002 silicon diode which drops the voltage to about 5.3 volts for a fresh battery. Although a bit high the TTL gate still operates with no problems and as the battery ages the voltage stays in the TTL operating voltage range for a long time.

As we did last month, fig. 2 is a pictorial diagram for those who need it and a list of components is also presented at the end of the column. As you can see this project is really quite simple and again there is really no excuse for not building it. You will have to do some soldering but not very much and all components are large enough to easily handle, even by the novice.

You should build the circuit in a metal mini-box (with the battery) available at RadioShack and other similar outlets. As with the case of last month's field strength meter you should also add a low cost whip antenna (insulated from the housing through a rubber grommet) to adjust the output level. When using such a signal generator keep in mind that it is also a low power transmitter. Always be sure to use only the lowest output you can (shortest antenna length) to obtain reasonable readings and do not leave it running for any longer than necessary either.

When you build this device there are a couple of uses that should be of interest, even to the non-technical amateur. The first is obviously is as a check of frequency. The chart below shows the various harmonic frequencies that are present. As you tune your receiver from band to band you should be able to find the signal at the proper point. Since color-burst crystals are fairly accurate the harmonics you detect should give you a very good idea of the state of calibration of your receiver.

Band	Frequency
80 meters	3.58 MHz
40 meters	7.16 MHz
20 meters	14.32 MHz
10 meters	28.64 MHz

Another application, and one that we mentioned more than 15 years ago in our November 1996 column, is to find out how directional your antenna system is. To do this you would place the signal generator a wavelength or more away from your antenna and adjust the output of the unit by adjusting how much of the whip antenna protrudes out of the case. Set the output to get a mid scale reading on the S meter of your receiver. Now move the

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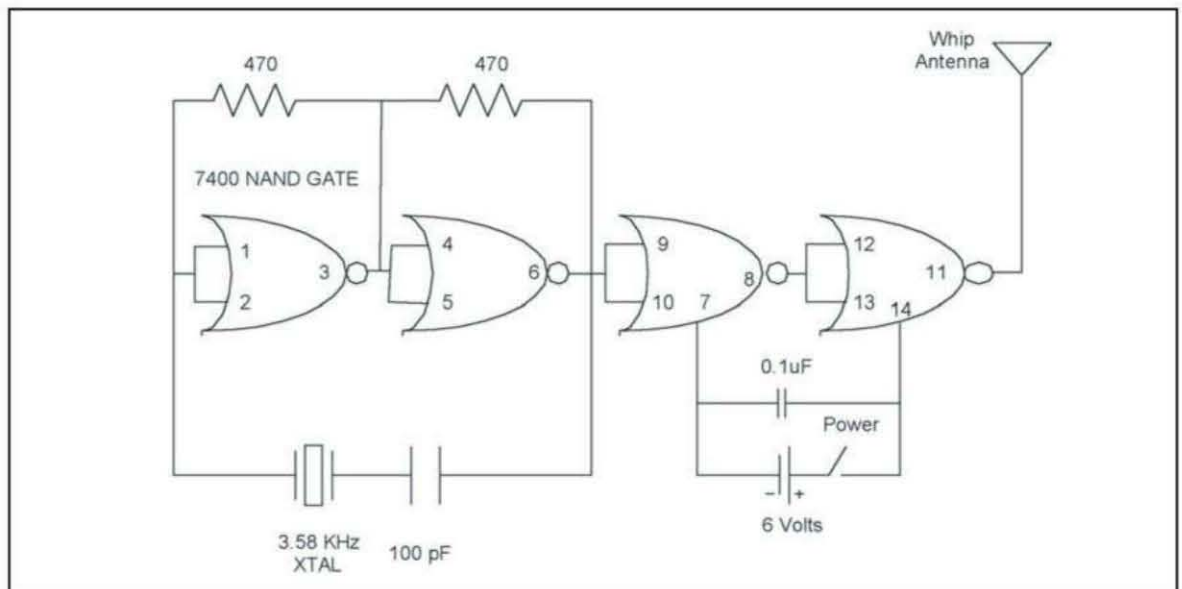


Figure 1— Simple signal generator discussed in text.

generator in a circular path around the antenna every 45 degrees from your original point. Try to keep the distance from the antenna as constant as possible for best results. Take a reading of the signal strength at each point (which is why we used a larger battery—for longer life) and plot them on a sheet of polar graph paper. The results will resemble fig. 3. Since an antenna is a symmetrical device, whatever is

received is a pretty good approximation of what will be transmitted (by the same antenna). If you have a beam antenna the job is even easier. In this case you only need to keep the signal generator at a fixed point and rotate the antenna in 45 degree steps. When doing this test do not change bands. The fundamental output at 3.58 MHz is fixed but at the second, third and fourth harmonics however the output levels will be different.

In conclusion, once again, I want to wish all of you a very Happy New Year and hope that all of your hopes and dreams really do come true in 2013.

73, Irwin, WA2NDM

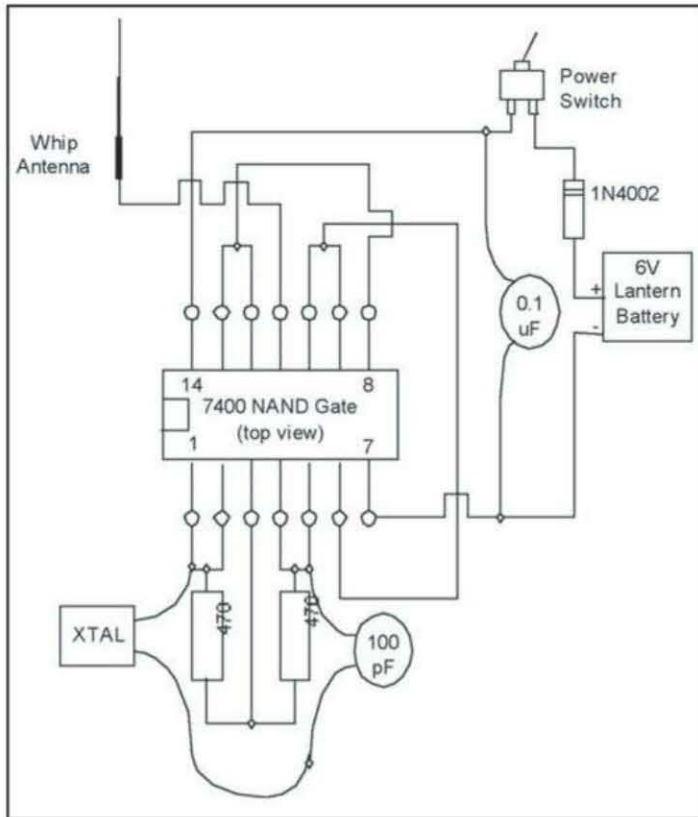


Fig. 2— Pictorial parts layout of fig. 1.

Components for test oscillator

- 1 6 volt Lantern Battery (Local Hardware Store)
- 1 0.1 μF ceramic capacitor (Mouser 80-C350C104J1G)
- 1 100 pF ceramic capacitor (Mouser 80-C322C101J1G)
- 2 470 ohm 1/4- watt resistors (Mouser 30BJ250-470)
- 1 3.58 MHz Color Burst Crystal (Mouser 744-MP036S)
- 1 7400 Quad NAND Gate IC (Mouser 512-74AC00PC)
- 1 1N4002 silicon diode (Mouser 512-1N4002)
- 1 Toggle Switch (Mouser 612-100-A1421)
- 1 Whip Antenna (RadioShack 270-1405)
- 1 Aluminum housing (RadioShack 270-238)

Rubber grommet, solder and wires (misc.)

Note that these sources are only suggestions. You can save quite a bit if you simply shop around on the internet. That is a standard "feature" of home brewing.

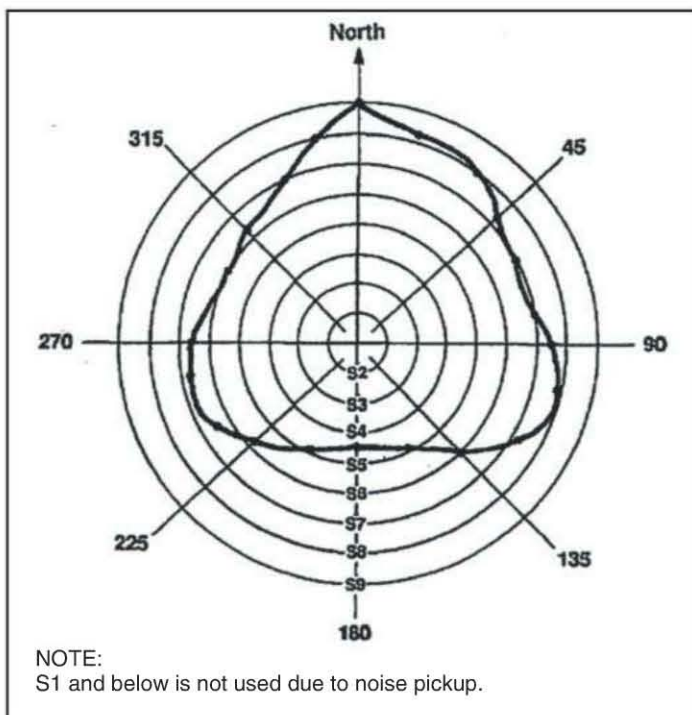


Fig. 3— Typical data chart discussed in text.

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By Any Name, Sandy Tested Our EmComm Mettle

Part I: Amateur Radio's Role in Southern New Jersey and Massachusetts

Thousands of radio amateurs up and down the U.S. eastern seaboard underlined the critical and robust role amateur radio plays in emergency communications last October when Sandy—variously referred to as *tropical storm*, *hurricane*, *Superstorm*, *Frankenstorm*, and *post tropical storm*—reminded us of how deadly serious our EmComm responsibilities are. At press time, we're in the midst of gathering reports from more than a dozen states that felt Sandy's wrath.

In this first of two parts, *CQ's* "Public Service" begins with a focus on the herculean efforts of radio amateurs in the ARRL Southern New Jersey (SNJ) section, many just a geographic stone's throw from Hurricane Sandy's landfall at Point Pleasant Beach, south of Atlantic City (photo A). Much like Sandy, we then move north to eastern and western Massachusetts, where the actions of EmComm operators in the face of remarkable damage were no less heroic. Next month we'll wrap up with reports from other regions.

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Photo A— The Weather Channel chronicled Hurricane Sandy's damage where the storm made U.S. landfall, Point Pleasant, New Jersey. Watch the video at <<http://bit.ly/SozIRW>>. (Internet screen grab)

Southern New Jersey: "We Fight the Way We Plan"

"While the recovery will take a long time, the communications emergency is ending in the nine counties of the SNJ Section," Assistant Section Manager Gary Wilson, K2GW, said in early November, fully a week after Hurricane Sandy ravaged the state. "Commercial communications systems are being restored in most parts of the SNJ section. Amateur radio emergency operations continue in Ocean and Atlantic counties under the direction of their emergency coordinators (ECs)." It had been a harrowing and challenging time for the SNJ section's EmComm volunteers. K2GW reported radio amateurs were called upon for:

- Weather spotting and reporting via SKY-WARN® <<http://www.SKYWARN.org>>
- Communications assistance at emergency evacuation shelters
- Support of the American Red Cross <<http://www.RedCross.org>>
- Office of Emergency Management (OEM) support
- Damage assessment reporting

More than two-hundred amateurs held down communications posts in SNJ during Sandy's onslaught. They spanned across 2-meter and 222-MHz FM, APRS messaging networks, and high-frequency single-sideband phone.

"Each county runs its own emergency net," Wilson noted, "linked at the higher level by the SNJ ARES® (Amateur Radio Emergency Service) Resource Net and New Jersey State RACES® (Radio Amateur Civil Emergency Service) Net, mostly on the NJ2EM 220 repeater."

K2GW said one of the reasons New Jersey is "a little better prepared than other states (in EmComm) is that the New Jersey Office of Emergency Management won't approve a county emergency management plan unless it includes a RACES® annex. As a result, every county Emergency Operations Center (EOC) has permanent amateur radio capability on 2-meter simplex, a 222-MHz radio aimed at the NJ2EM 222-MHz repeater (covering the entire state), 2-meter APRS for text messaging, and 75-meter SSB. These are tested once each month on statewide nets."

Each Red Cross chapter tests its 2-meter capability monthly with the central Red Cross station at N2ARC in Princeton, as well, which then links to the State EOC in West Trenton. Each county has



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a 2-meter repeater designated for its own work at the county level.

"We fight the way we plan and practice every month," Wilson said. "That's why the state and county OEMs pay for

permanent amateur radio stations in every county EOC and most Red Cross chapters."

At this writing, Wilson said, "John Zruba, K2ZA, SNJ Section Emergency

Coordinator (SEC) and Incident Commander, was running a Section Resource Net on the SNJ ARES® repeater at 7 a.m., 1 p.m., and 7 p.m. each day to provide support to the county ECs. He



Photo B- Casino Pier at Seaside Heights in New Jersey's Ocean County, is a soggy mess in the aftermath of Hurricane Sandy. (Courtesy of Wikimedia Commons)



Photo C— Eastern Massachusetts ARES® activated its amateur radio command center in the Clay Center Observatory at the Dexter-Southfield School in Brookline. (Courtesy of Marek Kozubal, KB1NCG)

was coordinating requests for sending about six relief operators each to Atlantic and Ocean counties,” (See photo B.)

K2ZA was “in contact with Eastern Pennsylvania, Northern New Jersey, and Western Massachusetts sections about their eventually providing relief operators as well.”

Ocean County EC (Emergency Coordinator) Bob Murdock, WX2NJ, reported that in Sandy’s aftermath six emergency shelters were being consolidated into one and that communications needs could be managed by

Ocean County ARES® members. (NOTE: WX2NJ reported he believed “the one last shelter might remain operational for about a week. The ARRL HamAid VHF radios are working great there.”—K2GW)

“The Atlantic County EC reported the need for six relief operators to give his operators a needed rest,” Wilson said. “Both shoreline counties will continue to determine their long-term amateur radio needs daily, based on Red Cross sheltering plans, and the state of commercial communication restoration.”

“Thanks go out to all of the ARES®/RACES® operators in the SNJ Section who showed that planning, regular monthly tests, and dedication pay off when it comes to helping their fellow citizens in a communication emergency,” Wilson said. “When all else fails, there’s amateur radio.”

Eastern and Western Massachusetts: No Lull Before the Storm

By Rob Macedo, KD1CY
ARRL Eastern Massachusetts Section
Emergency Coordinator

The level of EmComm support required during a monster weather system such as Sandy doesn’t just magically happen. There was certainly *no lull before the storm*.

Eastern and Western Massachusetts ARES® started preparatory conference calls for Hurricane Sandy on Thursday October 25, as the threat from this behemoth became significant.

Western Massachusetts Section Emergency Coordinator (SEC) John Ruggiero, N2YHK, joined conference calls held by Eastern Massachusetts ARES® with planning for activation for both the response and recovery phases began.

Eastern Massachusetts ARES® (<http://ares.ema.arrl.org/>) was put on standby Friday evening, October 26, to identify radio amateurs who would be deployed to various Emergency Operations Centers and shelters. Western Massachusetts ARES® (<http://wma.>



Photo D— Sandy’s storm surge soon took over the observation area on Long Wharf in Boston (<http://bit.ly/VO7rFu>). (Courtesy of Nick Snow, KB1YMY)

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arrl.org/) went on standby Saturday evening, October 27.

Eastern Massachusetts ARES® activated its amateur radio command centers at the Acushnet Emergency Management Agency in Acushnet and the Clay Center Observatory, co-located at the Dexter-Southfield School in Brookline (photo C). This assured the section would stay connected if widespread 2-meter repeater outages occurred. It was clear Sandy's impact would be significant (photo D).

The city of Boston Emergency Operations Center (EOC) requested amateur radio support, as did the Red Cross for several regional shelters within the Eastern Massachusetts section.

Cape Cod ARES® supported several regional shelters, had radio amateurs at several area hospitals, and ran net control for its district net out of the American Red Cross Chapter in Hyannis under the callsign K1PBO.

The Massachusetts Emergency Management Agency (MEMA) Region Two office in Bridgewater was active as WC1MAB (<http://www.WC1MAB.org>) through the efforts of Region Two RACES® Radio Officer Mike "Sparky" Leger, N1YLQ, and John Miller, N1UMJ.

WX1BOX, the SKYWARN® amateur

radio station at the National Weather Service office in Taunton (<http://www.WX1BOX.org>) was active for a 22-hour period from 3:30 a.m. Monday through 1:30 a.m. Tuesday. As Eastern Massachusetts ARES® SEC, I staffed the (WX1BOX) station along with Assistant SEC Carl Aveni, N1FY.

In Western Massachusetts, N2YHK reported that several Red Cross shelters were open in his section. One in Northampton was staffed with a radio amateur. Operators were not requested for others.

The Worcester Emergency Communications Team (WECT) established a resource net and supported SKYWARN® operations with damage reports across Worcester County. Tim Mongeau, KB1LZF, provided updates from portions of Worcester County for the duration of Sandy's impact on the region.

Eastern Massachusetts ARES® remained on standby for several days after Superstorm Sandy's impact on the region in case a Mutual Aid Team (ARESMAT) was required. Coordination with the SECs of Connecticut, New Jersey, and New York City/Long Island continued in case needs arose.

By the end of the week most Eastern

Massachusetts ARES® teams stood down. The standby was lifted at midday Saturday. It is estimated that more than one-hundred radio amateurs participated in operations in Eastern Massachusetts, with a similar number in the Western Massachusetts section—particularly when factoring in those who gave SKYWARN® reports during Sandy's onslaught.

WX1BOX handled several hundred reports of wind damage. The dispatches included reports of structural damage in some areas, as well as many trees and wires down (photo E). The station also gathered wind and rainfall measurements, as well as storm surge and urban flooding reports from heavy rainfall.

This utilized more than a dozen local area VHF/UHF repeaters with liaisons, as well as the New England Echolink/IRLP Reflector system—*IRLP 9123/*

*Echolink conference *NEW_ENG* node: 9123*—which was combined and linked with the VoIP Hurricane Net *IRLP 9219/Echolink conference WX_TALK* Node: 7203 system*. This created one large hurricane net covering from the Delaware-Maryland-Virginia region into New Jersey, New York, and New England.

The amateur radio station at the



Photo E- High winds toppled a tree onto a mobile home in Holbrook, southeast of Boston. (Photo courtesy of Rick Reuss, KA1LKB)

National Hurricane Center, WX4NHC, was linked into this network, as well. The damage and meteorological information was shared with other agencies such as the Red Cross, local and state emergency management, and the media to provide up-to-the-minute updates during Sandy's march across the region. This has become a very critical role for

amateur radio and is viewed as equally important to providing communications *when all else fails*.

At the height of the storm, many wind gusts exceeding hurricane force (74 mph) were recorded across southeastern New England, and as high as 70 mph in the interior of southern New England.

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HAZARDS AFFECTING LAND

National Weather Service

Photo F- Vital storm information provided to WX1BOX and relayed to the the NHC's WX4NHC, appeared in a National Weather Service Advisory October 29. (Internet screen grab)

Sustained winds of 64 mph, with a gust to 86 from the western region of Rhode Island, were reported to WX1BOX and relayed to WX4NHC. Cape Cod ARES® District Emergency Coordinator (DEC) Frank O'Laughlin, WQ1O, reported a gust of 76 mph in the Marstons Mills section of Barnstable, which was also relayed to the NHC.

These bits of vital information appeared in a NHC Advisory issued at 5 p.m. on Monday, October 29. (See photo F.)

Power outage statistics were staggering across the region:

- 386,000 in Massachusetts
- 122,000 in Rhode Island
- 630,000 in Connecticut

More than 1.1-million people were powerless in southern New England at Sandy's height. The region's power statistics paled, however, when compared to those from New York City, Long Island, and New Jersey, where more than three



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million were affected for a significantly longer period of time.

Flooding from Sandy's storm surge in southern New England was heaviest from the Westport, Massachusetts area westward through southern Connecticut, where damage was worse than that left in the wake of Hurricane Irene in August 2011.

In southern Rhode Island, storm-surge flooding was the worst since Hurricane Bob in 1991. Beach erosion left sand as deep as four feet, covering nearby roads. In Charlestown, Rhode Island, homes sustained major damage in the surge and in some cases were knocked off their foundation.

South coastal areas were restricted to residents-only and required a pass to get in. But amateur radio operators, embedded with local Emergency Management and Public Safety officials, provided reports and photographs of structural damage and storm surge when their responsibilities for the NWS Taunton SKYWARN® program had ended.

While most of Sandy's impact had faded by early Tuesday morning, a line of rogue thunderstorms associated with *Post Tropical Storm Sandy* affected portions of the ARRL's Eastern Massachusetts section that evening.

A microburst with wind speeds as high as 90 mph was recorded in the Wareham-Onset area, downing 100 trees and capsizing and knocking over boats at Point Independence in Wareham and at the Onset Bay Marina.

Scattered trees and wires were down in Plymouth and Kingston, and all the way up into Lynn, north of the metro Boston area.

One-inch diameter hail was observed in Melrose, along with flash flooding of many streets from the New Bedford-Wareham area to the metro Boston area.

SKYWARN® self-activated on several local area repeaters as the line of rogue storms passed through with reports sent to NWS-Taunton. A complete listing of reports can be seen at the WX1BOX web site in *Post-Hurricane Sandy Coordination Messages* posted there: <<http://www.WX1BOX.org>>.

Overall, this was another excellent operation for a significant weather-related event and the second hurricane to affect southern New England in two years, although the full force of the hurricane was felt just to the south.

Hopefully, this will drive further preparedness into the amateur radio community and into the agencies across Massachusetts.—*Rob Macedo, KD1CY*

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Going to Extremes

As this is being written, we are in the immediate aftermath of Hurricane Sandy. Due to the lead time needed in magazine publishing, you now know things I do not know as this piece is being composed.

What *is* known is that Sandy brought yet another large-scale emergency that affected millions. In addition to lost lives, many injuries, catastrophic property losses, massive power outages, and a disruption to the economy, once again the vulnerability of our communications networks made its presence known during an emergency.

In just the last year, the USA has experienced drought, flooding, severe storms, an East Coast earthquake, extensive wildfires in the west, and more. Politics aside, the “new normal” seems to find more severe events occurring and fewer responders in position to render assistance. Of course, more folks are impacted because our national population is now over 311 million and growing. The other reality is that many state and local governments are financially strapped, and some have even gone bankrupt. The upshot is they are not likely to be adding to their portfolios of emer-

gency responders. Some are simply struggling to maintain basic coverage.

Our Dependence

Let's face it: As a society we're “hooked” on a substance and the habit is hard to kick. That item is one of the smallest known, but like David facing Goliath, sometimes the smallest item carries a big impact. I'm referring to the lowly electron, incredibly tiny, yet it makes much of our modern lifestyle possible. From the macroeconomics of the stock exchanges to the light bulb on your nightstand, and seemingly everything in between, we depend on electrons moving about on some mission to serve us. When they stop moving, as in power outages, we begin to get an idea of how dependent we really are.

With Hurricane Sandy, we again learned the cell-phone system is vulnerable to disruption from damaged or powerless cell sites to individual phones that were unable to be recharged. However, that should come as no surprise, because time and again the cell network and its infrastructure has shown itself to be fragile due to causes ranging from simple demand through power failures and physical damage caused by storms or accidents. Following Hurricane Isaac earlier in 2012, New Orleans and surrounding areas again experienced

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Like this portion of the historic boardwalk in Atlantic City, New Jersey, many cell phone sites were destroyed by the fierce winds of Hurricane Sandy. Amateur radio remains one form of communications that works “when all else fails.” (Photo by Liz Roll/FEMA)

cell phone and public safety communication outages even after building more robust systems following the Katrina disaster only a few years earlier, and thankfully, while still serious, Isaac was a much smaller event.

If you need an additional measure as to our dependency, take a look at the cell phone charging stations at airports, coffee shops, and other public places. They're always busy. One of the many compelling photos in New York City following Hurricane Sandy showed a location with daisy-chained power strips being used to recharge hungry cell phones. Each device represented a user eager to communicate with loved ones or simply obtain updates on how quickly conditions might improve.

It isn't just cell phone systems that are fragile. Across the country, communities large and small are converting to digital radio systems that are dependent upon linked repeaters, often encrypted transmissions and seemingly vulnerable to their increasing layers of complexity and proprietary components. Contrast that with ham radio, which is still largely analog, using simple freestanding repeaters to serve a given area, equipment dispersed over wide areas (owned by individual operators), and robust. When the chips are down, it's often found that simpler is better. I'm also baffled at the notion that some public safety agencies keep a stockpile of cell phones to use as part of *their* contingency plans.

What's the Mission?

As ham radio operators, our DNA seems to be encoded with the willingness to use our skills and equipment to benefit others. The immediate protection of life and property top the list, followed by general health-and-welfare traffic. So far, so good.

However, in trying to accomplish those missions, whom do we communicate with? Unless you can answer that question, all the equipment in the world is of little use. That's where a structured response comes into play. To be sure, many emergency-preparedness organizations have established robust links with the ham community. The Red Cross and Salvation Army are among them. ARES, RACES, and SKYWARN groups are found in many areas, but sadly, many regions are not as well-served. Time and again over the last year, several of these well-trained units have proven their value. What is also evident is that structure and practice are the keys to having ham radio operators poised as an effective backup system for stationary communication systems

that are subject to fail. From supporting your local first-responders up through links to FEMA, there's a role to be filled and a job to be done.

I Want You!

The stern face of Uncle Sam pointing at you from a recruitment poster encouraged countless numbers of recruits to step forward in defense of the nation. He is calling again, only this time, he seeks your communication skills, equipment, and common sense to provide a strong network of trained operators to face future emergencies. We know they will happen; we just don't know where or when. By joining a communications response organization, you add strength to the system. On one hand, you may never be called. On the other hand, yours could be the radio that helps save a life, protect property, or bring comfort to just one person.

Don't rely on old skills and training or past relationships as your cushion against taking action today. Over the last few years a lot has changed in emergency management. Every new event is a learning experience, and those lessons are quickly incorporated into the operating structure. There's a lot to learn and importantly, new relationships to be established. It's far better to get to know the folks at your supported agency well in advance of an emergency. Through training and drills, capabilities are on display and trust is established.

But Wait, There's More

Perhaps it was a coincidence, but as Sandy raged, I received an e-mail from a group seeking to find a class that would help several people obtain training for the Technician exam. The appeal of emergency communications is a strong recruiting tool for bringing new people into realm of licensed operators. Too often, though, we lose track of them once they're licensed. There's no substitute for a good ham-to-ham support network that engages in teaching and communicating both on and off the air. If you have a local club that can support these objectives, great; if not, it only takes two persons to form a club that can devote its energy toward the goals we speak of in this article.

Here's hoping 2013 brings the nation a needed respite or at least a reduction from the many disasters we've faced over the last few years. Nevertheless, your ability is a great way to respond through being prepared—24/7/365—ready to put a little "Magic In the Sky."

73, Jeff, AA6JR



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Social Media, Ham Radio, and a Generation Gap

It's official. I am an "old man." Besides getting a seemingly continuous stream of junk mail from the AARP (formerly the American Association of Retired Persons), now teens and pre-teens refer to me as "some old guy." This really hit me while waiting in the check-out line at the hardware store. I overheard a group of young kids behind me talking about online bill-paying and self-checkout, and one of them said something like, "Have you noticed that people over 30 are too old to pay bills online and always have trouble in the self-checkout line?"

I wasn't sure who he was talking to, since most of his group was busy punching keys on their cell phones and laughing at something, and the others were staring at something else at the other end of the store.

I almost turned around to give this kid a piece of my mind, but decided to just grit my teeth and say nothing. I realized that I have become an old man and made a mental note about yet another difference between the generations today.

That same week I came across an article mentioning social media in the online radio communications magazine *Urgent Communications*. The article is called "Embrace Social Media—But Don't Try to Control It." It includes some useful tips for emergency response communicators and how to take advantage of the power of social media to help spread information to the community.

Reading the article made me think about ham radio and social media. Ham radio and social media have a lot in common. Both are global in scope. Ham radio and social media are ways to communicate to others immediately under most circumstances. Most of the time, such communications are not private, but public.

Another thought for the day: Regardless of how you feel about social media, it is here to stay. Like cell phones and smart phones, I tried to avoid adopting them, but failed to resist. Take a look at two videos made by Erik Qualman on his Socialnomics website: "Technology Will Kill," and "Is Social Media a Fad?" The URL is listed in the References section.

New and Old Crash in the Same Space

Many people think social media is something new and different, but as hams, we should consider ourselves among the first users of social media. After all, isn't ham radio all about connecting with strangers as well as friends and family on an international scale?

Speaking of new versus old, here is a chance for us old dudes to teach the younger generation a thing or two. If you are a CW operator or traffic-handler, you already know how to shorten mes-

sages to increase efficiency and accuracy. Have you brought this practice to text messaging, e-mail, or Twitter on your smart phone or other communication appliance?

For non-CW operators, I am talking about using ham radio abbreviations and prosigns in text messages and other social-media venues. Many of these radio abbreviations go back to the telegraph days in the 18th and 19th centuries. I think it would be very interesting if we added ham radio abbreviations into the newest social-media communications. The concept of using the same phrase as a question and as an answer (Q-signals) is particularly intriguing. By the same token, wouldn't it be interesting if Twitter and other text users started to adopt "our" abbreviations?

Space does not allow me to include a table of abbreviations for hams and Twitter users, but take a look at the abbreviations lists mentioned in the References section and compare them. On Twitter, abbreviations are mandatory; the maxi-



Photo 1— In an effort to expand ham radio awareness into non-ham radio venues, my small group entered a display called "Not Your Grandpa's Ham Radio" at the Bay Area Maker Faire last year. This narrowband 10-GHz system certainly wasn't something hams used in my grandpa's day.

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mum character count on a "tweet" is 140 or less. I am not an extensive Twitter user, but there is a great online publication called "The Simple Twitter Book," by Brent Ozar. Go to Brent's website and download a free copy if you are interested in this new and fast text communication media many kids are using these days.

Expanding Our Universe

How do we leverage social media to help improve and grow interest in ham radio?

Let's take YouTube for this example. Before YouTube, there was television. However, unlike TV, YouTube enables just about anyone in the world with a video camera, a computer, and an internet connection to become an actor, producer, director, promoter, and cameraman. Anyone can become an instant celebrity—sometimes accidentally—and even make money in the process of having fun.

This is the core difference between traditional broadcast content and YouTube: The majority of the people making and posting YouTube videos are doing this for fun. There is a certain air of dedication and a different attitude (let's call this passion) when people do

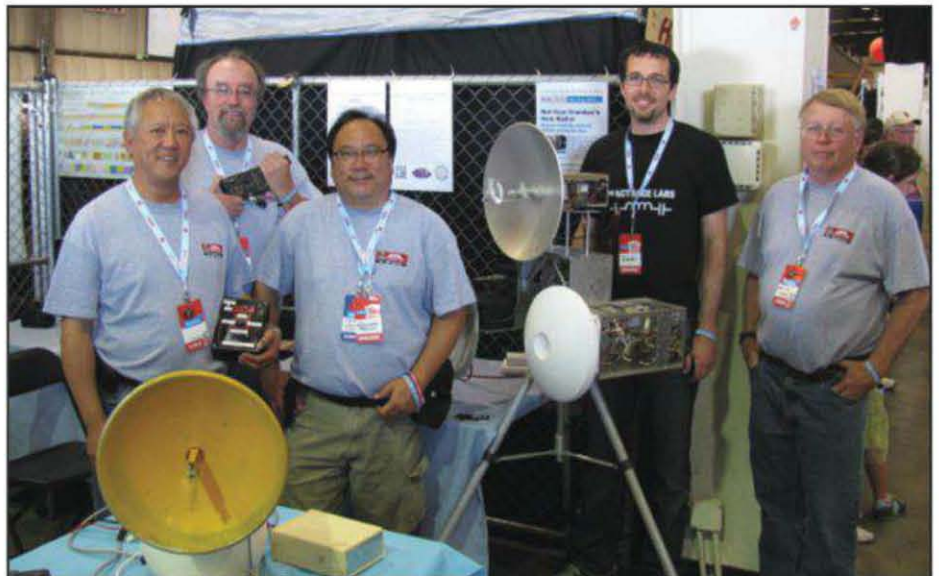


Photo 2— The Bay Area Maker Faire 2012 team, left to right: Brian Yee, W6BY; Dennis Kidder, W6DQ; Wayne Yoshida, KH6WZ; Tony Long, KC6QHP; and Mike Lavelle K6ML.

things on their own time and without remuneration.

If you have not discovered Jeri Ellsworth by now, go to YouTube and search for her. She is a YouTube star, making electronics-related videos of all kinds, and she has thousands of followers. Although she is not a ham, sev-

eral of us are encouraging her to become one.

In a related vein, Make: magazine has a ham radio columnist who also posts on YouTube and other social media outlets. Diana Eng, KC2UHB, is a New York area YL who is also a fashion designer. She incorporates electronics

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or some technology aspect into her clothing and other items. Diana is a great example of a young 21st century artist—and radio ham.

By making and posting videos and creating content for their blogs and other social media venues, ham radio can get a positive publicity boost beyond our network of ham radio people, a great recruitment and teaching tool. And best of all, the content is free.

Along the same lines, last year I headed a small team of hams and displayed at the Bay Area Maker Faire (San Mateo, CA, in the Silicon Valley). The theme was "Not Your Grandpa's Ham Radio" and was dedicated to show creative and technically minded people what hams are doing today. Our 20-foot display space was filled with our latest microwave frequency projects, an APRS demonstration, ham radio micro-processor-control projects, and other things that did not exist in my grandpa's day (see photo 1).

Although we did this totally for the fun of just doing it, we managed to have some impact on the local college crowd—both students and faculty—to gain an interest in ham radio. Just like the Star Trek Original Series episode

"Space Seed," I was not sure what I started when I combined ham radio with the Maker movement. So far, it is all good.

It's a Generation Thing

The younger generation seems to be much more "open" than many of us older folks. For example, I heard about a dating function on FaceBook, in which all of your friends can follow your comments to and from your guy or girlfriends. Talk about an open network, where is the privacy aspect of dating someone these days?

One thing we should keep in mind when talking on the radio or texting or tweeting a message is that the information is not only public, but it is also global and instantaneous. Remember, depending on the settings (or, quite often, the default settings) on your application, that everyone can see what you are saying and your messages are spread around the globe instantaneously.

Personal security should be a concern to you and your family when communicating via either social media or ham radio. When I was growing up and on the ham bands, my radio tutor would always remind me to talk about things after they happened, rather than talking about things before they happened. For example, since hams can be found by doing simple search on a callsign, you really should not talk about your three-week vacation overseas before you leave, especially after you mentioned that new computer system or big screen TV you just purchased. Instead, wait until you come home and talk about the fun times and the things you did after the event.

A Useful, but Double-Edged Tool

As an "old guy," I am just starting to use social media, but only as time allows. My new day job and new projects are filling my free time, and I actually would rather do something with real things and real people, rather than writing and documenting these events on my comput-

er. However, I must confess that I believe this self-promotion is mandatory and should be part of everyone's lifestyle today.

My recent bout of unemployment forced me to use social media to uncover job opportunities, perform company research, and get connected to new friends and colleagues. At first I was very concerned about the lack of privacy and feared identity theft. However, as my job search continued without success, I had to do something different. I needed to try some new things, because my previous strategies did not work. Social media (and LinkedIn in particular) became one of my most fruitful job search tools.

As they say about today's job market, it is no longer what you know. It is no longer who you know. It is who knows you. Leveraging the power of social media is the only way to make this happen.

Summary

I hope this article has inspired you to at least become aware of social media and how it is used. It is another way of communicating and can supplement what we do on the ham bands. It can be a way to reach beyond our network of ham friends and also connect with younger, equally interesting people—and possibly recruit them onto the ham bands.

If you have kids who are active on social media, you may want to monitor their online activities, since they may not know the impact of what they are doing even while engaging in casual "conversation" with their groups and friends.

I am just starting my venture into social media (LinkedIn, WordPress, YouTube), so if you run into me, I would be glad to connect with you. Also don't forget to "like" CQ magazine on FaceBook and join the CQ Group on LinkedIn!

TNX es 73 and BCNU . . .
Wayne, KH6WZ

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Wayne Yoshida KH6WZ YouTube: <<http://www.youtube.com/user/kh6wz>>

Wayne Yoshida KH6WZ WordPress: <<http://wayneyoshida-kh6wz.com>>

LinkedIn: <www.linkedin.com/in/wayneyoshida>

In Defense of W2OY and Other Curmudgeons

BY JANIS CARSON,* AB2RA

In the September 2012 CQ magazine, the "Zero Bias" editorial mentions Mike Premus, W2OY. I am writing in his defense. I have been active as a ham in central New York since 1959, and did a lot of listening and CW because I did not have effective antennas downtown. I became interested in pursuing a career in electronics as a result of Sputnik and ham radio, so I was a space cadet like a lot of young people at the time. I had a wonderful opportunity to spend part of my career working on satellites later on.

Mike really was not a totally bad guy. The technical excellence of his station set an example for good engineering. He did speak out for proper operating practices and against such things as "phony phonetics"—not sticking to proper word lists on phone. But he was *never* boring. Maybe he did not do it in the most persuasive way. You cannot say that about many stations you can listen to on 75 meters after dark these days. Squabbles over rights to a frequency detract from the impression outsiders have of the hobby. In those days, SSB was relegated to the upper few kc of the 75-meter band, AM and CW were pervasive, and the "frequency wars" happened on the boundaries. In these squabbles you had your real "lids."

AM often attracts attention because it is so accessible to SWLs. The contemporary AM community has iconic members such as WA1HLR, W2VJZ, and W8VYZ, whose voices are also preserved in audio clips on the internet. Each, like Mike, contributed to the colorful history of the hobby. Some, such as Tim (HLR), have contributed to the preservation and operation of vintage equipment. Others have tweaked less than perfect solid-state gear to reasonable performance. People who have happened on the scene recently have made contributions to the state of the ham radio art by even marketing Class E AM rigs. Wouldn't it be great to see more homebrewing as a result of fresh ideas? Check it out at <<http://www.classerradio.com/>>.

Another well-known ham of that era was Clara, W2RUF, who was active in

the CW traffic nets. I was fortunate to have known her when a friend encouraged me give to the nets a try. A memorial is on the net at <<http://hamgallery.com/Tribute/W2RUF/w2ruf.pdf>>. She would not fall into the category of curmudgeons, since her work was more positive in presentation. And contrary to popular opinion, women *were* active contributors to ham radio in those days.

What I am trying to say is, there is—and always should be—a tension between the past and the future. This is why I am a member of FISTS, but supported the work of No Code International. FISTS does a lot of valuable training and promotes the use of CW. Riley Hollingsworth, K4ZDH, makes a brief reference to this past conflict. Sadly, the work of W5YI (Fred Maia, SK), Bruce Perens, and Guy Matzinger (now W1GUY) on behalf of the hobby through

NCI has almost been forgotten. In this case, the ARRL was the curmudgeon, fighting to the very end the best path to a new resurgence in the hobby. Another legendary icon is Wayne Green, W2NSD, publisher of *73 magazine* as well as a number of computer-related journals. His diatribes on the ARRL were a force for positive change and provided a refreshing contrarian take on a number of topics. Ham radio has benefited from all of the voices being heard.

In defense of a curmudgeon, the ARRL has done a lot of good for the hobby such as the WARC bands and protecting our access to the spectrum. It just made a bad call on the Morse testing issue.

We need a W2OY memorial site for good phone operating practice. So let's let W2OY rest in peace. He surely left a mark on the hobby. Good memories, too. 73, Janis, AB2RA

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Becoming a Beginner (and an Expert)

Thank You and 73 to K7SZ

“Learning Curve” editor Rich Arland, K7SZ, has decided that after 10 years of writing various columns for *Popular Communications*, *CQ VHF*, and *CQ*, it’s time to do something else with his free time. So we bid Rich a fond farewell and 73, with our gratitude for a decade of service to our readers. I will be filling in until a new “Learning Curve” editor has been named. — W2VU

I’ve got a secret for you ... I’ve been a ham for more than 40 years, and I’m still a beginner. And so are you. According to our reader surveys, on average, one *CQ* reader in 10 has been licensed

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

less than five years; and roughly six in 10 have been licensed for more than 25 years. But 100 percent of our readers either are, or can become, beginners at some aspect of amateur radio. In my 40+ years as a ham, I have never met a single amateur who has done absolutely everything the hobby has to offer or who has mastered all of ham radio’s different activities and adventures.

Many of us, of course, are experts—but in one or two selected areas. If you take a “big gun” in HF contesting and sit him down in front of a satellite station, or a portable microwave setup on some hilltop, chances are he will not intuitively know what to do in order to make contacts. In some cases, he might not even know how to program a VHF/UHF handheld.

What is an expert, anyway? To most of us, anyone who knows more about a subject than we do



Tom Tumino, N2YTF, of the Hall of Science Amateur Radio Club, talks with a young fairgoer at the 2012 World Maker Faire in New York City about home-built low-power ham gear. W2VU’s “tuna tin” station is on the table behind the hand key. (W2VU photos)



Once again, learning to solder was a big hit at the New York Maker Faire. This time, RadioShack® sponsored the activity as part of its return to its roots as a source for builders. We need activities like this at our hamfests, and not just in areas reserved for kids. There were as many adults as children trying their hands with soldering irons here, and at least as many women as men.

is an expert in that subject. If that contesting big gun who's never programmed a handheld before just got one for Christmas, and you—who are perhaps one of our 10 percent of readers licensed less than five years, but have a fair amount of experience in programming handhelds—offer to help, then you are an expert in his eyes. Another ham may be a “tower jockey” who's great at 150 feet, but who knows little about running a wire antenna in an attic. And one of the great things about ham radio is that there's an endless supply of new things to try, to learn about, to fail at, and to reach out to our fellow hams for help in learning to succeed. We are all beginners. But most of us are also experts ... even if we don't realize it.

A Beginner and an Expert

I have spent the past year or so learning about low-power (QRP) operating

“in the field” and slowly putting together a portable HF station with the goal of being able to hike to some remote location, pull a radio, battery, and antenna out of my backpack, and get on the air from “off the grid.” I have had (and needed) help at every turn from more experienced QRP/“Trail-Friendly” radio ops.

So far, I've gotten as far as a local park (one contact) and the Hall of Science Amateur Radio Club booth at the 2012 World Maker Faire in New York City, where I set up my kit-built “tuna-tin” station and end-fed halfwave dipole antenna. I made no contacts there but had learned enough about what I was doing to be able to demonstrate the station and talk about its capabilities. In that setting, I was an “expert,” because I knew more about it than the average attendee, even though I still consider myself very much a beginner overall. So in this case, I was both a beginner and an expert simultaneously. One other thing ... I had a blast!

(Thank you again to the HOSARC folks for the opportunity to share your booth.)

Become a Beginner

One of the problems ham radio has faced for a very long time is that some people have a tendency to think that whatever it is they do with the hobby and have done for a long time—whether it's DXing, contesting, public service, or operating QRP portable—is what the hobby is all about. And if they start getting tired of what they do, they decide that ham radio is no longer interesting for them. This afflicts newer hams as well as old-timers. Many a new ham who started out on a local repeater and grew bored with it has dropped out rather than seeking out some other aspect of our tremendously diverse hobby.

This is where clubs and magazines are incredibly valuable, because they expose us to the many varied parts of amateur radio. Read about the different

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As usual at a Maker Faire, it wasn't hard to find a fellow ham. Here, Robert Fitzsimons, EI2GQB, of the Dublin hackerspace TOG (note the radio antenna in the logo) demonstrates a giant-sized Arduino Uno. Also on hand were the Antique Radio Club of New Jersey (with a program on radio building for the 21st century) and the Brooklyn, New York-based NYC Resistor hackerspace, whose membership includes some of the Maker movement's leading hams.

things people are doing with ham radio, from high-altitude balloon launches to remotely-operated HF stations and so much more; go to club meetings where members and guests talk about the different ways they're using ham radio; discover something new that sounds interesting to you.

Once you've identified that new area of interest, look for books and articles on the topic. The Internet can be a tremendous follow-up resource as well. There are websites and groups for virtually everything that people do with ham radio and they're as close as the nearest search engine. Getting help, getting educated, and making new friends both on and off the air can be just a mouse click away.

So for the new year ... whether you're a new ham or an old-timer looking for a new challenge ... why not become a beginner again and try some new ham radio activity? And remember, once you learn just a little bit more about it than the other folks in your club or on your repeater, then you'll be not only a beginner but an expert as well!

Happy New Year and happy hamming! 73, Rich, W2VU

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The Emtech ZM-2 Tuner Kit

First, I'd like to wish all of my readers a very Happy New Year. With the coldest time of the year upon us in the Northern Hemisphere, many of us find it is our favorite time to spend inside working on kits. Remember that when it is cold outside, it is important to keep in mind proper ESD procedures to protect your static-sensitive parts when building. When dealing with kit radios, the question often comes up about what antenna tuner to use. After all, having a monster-size kilowatt tuner will suffice, but it is not as desirable as one designed for low-power portable use. A reliable tuner that can handle the wide variety of impedances presented by various types of antennas is important to kit builders, and having a tuner that is a kit is even better!

The Emtech ZM-2 tuner kit meets the requirements of impedance flexibility and portability, as

well as having indication of SWR that is not hard to work with. The ZM-2 will tune all kinds of antennas, including random wires, balanced open-wire feedlines, and coax-fed antennas. It is the proverbial "wet noodle" tuner, but for QRP power levels. The instructions for the ZM-2 are very detailed and suggest winding the two toroids first to get that task out of the way. What is even more interesting is that for those who are adverse to winding toroids, Emtech has an option to buy the kit with the toroids already wound for an extra \$9.25. If you choose to wind them yourself, winding the two toroids is not difficult, as the toroid cores are relatively simple. Just take your time to read the directions and double-check your work each time you add a wire. One of the toroids serves as the coupling transformer to measure SWR, while the other serves to perform impedance-matching duties. The LED SWR indicator in the ZM-2 is taken from the original design by Dan Tayloe, N7VE, which has become popular in many other kits.

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Kit contents as packaged. Notice the large toroid and multiple colors of wires.

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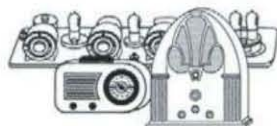
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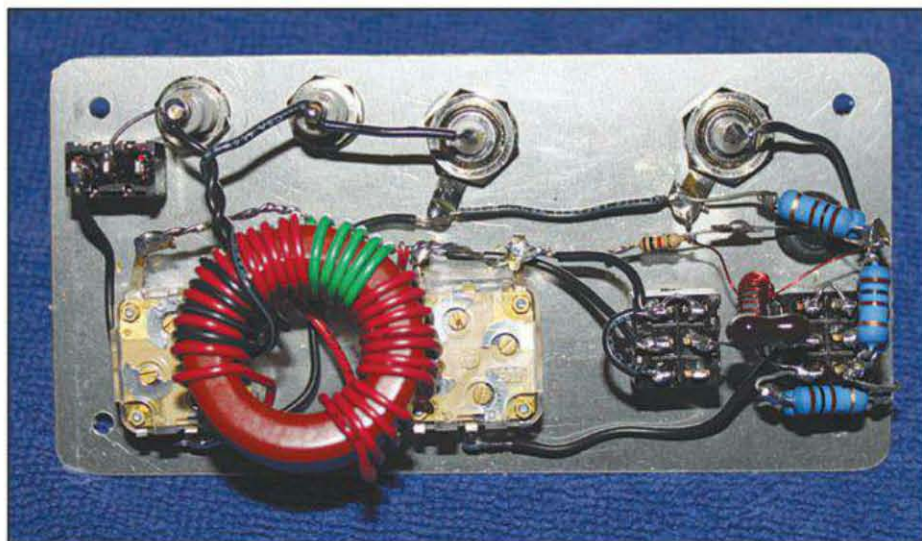


Unlike most antenna tuners, there are no switchable inductors in the ZM-2. There are just the two variable capacitors and a switch that allows you to switch in additional capacitance, if needed on 80 meters. Another switch allows you to tune a random wire instead of a balanced line.

The kit comes with an adhesive decal for the front-panel markings, and a spare decal is provided should you mess things up, like I did, by scratching one of the markings off when installing a switch. The case and front panel come pre-drilled and punched and ready to go. Since there is no PC board in this kit, all of the wiring is point-to-point. After the toroids are wound, you place the decal on the front panel and then mount the components needed on the

front panel. The other parts mount to the front-panel components, and you use the extra black wire supplied to make the rest of the connections. These connections do not need to be made in any particular order, but pay close attention to the diagrams to see where each part needs to be to prevent shorts when placing the finished front panel in the case. I simply followed the three supplied diagrams in their order to get the parts mounted and wiring completed. You will spend about an hour winding the two toroids and preparing their leads and a few minutes more preparing the front panel for the label and trimming the label and holes once installed. Be sure to have a sharp X-acto® type hobby knife to work with the label.

The final assembly for me was plac-



Front panel completely wired with the large toroid in place.



The Emtech ZM-2 completed in the supplied case.

ing the large toroid behind the two tuning capacitors. I recommend that being the last part of the project, as it covers a lot of connections that need to be made. Also, you might find yourself soldering a wire over one already in place as you make your connections. I minimized this by looking ahead at the diagrams to see where the large toroid, as well as other components and wires, was to be placed.

I believe that this kit can be completed by many builders in one evening, but if you take your time, it might take two evenings or a nice afternoon. I recommend taking your time and enjoying the process of building this tuner. Once completed, follow the directions carefully when using this tuner, as it is designed to be used exactly as directed. This includes being careful to turn the link switch to ground when tuning coax-fed antennas and turning it off when tuning a balanced feedline. The tuning is rather sharp, so be careful when turning the knobs, knowing that they interact, so retune each after the other is tuned to get your best match. I got mine into the ballpark by using receiver noise and then followed with the quick tune-up procedure. The best match is indicated when the LED dims or goes out with 5 watts or less signal on the input.

Without a switched inductor, this tuner tunes very quickly and also always presents at least a 2:1 SWR in the tune mode to your transmitter to protect sensitive QRP output stages. Also keep in mind that although a tuner makes your transmitter happy by presenting a correct load to it, you may not be radiating as much RF as you can. Always be sure your antennas are tuned and you have good feedline and a good ground or counterpoise for best results.

The ZM-2 is available from Emtech at <<http://emtech.steadynet.com>> for \$65 including shipping in the U.S. and Canada. You have a choice of BNC or SO-239 connectors, and for \$9.25 extra you can have the toroids pre-wound.

Finally, when building a kit, be sure to always keep your parts safe from being disturbed by unwanted visitors, pets, and other hazards. There is nothing worse than coming back to a kit under construction with a cat nearby and finding your parts strewn all over.

If you have any suggestion for currently available kits that should be covered in this column, let me know and I'll look in to them. Enjoy all of the fun winter contests and keep building!

73 de Joe, KØNEB

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New Mini-SSB Rigs and Running Rings Around Your Vertical

Happy New Year and I hope you found some new radio toys under the tree to get 2013 off to a good start. We'll get started this month with a couple of new portable SSB transceivers, followed by help for guying vertical antennas, components for builders, an interactive catalog, and a hands-on kit for learning about digital logic.

MFJ Adventure Radios™

MFJ has added two new bands to its Adventure Radios™ line of not-quite-QRP portable single-band HF transceivers. The MFJ-9417 (photo A) gives you 12 watts PEP of single-sideband (SSB) voice on 17 meters (18 MHz) as well as CW capability; and the MFJ-9412 is the 12-meter version, delivering 20 watts PEP on 24 MHz. Both radios feature MFJ's exclusive "ConstantCurrent"™ syllabic speech processing for extra audio punch on transmit, as well as a superhet receiver with a double-balanced mixer and low-noise front end to reduce intermod.

The radios are lightweight and tiny, measuring just 6.5 inches wide by 2.5 inches high and 6 inches deep. However, the receive audio is anything but tiny, with a half-watt of audio delivered through a 3.5-inch speaker mounted on the radios' top side. These little rigs also feature an analog S-meter (which doubles as a speech processing level meter on transmit), analog tuning, and an FET switch to key an external amplifier. If you're not running an amp, then the radios can be powered by a 2-amp AC supply or a 12-volt DC battery. A handheld dynamic microphone is standard, along with a jack for plugging in your favorite key for working CW.

As with everything else from MFJ, the 9417 and 9412 are covered by the company's NoMatterWhat™ one-year limited warranty. List

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prices for these little transceivers are \$269.95 for the MFJ-9417 and \$289.95 for the MFJ-9412. For more info, visit the MFJ website at <www.mfjenterprises.com>.

DX Engineering Guy Rings

Have you ever wondered how you can securely guy a vertical antenna made from telescoping sections without affecting the antenna's performance? DX Engineering has an answer, with its new set of non-conductive guy rings (photo B) designed for rope guying of most verticals made from aluminum tubing, including DX Engineering, Hustler, and others.

The guy rings are made from glass-reinforced, UV-resistant black poly-resin material that the company says is "virtually impervious to extreme outdoor conditions and mechanical stress." Each ring has holes for up to six guy ropes, with no sharp



Photo B— A set of guy rings from DX Engineering makes it easy to secure vertical antennas made from telescoping aluminum tubing elements. (Photo courtesy of DX Engineering)



Photo A— The MFJ-9417 is one of two new additions to MFJ's Adventure Radio™ line of portable low-power SSB transceivers. It covers the 17-meter band, while the MFJ-9412 operates on 12 meters. (Photo courtesy MFJ Enterprises)



Photo C— Installing the DX Engineering guy rings is easy. Simply slide each one over the appropriate-sized element and let it rest on top of the next larger section. (Photo courtesy of DX Engineering)

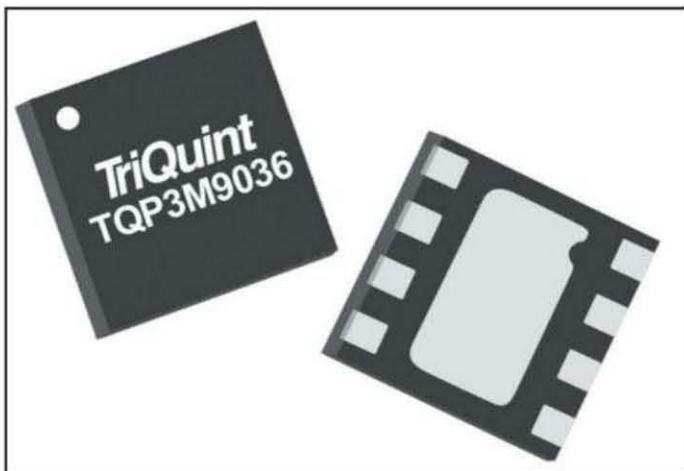


Photo D— The TriQuint Semiconductor TQP3M9036 low-noise amplifier is one of three new products introduced recently by RFMW, Ltd. (Photo courtesy RFMW, Ltd.)

edges to cause catches in the ropes. The set contains five rings, with one each designed to fit 0.75, 1.0, 1.25, 1.50, and 2.0-inch outside diameter (OD) aluminum tubing, so you can use whichever ones are appropriate for the thickness of your antenna. They simply slide over their respective tubing size and seat firmly against the top of the larger section below (photo C). List price is \$7.95 per kit of five rings. For more information, go to <www.dxengineering.com>.

New Components from RFMW

RFMW, Ltd., has added a new transistor, a low-noise amplifier, and an RF switch to its ever-growing line of microwave components. The transistor is the T1G4003532-FL from TriQuint Semiconductor. It operates from DC to 3.5 GHz and puts out up to 37 watts. The FL is a flanged package that can be bolted down. There is also an FS model without the flanges. RFMW says the 3532 is ideal for radars and communications systems requiring high gain and high efficiency.

Also coming from TriQuint is the TQP3M9036 low-noise amplifier (photo D), covering 400–2000 MHz and producing 19 dB of gain with a 0.45-dB noise figure. It requires only bypass/blocking capacitors and a bias inductor for operation—no matching components needed.

Finally, the RFSW1012 switch from RFMD is a single-pole, double-throw (SPDT) RF switch that operates between 5 MHz and 6 GHz and can handle up to 4 watts of RF power (over 500 MHz). Designed to operate in either 50- or 75-ohm environments, the switch has an insertion loss of only 0.3 dB and features 37 dB of isolation.

More information on these products is available at <www.rfmw.com>, or you can contact the company by postal mail at 90 Great Oaks Blvd., #107, San Jose, CA 95119, by phone at (408) 414-1450, or by e-mail at <info@rfmw.com>.

Pasternack Interactive Catalog

Another supplier of RF and microwave products—Pasternack Enterprises, Inc.—has introduced an interactive version of its product catalog. The company says the interactive catalog contains all of the same content as the print version but has added features to make searching and purchasing easier. For example, you can zoom in on a product photo or link directly from a catalog listing to the respective product page on the Pasternack website. Viewers may also move freely back and forth between the catalog and their

online shopping cart. Pasternack Marketing Manager Shaun Gameroz tells *CQ* that the interactive catalog “is proving to be very useful to our growing population of online and mobile customers,” and he says it is “simply another helpful tool we are offering our customers.” The catalog may be accessed from Pasternack Enterprises’ home page at <<http://www.pasternack.com/>> or viewed directly at <<http://www.pasternackcatalog.com>>.

LogicBlocks Kit for Computer Education

SparkFun Electronics has introduced the LogicBlocks Kit, designed to help students and beginners learn the basics of digital logic, the basis of digital computing. Understanding digital logic is essential to understanding how circuits and hardware communicate within a computer, according to the company.

SparkFun says the kit includes various blocks—such as Input, AND, OR, and NOT blocks—that snap together to create different strings of logic. Lindsay Levkoff, the company’s director of education, says, “The different sequences of the blocks’ orientations allow students to actually see the logic rather than just having it be a conceptual building block.” The kit is priced at \$39.95 and can be ordered from <<https://www.sparkfun.com/products/11006>>. Additional information is available at <www.sparkfun.com/LogicBlocks>.

App of the Month

VHF Rovers and other hams who want to know their precise locations and how that translates into the Maidenhead Grid Square system should check out the *HamSquare* app for iPads and iPhones. This free app uses the GPS receiver in your mobile device to pinpoint your location and displays your six-character grid locator (e.g. FN20vs) as well as your latitude and longitude and a margin of error on your screen. It is very handy for VHF contesters, microwave hilltoppers, and others who depend on grid locators for contacts and determining distances covered. *HamSquare* is available in the iTunes App Store.

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.

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The New 40-meter Yagi Adventure



A beautiful view ... and mountains, too! The view across the Rogue River valley from the base of W9KNI's 40-meter tower, showing his second tower supporting a 30-meter Yagi and a Bencher Skylark. (Photos courtesy of the author)

About five years ago, I put up a 40-meter Yagi at my new QTH in Grants Pass, Oregon. The Yagi had three elements, each about 47 feet or 15 meters long, using high "Q" loading coils. Boom length was about 36 feet, or 8.5 meters. The basis of the design had been developed by W6ANR and had been rendered into reality by my close friend and neighbor Rich, K7ZV. The 40-meter design had been scaled down from Rich's spectacularly successful 80-meter Yagi.

The combination of the antenna and the QTH quickly proved to be very good. Especially in the fall and winter months, Dawn Patrol provided some fascinating DX, both long path and short path. Most of the time, when paths peaked for me, I was hearing the weak DX signals better than anyone else on the West Coast. I did not always win in the pile-ups; several stations often beat me out. I was running an Amertron AL-1200 with 1500 watts output and being beaten out by one or two "S" units, but the other stations typically had a lot more trouble copying the DX than I did.

However, as one friend put it, the stations beating me out were known to be using final amplifier tubes that had "handles." (Tubes with handles start at 5000 watts plate dissipation and go up from there.). Needless to say, I was well satisfied with the antenna.

Before I go further, let me also describe the site. Grants Pass lies in southwestern Oregon, along

the banks of the Rogue River. The river valley is surrounded by mountain peaks, some of our front range going to as high as 4700 feet (1800 meters) above sea level, with taller peaks behind them. The floor of the valley is at about 850 feet (275 meters) above sea level. My home is on the side of a hill coming up from the valley floor, with the home site being about 1400 feet (450 meters) above sea level, and thus about 550 feet (175 meters) above the valley floor. The top of the hill is about another 50 feet (16 meters) higher behind the house, and the tower for the Yagi is on top of the hill. While the mountains surrounding my hill do go much higher, they are six or seven miles (about ten km) away, so they do not trap my signals. While I have no negative horizon, neither do I have significant obstructions.

The tower is a US Tower motorized crank-up, a magnificently engineered and manufactured tower that retracted is about 24 feet (7.5 meters) high and is 89 feet (28 meters) high when fully extended, and capable of holding large antennas such as 40-meter Yagis.

Since the feed line is about 650 feet (200 meters) from the shack, I use 7/8-inch (22 mm) cable TV hard line for a feed line. This coax has very low loss at HF frequencies, 72-ohm impedance, and was made up of roll ends obtained from a cable TV operation in California. Homemade splices give me the needed length. Broadband impedance transformers at each end, purchased from Array Solutions, convert the impedance to 50 ohms.

* e-mail: <bob@thelochers.net>

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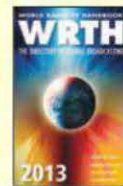
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The only real problem with my antenna was its bandwidth. It was good for about 75 kilohertz, making it almost unusable for SSB. Since 40-meter SSB has become an active DX band, this was becoming something of a handicap.

A New Design

Rich, K7ZV, developed a new design for 40 meters using EZNEC-4. This antenna would use the same style of elements, with the high-Q loading coils, but have a longer boom and an additional element. The primary purpose of this added element was to act as a second driven element, fed out of phase with the other driven element to broaden the bandwidth of the antenna. Further, the boom would be lengthened by about 6 feet (2 meters). The antenna model that Rich developed would offer wide bandwidth and slightly more gain than the existing three-element antenna. We decided to modify my antenna to the new design. Additional materials were procured, and Rich built the new additional element.

Last fall Rich and I took down the 40-meter Yagi. We retracted the tower and then lowered the antenna using a rope going through a pulley set on top of the mast. The antenna came down fairly easily.

Events then intervened, though. The weather began to deteriorate, with a

good deal of rain. In the end, it was several weeks before we were able to get the modifications effected and installed.

Finally, during the third week of November the modifications were finished and the antenna was ready to go back up. While the weather was generally not very good for tower work, thanks mainly to a series of rainstorms we finally got a day of fairly clear and dry weather. We set up the antenna at the base of the tower and attached the rope, bringing it down from the pulley to another pulley at the bottom of the tower and away. Rich owns a small tractor, and we set that up to do the actual pulling on the rope. We had a steering harness attached to the antenna. My son Rob, W7GH, helped with the steering.

We started to pull the antenna up. The rope was not running smoothly. At least a part of the problem was that the rope had to run over itself due to the arrangement of the pulley, which could not easily be changed. However, we were confident everything would hold. Nonetheless, Rich, who was driving the tractor and also acting as team leader, cautioned us to be sure we were not immediately under any of the elements, and also cautioned me to stand clear of the rope coming away from the tower.

Slowly the antenna went up, jerking in response to the binding on the rope. At a height of about 20 feet (6 meters),

suddenly the rope broke! In an instant the antenna was on the ground. My glasses had gone flying. I looked around and everyone was OK. Rob had gotten slapped with the tip of an element as it went by but had no personal damage other than a little smarting. Rich was entirely clear. I eventually figured out that my glasses must have been caught by the broken rope as it went by me at a very considerable velocity. I never felt anything, and fortunately my glasses and I were undamaged.

We stood there in shock for several minutes. Frankly, we were very fortunate that there was no injury. One or more of us could easily have been severely injured or killed. Obviously, we were quite dismayed.

After a few minutes of calming ourselves down, we inspected the damage to the antenna. Actually, it was amazingly minor. All four element tips on one side needed replacement, as well as one interior portion of a single element. None of the loading coils were damaged at all, nor were the boom, the mounting hardware, and the feed system. One thing had helped. We had stuck a 4" x 4" (10 cm x 10 cm) post through the tower to support the boom of the antenna before it went up and that was still in place. The post was aged and weathered and not in the best of condition but served our purpose.



The new 40-meter Yagi where it belongs—high in the air!

When the antenna came down, the boom-to-mast plate struck that post and broke it. The broken part of the post then slammed down to the ground at an angle, forcing the antenna boom away from the tower just a little, but enough that the boom did not strike the concrete base of the tower, and at the same time significantly cushioned the impact of the antenna. In every possible respect we were extremely fortunate.

Needless to say, we were a bit shaken by the turn of events and called a halt to any further antenna work for the day, other than to take an inventory of what pieces of aluminum tubing would be required to replace the damaged pieces.

And then the rains began.

Six days and 3 inches (7.5 cm) of rain later, weather conditions improved, with a dry day and minimal morning fog that was slowly clearing. Rich showed up with some extra aluminum tubing and we began repairs. Two hours later everything was finished. The weather continued to improve. After a break for lunch, Rich and I set out to raise the antenna. Rob was unavailable to help us that day.

Rich in particular had done a lot of thinking on how to set up the raising procedure. He has had a good deal of experience using ropes, blocks, and pulleys. Also, he had a replacement rope that was heavier and stronger, a nylon or Dacron rope with a 9/16-inch diameter (14 mm) and a braided cover, offering more than twice the strength of the original. This time the rope was routed differently using a tree stump on the other side of the tower to hold a block, which both evened the downward pressures on the mast and, more importantly, kept the rope from binding on itself.

An hour after we had finished lunch, the antenna was on top of the tower.

The rest of the job went very smoothly, although it was a bit time-consuming. Bolts were tightened, boom strut wires were adjusted and then safetied with wire through the turnbuckles, coax was looped, etc., and the job was finished. The ropes were removed, the ladder to the top of the tower was unlashed, and down I came, tired for sure but in very good spirits. We did a partial cleaning of the site, raised the tower—motorized towers are a wonderful invention—and then headed for the shack for that first critical test.

On the Air

First, SWR—outstanding! Less than 1.5:1 across the whole 40-meter band (7.0 to 7.3 MHz). The CQ WW CW con-

test was on, so I turned the antenna to Europe and listened. I was hearing European signals, but frankly they were not all that good. I called several stations with limited success. My first QSO

with the new antenna was an eastern European, and he was not easy, but he made me feel better. He was 579 here, and I know for a fact that contest stations in his country often use “Tubes

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with Large Handles.” The band sounded a bit strange, and I suspected a bit of a solar issue.

And so it proved to be: A contest wrap-up complained about the poor band conditions on Saturday afternoon, which was right when I was testing the antenna.

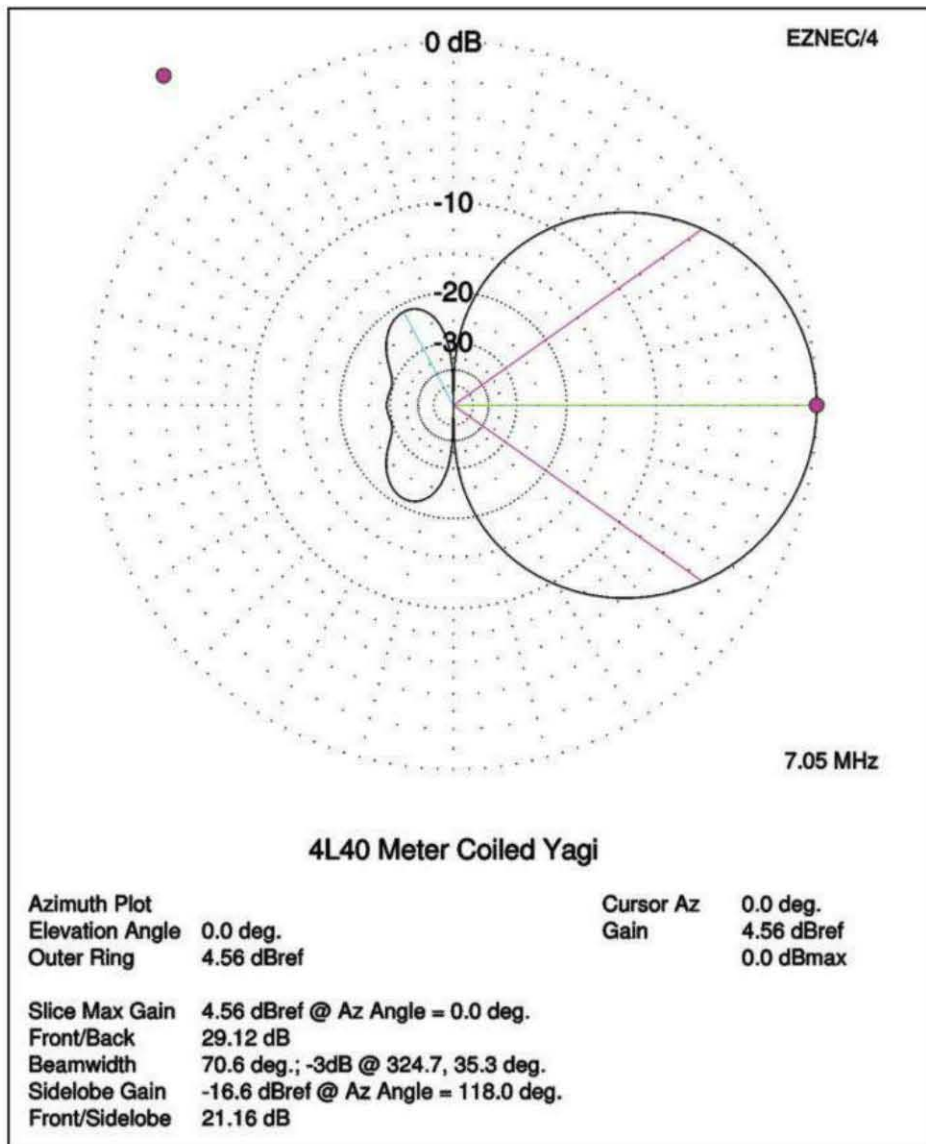
In any case, I am beginning to develop some experience with the antenna. It is still very much “early days” with the Yagi, but my limited experience thus far has entirely validated Rich’s design. Front-to-back and front-to-side checks show about 20 dB front-to-back ratio, and about 25 dB front-to-side. Compared with a lot of antennas, these numbers would not seem all that spectacular; however, this antenna was designed to optimize forward gain, *not* front-to-back or front-to-side. Also, significantly, the numbers are very close to the predicted model, which further validates Rich’s design.

I have now made some QSOs with the antenna, including excellent long-path QSOs into Europe, as far west as Ireland, with fine strong signals. I had success working 8Q7DV in a big pile-up, and even better, easily worked 5Z4HW in a simplex pile-up. (OK, I admit it; I did move off frequency 200 Hertz.) The antenna is working very well.

The real point of this article, however, is *Safety First*. We were very fortunate indeed that the rope break did not lead to serious injuries. We were being careful up to a point, but frankly we also had a good deal of luck. We could easily have been injured, maimed, or killed.

Post-Incident Analysis

A post-incident analysis: The original rope was a 3/8-inch (or about 10 mm) rope made of some poly material in a three strand configuration. The rope had been stored carefully in a container and not exposed to sunlight when not in use. It had been used successfully before in raising and lowering the earlier 3-element 40-meter Yagi, and had been regularly used with my Yagis for higher bands, none of which, however, weighed more than about 70 pounds (32 kg). At this point, the supplier of the rope was unknown, as was the exact material from which it was fabricated. However, some internet research suggests it had a safe load rating of about 250 pounds (115 kg), at least when new. The exact weight of the new 40-meter Yagi is not known, but my estimate is that it is in the area of 150 pounds (70 kg).



EZ-NEC plot of predicted performance for Bob’s new 40-meter Yagi. On-the-air results show the antenna operates very close to the predictions.

Frankly, had I done this research on the rope strength earlier, I am not sure I would ever have used it for the 40-meter Yagi. I can guarantee I never will again! The margin of the safe load was simply too close to the actual load. The jerking of the load caused by the rope having to run over itself undoubtedly caused peaks in the stress load that led to the failure.

Another aspect of rope load safety is confusing. Most rope is rated for tensile strength—the ultimate steady-state load it will carry without breaking. Unfortunately, this number, while important, can be very misleading. It offers no room whatsoever for binding, jerks, or any kind of deterioration. In fact, industry standards derate the tensile strength rating by a factor of better than seven times for a safe load! Therefore,

a rope with a tensile strength of 1,000 pounds is considered to be safe to use for a load of about 135 pounds! To be safe, you should always add an additional safety factor.

It was a very sobering experience, one I know I learned from, and I hope all who read this will gain from it as well. *If you are working on a tower project—trust nothing!*

However all’s well that ends well. To say my thanks to Rich, K7ZV, simply does not do my friend justice. This antenna is his creation. I feel like the pilot of a plane. I know how to fly it well, but it would never have flown at all without the efforts of all the people who built it and those who maintain it. For this project, Rich is all those people.

73, Bob, W9KNI

Marshmallows and Chasing DX

BY RANDY JOHNSON, * W6SJ, GUEST COLUMNIST



Forty years ago, psychologists gathered a group of 4-year-old kids.¹ The kids were given a choice between getting one marshmallow immediately or waiting 15 minutes and getting two marshmallows. This was basically a test of the desire for immediate gratification versus the ability to enable delayed gratification for a greater long-term reward. Psychologists now realize that self-control and willpower are interrelated and just part of the series of personality traits that end up determining a person's character.

One learns correct social behavior from some "controlling influence." Parents, teachers, bosses, peers, and the like all are there to tell you when your behavior has strayed beyond the acceptable. What you learn then is that negative behavior has negative consequences. Paraphrasing Aristotle, the only way human beings develop true character is through constant practice, until the ethical virtue itself becomes habit. Ultimately, he said people engage in virtuous behavior even if no one is watching.

However, it doesn't always work out that way. Many of us have noticed that peoples' inability to self-regulate their behavior, including the need for immediate gratification, is a major social problem today. We hams are not immune to those same forces.

In a hobby such as ham radio, there really is no similar controlling influence. We rely upon the ability of the other guy to regulate his own behavior. A ham may be a perfect gentleman, courteous and polite, on the job and in social situations, but when he gets in a DXpedition pileup, the self-control he exhibits elsewhere in his life may disappear. He gives into the impulse for the immediate gratification of a contact—right now—regardless of what it takes to get it. That is what adds to the chaos of a pileup.

Unless the DX operator disciplines the pileup through his/her techniques, many of those calling lack the control mechanism that we get from various authority figures in our lives. If you act like a jerk in a pileup, propagation is generally such that the people who know you best, the ones in your local club who might tell you to shape up, can't hear you. They don't know you are being a jerk. The people who *can* hear you being a jerk are one



skip away and they probably don't know you. Thus, bad behavior does not result in negative consequences.

You would think that the characteristics of intelligence and grit required to learn the technical aspects of radio and to get a license should mean that most hams' innate characters would have strong willpower. Why, then, is it that enough hams "fall off the wagon" so as to make pileup behavior a problem?

How Your Behavior is Perceived by Others

It has been noted before that, as a group, hams sometimes tend to be less sensitive to the feelings of others than the overall population. Those who fit that description simply may not have the built-in social mechanisms of seeing their own behavior and understanding, or caring, how that behavior is perceived by others.

Consider this, though: Would you act differently if you knew that your calling in a pileup was being recorded and would be played at your next club meeting? Would the later embarrassment of peer pressure be a motivating factor to change your behavior?

Unfortunately, as much as we would like to think so, rational thinking has relatively little to do with the way humans actually make decisions. Neuroscientists and brain physiologists have learned more about the actual operation of the brain in the last two decades than they did in the last two millennia. No one in Michelangelo's time

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thought that our brains could process millions of small chunks of data every second. On a conscious level, we can't, but on a sub-conscious level, we can.

The rational brain understands that certain operating behaviors are counter-productive. However, it's not in control. Ultimately these subconscious decisions coalesce into habits based upon what behavior has led to success in the past. Sadly, for many, immediate gratification has ruled and has resulted in habits of poor operating practices, just as when it wanted the marshmallow immediately. Even when hams who are guilty of poor behavior read this sentence, they won't think I am talking to or about them. *Wrong!*

Absent a force such as the ham police to "write tickets" when they see impolite, rude, or inconsiderate behavior, we have to rely upon each individual making decisions for him-

self. People with a strong sense of honor and self-control can say, "Maybe no one else will ever know what I am doing, but I will." It is that sense of character, of personal integrity, that results in proper operating procedures.

Changing Perceptions

Psychologists have also shown an effective way to change this behavior: Develop a different perception of the norms that govern our behavior. Widespread agreement about what is acceptable behavior can, with time and energy, change habits.

It is the desire to harness that energy that resulted in the *DX Code of Conduct* based upon encouraging a high standard of ethical behavior. If we all do our jobs right and get

The WPX Program

CW

3322.....K6ND 3334.....W4CWA
3332.....JO1VRV 3335.....JA2FGL

SSB

3186.....K6ND 3202.....K5BUD
3191.....IT9ABN 3203.....JA2FGL
3200.....JG4OOU 3205.....KE3O
3201.....WQ5N 3206.....JM1LPN

Mixed

2311.....K6ND 2343.....JE2UFF
2319.....EA7ZY 2344.....K5BUD
2332.....JO1VRV 2345.....G3SVQ
2338.....K7ULS 2346.....JA2FGL
2339.....N2WK 2348.....IV3XZG
2340.....WQ5N 2349.....WF2S
2341.....W4EY 2350.....JM1LPN
2342.....IT9CLU 2352.....KG5RJ

Digital

122.....EA7ZY 128.....K5BUD
125.....JO1VRV 129.....WF2S
127.....HB9ARI

CW: 400 KB8VCV. 450 JO1VRV. 500 SM2LKW. 600 JA2FGL. 1450 K6ND. 2050 YO9HP.
SSB: 500 K5BUD, JM1LPN. 550 IT9CLU. 1050 IT9ABN, 1150 JG4OOU. 1500 K6ND. 2200 YO9HP
Mixed: 450 IV3XZG. 500 WQ5N, G3SVQ, K7ULS. 550 K4JKB. 600 IT9CLU, JM1LPN. 700 K5BUD. 800 JO1VRV. 900 JA2FGL, KG5RJ. 1150 WF2S. 1850 N2WK. 2200 K6ND. 3000 YO9HP. 3400 K9UQN. 3550 K1BV.
Digital: 500 HB9ARI, JO1VRV. 800 WF2S. 1300 YO9HP.

160 Meters: K6ND, W4CWA
80 Meters: K6ND
40 Meters: K6ND
30 Meters: K6ND
20 Meters: K6ND, WQ5N, K5BUD
15 Meters: K6ND, K5BUD
12 Meters: YO9HP
10 Meters: K6ND, K5BUD, K7ULS, YO9HP
6 Meters: YO9HP

Asia: K6ND
Africa: K6ND
Europe: K6ND, K4JKB, WQ5N, IT9CLU, K5BUD, JE2UFF, WF2S
Oceania: K6ND
North America: K6ND, K5BUD, K7ULS
South America: K6ND

Award of Excellence with 160 Bar: K6ND
30M Bar: K6ND

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MDD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GO, W4BQY, I0JX, WA1JMP, K0JN, W4VQ, KF2O, WB8CNL, W1JR, F9RM, W5UR, CT1FL, WA4QMQ, WB8LC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YLW4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SM0DJZ, DK5AD, WD9IIC,

W3ARK, LA7JO, VK4SS, I8YRK, SM0AJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DE0DXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK, SM6GST, VE1NG, I1JQJ, PY2DBU, H8LC, KA5W, K3UA, HA8UB, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, N3XX, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YB0TK, K9QFR, 9A2NA, W4UW, NX0I, WB4RUA, I6DOE, I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DE0DAQ, IHWXY, LU1DOW, N1IR, IK4GME, VE9RJ, NN1N, HB9AUT, KC6X, N6IBF, W5ODD, I0RIZ, I2MQP, F6HMJ, HB9DDZ, W0ULU, K9XR, JA0SU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, K0IFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, I7PXV, VE2UW, DF7GK, S57J, EA5BM, DL1EY, DJ1YH, KU0A, VE2UW, 9A9R, UA0FZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RA0FU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, K4LQ, K0KG, DL6ATM, VE9FX, DL2CHN, W2OO, A16Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B, K0DEP, DK0PM, SV1EOS, UA0FAI, N4GG, UA4RZ, 7K3QPL, EW1CQ, UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR, UT3UY, W5AVGI, UT9FJ, UT4EK, K9UQN, UR5FEO, LY2MM, N3RC, OH3MKH, RA3CQ, UT3IZ, S55SL, RU3ZX, YO9HP, RA3DNC, K8ZT, KE5K, JH8BOE, TF8GX, S58MU, UX1AA, AB1J, DM3FZN, AG4W, UA3QNS, RX3AGD, WB5JID, LY3W, LY5W, RW4WZ, VO1CV, DK8MCT, HB9DDO, DL4CW, W9RPM, IZ3ENH, DM2DXA, EY8MM, K4HB.

160 Meter Endorsements: N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, WB8CNL, W1JR, W5UR, WB8LC, K9BG, W1CU, G4BUE, LU3YLW4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SM0DJZ, DK5AD, W3ARK, LA7JO, SM0AJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DE0DXM, UR2QD, AB9O, FM5WD, SM6GST, I1JQJ, PY2DBU, H8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N6JV, ONL-4003, W5AWT, N3XX, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YB0TK, K9QFR, W4UW, NX0I, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, NN1N, W5ODD, I0RIZ, I2MQP, F6HMJ, HB9DDZ, K9XR, JA0SU, I5ZJK, I2EOW, KS4S, KA1CLV, K0IFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, DJ1YH, KU0A, VR2UW, UA0FZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, S51U, RA0FU, CT4NH, EA7TV, LY3BA, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU, K0DEP, DK0PM, SV1EOS, N4GG, UA4RZ, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR, UT3UY, W5AVGI, UT9FJ, UR5FEO, N3RC, UT3IZ, RU3ZX, YO9HP, RA3DNC, K8ZT, KE5K, JH8BOE, S58MU, UX1AA, DM3FZN, AG4W, UA3QNS, RX3AGD, LY3W, LY5W, VO1CV, HB9DDO, DL4CW, W9RPM, IZ3ENH, DM2DXA, EY8MM, K4HB.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage for airmail) to "CQ WPX Awards," P.O. Box 355, New Carlisle, OH 45344 USA. Note: WPX will now accept prefixes/calls which have been confirmed by eQSL.cc and the ARRL Logbook of The World (LoTW).

*Please Note: The price of the 160, 30, 17, 12, 6, and Digital bars for the Award of Excellence are \$6.50 each.

5 Band WAZ

As of November 1, 2012, 892 stations have attained the 200 zone level and 1793 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):

K8JRK, 199 (26)	IN3ZNR, 199 (1)
UW0LT, 1999 (2 on 40)	IK4CIE, 199 (1)
N4WWW, 199 (26)	JK1BSM, 199 (2)
W4LI, 199 (26)	RW0LY, 199 (2 on 40)
K7UR, 199 (34)	JA1CMD, 199 (2)
IK8BOE, 199 (31)	EA5RM, 198 (1, 19)
JA2IVK, 199 (34 on 40)	N8LJ, (17, 24)
IK1AOD, 199 (1)	EA5BCX, 198 (27, 39)
VO1FB, 199 (19)	G3KDB, 198 (1, 12)
KZ4V, 199 (26)	JA1DM, 198 (2, 40)
W6DN, 199 (17)	9A5I, 198 (1, 16)
W3NO, 199 (26)	G3KMQ, 198 (1, 27)
RU3FM, 199 (1)	N2QT, 198 (23, 24)
N3UN, 199 (18)	OK1DWC, 198 (6, 31)
W1FZ, 199 (26)	W4UM, 198 (18, 23)
SM7BIP, 199 (31)	US7MM, 198 (2, 6)
N4NX, 199 (26)	K2TK, 198 (23, 24)
EA7GF, 199 (1)	K3JG, 198 (24, 26)
JA5IU, 199 (2)	W4DC, 198 (24, 26)
RU3DX, 199 (6)	F5NBU, 198 (19, 31)
N4XR, 199 (27)	W9XY, 198 (22, 26)
HA5AGS, 199 (1)	KZ2I, 198 (24, 26)
N5AW, 199 (17)	W9RN, 198 (26, 19 on 40)
JH7CFX, 199 (2)	W5CQW, 198 (17, 18)
RA6AX, 199 (6 on 10)	UA4LY, 198 (6&2 on 10)
RX4HZ, 199 (13)	JA7XBG, 198 (2 on 80&10)
S58Q, 199 (31)	JA3GN, 198 (2 on 80&40)
K8PT, 199 (26)	N4GG, 198 (18, 24)
N8AA, 199 (23)	K4JLD (18, 24)
IZ1ANU, 199 (1)	

The following have qualified for the basic 5 Band WAZ Award:

SP8HKT (180 zones)

5 Band WAZ updates:

UX1AA (200 zones)
K2EP (196 zones)
N7XM (200 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, P.O. Box 449, Wiggins, MS 39577-0449. 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 WAZ Program

20 Meters SSB	
1214.....	WB8MR
10 Meters CW	
204.....	WB8ZRL
15 Meters CW	
350.....	WB8ZRL
17 Meters CW	
90.....	S55ZZ
20 Meters CW	
616.....	WB8ZRL
80 Meters CW	
96.....	WB8ZRL
160 Meters	
410.....	VA3EF (40 zones)
411.....	R9SG (31 zones)
160 Meter Updates	
UX1AA.....	(40 zones)
SP7GAQ.....	(35 zones)
N7XM.....	(37 zones)
All Band WAZ Mixed	
8943.....	JA4DHR
8944.....	F4FFH
8945.....	AA6RE
8946.....	R3BM
8947.....	KP4GC
8948.....	CU7MD
8949.....	N4HB
SSB	
5232.....	WA8UEG
RTTY	
234.....	JH1LAY

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, P.O. Box 449, Wiggins, MS 39577-0449. 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>.

CQ DX Awards Program

SSB	
2591.....	W9RPM
2592.....	WA4RD
2593.....	SM7ZDC
2594.....	LA5UJ
2595.....	AB7LA
CW	
1135.....	W9RPM
Digital	
63.....	W9RPM

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, Please make checks payable to the Award Manager, Keith Gilbertson. Mail all updates to Keith Gilbertson, K0KG, 21688 Sandy Beach Lane, Rochert, MN 56578-9604. We recognize 342 active countries. Please make all checks payable to the award manager. Photocopies of documentation issued by recognized national Amateur Radio associations that sponsor international awards may be acceptable for CQ DX award credit in lieu of having QSL cards checked. Documentation must list (itemize) countries that have been credited to an applicant. Screen printouts from eQSL.cc that list countries confirmed through their system are also acceptable. Screen printouts listing countries credited to an applicant through an electronic logging system offered by a national Amateur Radio organization also may be acceptable. Contact the CQ DX Award Manager for specific details.

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 listing 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, Keith Gilbertson. Mail all updates to Keith Gilbertson, K0KG, 21688 Sandy Beach Lane, Rochert, MN 56578-9604.

Mixed

K2TQC.....275	K0DEQ.....216	OK1AOV.....205	BA4DW.....188
W1CU.....244	K8SIX.....215	RW4NH.....203	HB9DDZ.....188
HA0DU.....240	W6OAT.....215	N4MM.....202	K8YTO.....186
VE7IG.....240	VE3ZZ.....214	W4UM.....202	K2AU.....183
HA1RW.....239	VE3ZZ.....207	IV3GOW.....201	K2SHZ.....182
VE3XN.....234	JN3SAC.....207	N5KE.....200	K1NU.....180
HA5AGS.....228	NI6T.....207	K8OOK.....198	W5ODD.....177
9A5CY.....227	HA5WA.....206	N4NX.....192	N0FW.....176
N8PR.....224	F6HMJ.....206	ON4CAS.....191	
HA1AG.....218	KF8UN.....205	HA9PP.....190	

SSB

W1CU.....224	K0DEQ.....192	JN3SAC.....177
W4ABW.....202	N4MM.....186	N0FW.....176
VE7SMP.....193	W4UM.....184	DL3DXX.....175

CW

DL6KVA.....233	DL3DXX.....203	HB9DZZ.....186	N7WO.....175
W1CU.....233	JN3SAC.....202	OK2PO.....184	
DL2DXA.....209	W4UM.....197	N4MM.....179	
K0DEQ.....207	OK1AOV.....196	N4NX.....177	

Digital

W1CU.....184

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the support of the worldwide amateur radio community, individuals, their clubs, and the national societies, we can hope that the presence of a strong, widely accepted standard of conduct will reaffirm that norm. Ultimately it will have a positive effect on those hams who are tempted to do something less than honorable. I encourage you to read the *DX Code of Conduct* at <www.dx-code.org> and make a conscious decision to abide by it.

It is also important to consider new hams, the ones who will replace us. How will they learn to behave? Hopefully they will learn from the best operators that being honorable is a more pleasurable experience than whatever pleasure is derived from giving into the impulse for immediate gratification. It is better to be honorable today, even if that means having to wait until tomorrow for the QSO.

Ironically, scientists recently have discovered that the chemical that feeds the brain and is responsible for higher willpower is glucose. When glucose levels are low, the brain will not function well in a process requiring mental effort. Thus, if you feel your willpower sagging, maybe you ought to have a marshmal-

low. With your willpower enabled, you will certainly feel a greater sense of pride when ethical operating practices get you into that DXpedition's log.

DX News

Norman Banks, 5B4AIF, plans to operate as E51E from Aitutaki Island (IOTA OC-083) between December 10, 2012 and January 5, 2013. He will be oper-

ating SSB and RTTY from 6 meters up to 80 meters with full legal power. There will be a 6-meter beacon active when Norman is not on the band, sending his phone number for texting him when the band opens. For more information, visit <www.aitutaki2012.com>.

Note

1. See References below.

References

The Stanford Marshmallow experiment was published in 1972 in the *Journal of Personality and Social Psychology* and may be downloaded (for \$11.95) from <<http://psycnet.apa.org/index.cfm?fa=buy.optionToBuy&id=1972-20631-001>>. There are also many references to the study on the Internet, notably <http://en.wikipedia.org/wiki/Stanford_marshall_experiment> and it has been used as the basis for lots of work since then. The comment by Aristotle came from a *New York Times* article, <<http://www.nytimes.com/2012/03/13/opinion/cultivating-character.html?scp=5&sq=dauid%20brooks&st=cse>>.

Other resources include the following books:

Willpower: Rediscovering the Greatest Human Strength, by Roy F. Baumeister and John Tierney (Penguin, 2011)

The Social Animal: The Hidden Sources of Love, Character, and Achievement, by David Brooks (Random House, 2012)

Thinking, Fast and Slow, by Daniel Kahneman (Farrar, Straus and Giroux, 2011)

The Power of Habit: Why We Do What We Do in Life and Business, by Charles Duhigg (Random House, 2012)

DX World Guide
By Franz Langner, DJ9ZB

Known throughout the DX and DXpedition world as a meticulous and tireless operator, Franz Langner, DJ9ZB, is also noted as one of the most knowledgeable individuals in Amateur Radio in terms of documenting DXCC entities. This is the third edition in his series of books bearing the title *DX World Guide*, first published in Germany in 1988, and then in a second edition, also in Germany in 1997. This edition is the first to use color throughout, and includes information on well over 300 DX entities. Whether used as a desk reference for the DXer of any level of proficiency or as a “wish book” for DXers just starting his or her DXCC journey, the new *DX World Guide* is a worthy and pleasant companion.

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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

66079A2AA	4228N6JV	34129A4W	2499VE6BF	1961W7CB	1347K6UXO	924IW9HII	682N8HM	620PI4DHV
6331K2VV	4216 ..WA5VGI	3379K1BV	2493I5RFD	1918NX0I	1329..DK8MCT	908.....K4JC	670WW3QB	616DL5JH
5956W1CU	4187 ...K0DEQ	3305 ..JH8BOE	2477 ..WD9DZV	1862VE9FX	1322AA4FU	825KD4W	662JA7OXR	607K3CWF
53039A2NA	4173W9OP	3276K9UQN	2476K5UR	1818KX1A	1269K5WAF	815KL7FAP	662SP8HK	600IK1RKN
5142EA2IA	4129 ...S58MU	3252W9IL	2445AB1J	1722 ..VE6BMX	1233K4HB	808W6PN	653KK3Q	600KB9OWD
4866N4NO	4074 ..YU7BCD	3231W2OO	2428N6QQ	1667SQ7B	1201IT9ABN	781V51YJ	650N3YZ	600K9OHI
4722YU1AB	4022N9AF	3184JN3SAC	2338I2EAY	1655SV1DPI	1116YU7FW	726K5IC	649RA9OO	
4646VE1YX	3967 ..ON4CAS	3007W2WC	2289N3RC	1593S55SL	1107PY2MC	725WK3N	647 ...PA0QRB	
4413KF2O	3966IK2ILH	2946YO9HP	2116A65B	1463NE6I	1075N6OU	723K0DAN	644KW0H	
4407S53EO	3816 ..WB2YQH	2922 ..OZ1ACB	2192N2SS	1462 ...DL4CW	10669A3ST	712IS0EO	636ZS2DL	
4344VE3XN	3811N8BJQ	2820W3LL	2133K0KG	1446DF3JO	1066 ...JA1CKE	707 ..W1E74OF	634K9OHI	
4313I2MQP	3628 ..SM6DHU	2544W6OUL	2100AG4W	1400NK0S	976KM6HB	684FG4NO	UA3LMR/QR	
4290I2PJA	3540 ..KC9ARR	2532N3XX	2004W2FKF	1383 ..IW0HOU	964K8ZEE	682AI8P	629...WB4SON	

SSB

5169I0ZV	3323 ..OE2EGL	2652I3ZSX	2310K17AO	1971 ...W2FKF	1712N3RC	1386 ..IK4HPU	1031 ..IK8OZP	802N6OU
4851K2VV	3294 ..CT1AHU	2595EA1JG	2275IK2DZN	1935 ..SV1EOS	1661PT7ZT	1386NX0I	1022NW3H	758IV3GOW
4638OZ5EV	3108I4CSP	2529W3LL	2209IK2QPR	1927AE5B	1641AE9DX	1258N1KC	1012KU4BP	724W3TZ
4584F6DZV	3101K0DEQ	2497 ...S58MU	2201NQ3A	1889N6QQ	1623VE9FX	1221 ..WD9DZV	1007 ..VE6BMX	717K0DAN
4566VE1YX	3022I8KCI	2470N8BJQ	2159 ..DL8AAV	1879K3IXD	1611W2ME	1189NK0S	1004K4HB	691K5CX
4238I2PJA	2903IN3QCI	2459W2OO	2156YO9HP	1825KQ8D	1550IK2RPE	1146SQ7B	978EA7HY	690W6PN
42089A2NA	2877 ..YU7BCD	2451 ..EA3GHZ	2131N6FX	1805EA3NP	1480AB5C	1145 ..EA3EQT	976NE6I	640UA9YF
4033I2MQP	28574X6DK	2449 ..SM6DHU	2098K5UR	1799 ..JN3SAC	1464 ..VE7SMP	1089I28FFA	965VE6BF	637K5WAF
3825EA2IA	2817KF7RU	2376W9IL	2094I8LEL	1782 ..W6OUL	1463I2EAY	1089 ..IT9ABN	883WA5UA	600 ...WA2BEV
3593KF2O	2794 ..WA5VGI	2326CX6BZ	2093W2WC	1778AG4W	1410S55SL	1083KX1A	875K7SAM	
3557N4NO	2711 ..LU8ESU	2315 ..SV3AQR	2076K2XF	1719K9UQN	1408N3XX	1042 ...I20BNR	833DK8MCT	

CW

5704 ..WA2HZR	37229A2NA	3025 ..SM6DHU	2502 ...JA9CWJ	2010K5UR	1480WO3Z	1186NX0I	794LA5MDA	600IK2SGV
5696K9QVB	3676S58MU	2804K9UQN	2478W9IL	2008YO9HP	1447EA2CIN	1165 ..VE6BMX	753F5PBL	
5589K2VV	3662 ..WA5VGI	2763JN3SAC	2424W2WC	1990W6OUL	1424N6QQ	1135VE1YX	749AE5B	
4395N4NO	3471K0DEQ	2730IK3GER	2381N6FX	1983 ..EA7AAW	1341 ..WA2VQV	1125I0WOK	743JA5NSR	
4228N6JV	3347KF2O	2723 ..EA7AZA	2373VE6BF	1968N3RC	1326K6UXO	1097NE6I	732SQ7B	
4024LZ1XL	3317W8IQ	2721I0NNY	2365W2OO	1848I2EAY	1247IT9ELD	1049K5WAF	706AG4W	
3918VE7DP	3226 ..YU7BCD	2720KA7T	2245W9HR	1827AC5K	1223KX1A	891DK8MCT	695S55SL	
3864EA2IA	3106N8BJQ	2638 ...OZ5UR	2215I2MQP	1802 ..WD9DZV	1220AA4FU	821HB9DAX	629IV3GOW	
3750 ..VE7CNE	3042I7PXV	2632W2ME	2139N3XX	1549AF5CC	1210DL4CW	813VE9FX	615JH6JMM	

DIGITAL

1809W3LL	1481 ..WD9DZV	1133N6QQ	1049W2OO	1009 ..GU0SUP	929N3RC	866SQ7B	670IV3GOW	643K9AAN
1627N8BJQ	1333YO9HP	1054KF2O	1047 ...RW4WZ	970AG4W	886K0DEQ	685EA2IA	669JN3SAC	

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Mixed

131K8YTO

SSB

74K8YTO

CW

65K8YTO

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100NK0S

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RF Safety: A Technical Conversation

This past October Daniel Koch, DL3IAE, posted the following query on the Microwave (mw) listserve:

A question to the experts: I have been working on some 10 GHz amps at 10 watt level lately. Although I haven't been feeling uncomfortable, longer lasting exposure to microwaves should not be underestimated, mainly due to the heating effects inside the human body, especially in the eyes.

I try to do most of the snowflaking at low levels to minimize radiation coming out of the open amplifier but placing little copper foil bits close is expensive [Editor's note: The term snowflaking is adding tiny pieces of copper foil in order to increase the power amplifier gain.] Power FETs isn't easy as we all know and sometimes my head has to come pretty close so I can see what I am doing.

I use one of those desk lamps that has a big magnifying glass built in. It will not attenuate radiation in a big way but at least it helps to increase the working distance a bit. I wonder how others tackle this problem and how would it be done professionally in RF labs or so?

Nearly 20 posts were logged on the listserve in response to Daniel's query. Here are many of those responses:

Paul Wade, W1GHZ, wrote:

Years ago, when I was tuning RF amps professionally, we would take an RF sniffer and probe around the amp. Actual levels are hard to measure, but I remember one we had that was pretty bad, so we built a cover of copper mesh screen and poked holes in the screen where the tuning tools went. Output power went up significantly (1/2 dB) with the screen in place, so a fair amount was lost to radiation.

At 10 GHz, a small horn on a power meter will be enough to find harmful radiation. Even a small horn has a capture area of several square cm, so a power level of 1 mw/cm² or less is easy to detect. Less than that is probably safe for short exposures.

If the radiation is bad, you are wasting power. Some impedance matching structures are worse than others. Caution is good.

Barry Malowanchuk, VE4MA, wrote:

I was exposed to high RF while working on 432 antenna arrays back in the 1970s. I felt my eyes "dry out" and I got the heck out of there! It took a month for the dry eyes feeling to disappear.

I have also done a bunch of snow flaking here and had others doing tuning at work without covers on and with a long enough exposure your eyes start to feel tired. At work I had tuning covers made, as Paul describes, and the technician complained about tired eyes when he was not using the covers!

I have used a small old RadioShack® microwave oven "sniffer" to check out hot spots and get an idea of how much stray RF is present. I am not sure how good it is at 10 GHz, but it is probably still a good relative indicator.

Certainly limit your exposure time and proximity if possible. I have considered making and using a metal screen face mask. Caution is good.

e-mail: <n6cl@sbcglobal.net>

VHF Plus Calendar

January 4	<i>Quadrantids</i> meteor shower
January 5, 2013	Last quarter Moon
January 10	Moon apogee
January 11	New Moon
January 18	First quarter Moon
January 19-21	ARRL VHF Sweepstakes
January 22	Moon perigee
January 27	Full Moon

—EME conditions courtesy W5LUU

Jerry Johnson, KØCQ, wrote:

Perhaps it's time to plan tuning a bit better and make the tuning elements adjustable from outside a closed box. Snowflaking is too expensive when eye damage can be a result.

Perhaps something like 3 piston trimmers at 1/8- or 1/4-wave intervals on input and output lines. One thing about trimmers is that they aren't likely to short, which is a hazard while snowflaking. Sure, the half-dozen trimmers will raise the cost, but the first effect of too much RF in the eyes is documented in MIT Rad Lab, where they reported 10 mw from WR90 was enough when close to a rabbit's eye to cause a cataract.

Cataracts are correctable these days, at a cost of \$6,000 or so per eye, plus months of healing. So far all the costs have been covered by Medicare and my supplemental insurance except for prescription drugs. My cataract was caused by old age, but made much worse by the laser treatment for a detached retina and the eye drops following that treatment. Turned the lens into a fuzzy thing that wouldn't focus light. I've recovered well enough to build a DEMI 3-watt PA to which I didn't apply RF power with the cover off.

I typically have used those three shunt trimmers with minimum reactance about 1/2 the line impedance. That would be like tuning screws in waveguide where such a three-screw tuner is reputed (in MIT Rad Lab series) to tune most any load. If 1/8th wave is too close, 5/8th wave ought to work just as well, though it may lengthen the enclosure. Usually in such a three-screw tuner all three screws are not needed; two nearly always should work and sometimes one is enough. Or like Barry's 24-GHz waveguide preamp, a series of holes at close intervals needs only one screw in the right hole. I think a screw won't be enough capacitance in a coax line even at 10 GHz without getting the gap uncontrollably small. The commercial version might be a slot with a carrier for one screw to achieve the same result with more waveguide machining.

Chip Taylor, W1AIM, wrote:

My work in the Health Physics field was all with ionizing radiation. But our professional organization, the Health Physics Society, is also involved with RF radiation and there have been some excellent articles in our monthly journal, *Health Physics*, *The Radiation Safety Journal*, as well as on the Health Physics Society's web site.

The scientific consensus is that the only harmful effect of RF on the human body is heating, and it takes very high levels of RF to produce heat that one can actually feel. (YouTube videos aside, you can't make popcorn

with a cell phone!) Itching or dry eyes, headaches, and such are not necessarily due to RF exposure. Correlation is not the same as causation. My eyes sometimes itch and get dry just watching TV, and I'm not convinced TV watching is the cause. (Although I suspect it may cause one's brain to atrophy!) Even the link to cataracts is not all that strong; very high levels of microwave radiation can sometimes cause cataracts but it's not a certainty by any means. Most of us who eventually develop cataracts will get them for reasons other than RF exposure. (My cataract was caused by steroids used to treat iritis [an irritation of the iris], not from playing with microwaves.)

As low as the risk is (pretty close to zero for the power levels most of us work with), Paul's advice is good. The mantra for those of us in the HP field is "As low as reasonably achievable." It's not hard to limit or reduce exposure (remember the Inverse Square Law?) and worth doing so.

Barry Malowanchuk, VE4MA, responded to Chip:

Hi Chip, with all respect to the professionals in the field, the "drying of eyes" was real, although I know it was doubted by the professionals contacted by Joe Reisert, W1JR, at the time also. This was an effect that appeared in tens of seconds, not hours or days later. Perhaps dry eyes is a poor way to describe it. It was like you had been awake for 30+ hours or you had been working in a dusty area...eyes really wanted to be closed.

We don't work in high power levels necessarily, but at the frequencies we are dealing with (10 GHz in particular) the power density from small apertures (feedhorns and point-source radiator striplines) can be quite significant.

Ed Cole, KL7UW, wrote:

Several years ago I worked in a commercial 2-way radio shop which also serviced marine radar. Some of the techs were lazy and ran the magnetrons with open waveguide for testing until I complained of getting a headache from that (came on in about 15-min of exposure). Most run about 3 kw peak on 3 GHz. I could tell when anyone did this in short time every time. Dummies! We had waveguide loads.

Jerry Johnson, KØCQ, added:

Strip lines radiate like antennas. Not efficiently but primarily from the current in the line. And when an amplifier enclosure is broad enough to act as a waveguide (over 1/2 wavelength) the conversion from strip line to waveguide mode can couple from the output line to the input line and cause the amplifier to oscillate, only when the case is covered. That's often cured with cross- or length-wise baffles and/or chunks of some RF lossy material glued to the cover.

Besides incorporating tuners adjustable from outside the closed case, we might use a scope and diode detector for relative output instead of a thermal power meter and then pulse the drive to only apply drive for a short time, like a millisecond or less after moving the snowflake. With 100-MHz bandwidth scopes and diode detectors with 1-GHz detected bandwidth, a few microseconds should be enough time to see it with the scope. For existing amplifiers we could add on external tuners for input and output, but not inter-stage tuning.

Doug McGarrett, WA2SAY, responded to Jerry:

Interesting ideas, Dr. Jerry, but I think an open-ended cable with a very small series C at the end connected to a spectrum analyzer is really what you need, so as to see if the signal you're measuring is the same frequency as what you're driving with, and that there aren't any others there—oscillation. Or, of course, with your padded-down SA at the output port. With the path loss of the microwave signal so high, I think that the radiation from a circuit is small enough to ignore.

Let's take a 100W amplifier, and let's say (as another contributor to this thread has) that the radiation is about -0.5 dB. At 10 inches, that's about 42 dB path loss, so the effective power at that range is about 0.7 mW, total, much less than that in 1 cm², which is how the

standard is written. So keep your eyes about 10 inches above the circuit, and you should be OK.

Jerry Johnson, KØCQ, responded to Doug:

At 10 GHz 1 pF is not small, but for HF work it's tiny. Perhaps a small loop or link would be better at loose coupling.

A spectrum analyzer is a super deluxe tool, and the good ones today cost about the same as an Escalade, like a house did 20 years ago. The old spectrum analyzers don't have the designed capability of looking over the whole spectrum that might come from an amplifier oscillating way outside its expected band with LO leakage, stray mixer products, and harmonics. The earliest spectrum analyzers were intended only to show the spectrum of a signal, generally a pulsed signal, so their dispersion is a small fraction of their center frequency. They didn't sweep from DC to light in one pass, not even from fundamental to the third harmonic of the carrier frequency. Only carrier frequency plus or minus a few or tens of MHz. Some had only slightly reduced sensitivity for harmonics of their swept oscillator, making it a task to determine what some stray signal found was, whether harmonic of the DUT or harmonic spur generated in the SA.

Not all of us are willing to put money in a non-communication device such as test equipment, so we have to do with power and diode detectors, augmented by band-pass filters. So we can peak with the indicator seeing through that band pass filter, then compare the unfiltered detection with the filtered level, allowing for filter loss to see if the amplifier is putting out power at other than the desired frequency. And we can look unfiltered for power with no drive to the transverter.

One thing I've noticed about ham band microwave amps is that there isn't much in the way of harmonic filtration, perhaps some even harmonic reduction in push-pull amps, but less so in quadrature coupled stages and some inherent in the active devices internally matched with single pi low-pass filters, two shunt Cs, and the bond wires making a series L. Sometimes when driven to clipping, I'm sure there is more than trivial power at the harmonics, as well as radiated as splatter in the ham band of interest.

Doug wrote:

Let's take a 100W amplifier, and let's say (as another contributor to this thread has) that the radiation is about -0.5dB. At 10 inches, that's about 42 dB path loss, so the effective power at that range is about 0.7 mW, total, much less than that in 1 cm², which is how the standard is written. So keep your eyes about 10 inches above the circuit, and you should be OK.

Jerry responded:

You presume hemispherical or spherical radiation which may be true in some cases and not in others. The free space 1 wave traveling wave wire radiates more concentrated than a dipole, for sure a narrower pattern than a hemisphere. The free space several wave wire has many lobes and nulls and quite a bit of gain in the lobes, the greatest gain closest to the wire and rising the longer the wire. Making that wire part of a microstrip, stripline, or coplanar coaxial circuit affects the radiation pattern significantly, but doesn't eliminate it. The asymmetry of the macrostrip and coplanar conductors with dielectric next to ground but the low dielectric constant air above makes for complicated wave propagation along the conductor at two speeds, which can enhance radiation.

Doug wrote:

By the way, the free and easy use of the word "stripline" always annoys me. What you're talking about is microstrip. Stripline is bounded by a top and bottom ground plane. I think it's worthwhile respecting the difference, especially in the presence of younger RF folks who may never have encountered actual stripline. And who may not know that in order to make a decent directional coupler, or anything that demands good isolation, like a filter, you really need stripline.

Jerry responded:

True enough about strip line, but like I said above there is as much difference in vintage to modern spectrum analyzers that just calling for a spectrum analyzer to test for stray products out of an amplifier can also be a similarly excessive simplification. Stripline came before microstrip and coplanar.

Joe Hopster, WB8DNO, wrote:

A glass lens doesn't block microwaves. In fact, I used to send 20 mw AM from a klystron across the basement to a crystal detector. When I held an 8-inch glass lens in front of the detector, it would focus the signal much like it would for light. Didn't measure the gain but it seemed to be several dB.

I may have read that the lens of the eye will frost over from heat much like an egg white. Ten GHz will not have to penetrate very deeply to do that.

Mike Sapp, WA3TTS, wrote:

I recall the metalized Low-E glass in my house windows doing a good attenuation number on my 10 GHz test beacon a few years ago when cobbling my 10 GHz transmitter together. I would suggest testing a few pieces of the adhesive metalized window film products used for improving window insulation efficiency. One may be able to apply such a metalized film to a standard set of polycarbonate safety glasses. Even an extra 6 or 10dB of attenuation would be a prudent optical safety precaution. If the tint is too dark, turn the lights up.

I did a quick look online for "RF safety glasses" and "EMI Safety Glasses," but nothing popped out of Google that was very obvious. Laser safety glasses are out there, so some company likely makes RF shielded safety glasses as well.

Michael Fletcher, OH2AUE, wrote:

Ten watts at 10 GHz is plenty to feel thermally by the back of the hand (so as not to accidentally damage the more important side of your hand...) not very far from the feedhorn. Of course this kind of power can be radiated elsewhere if not actually terminated and converted to heat.

A good friend of mine mildly burned the other side of his face while tuning a home brew high-power solid-state 23-cm PA (he was looking sideways at the power meter most of the time.).

The real primary risk is thermal, and the most sensitive part in our case is the eye. The retina has no blood vessels to regulate temperature, but is protein rich. If you want to simulate your eye, separate the yolk from a chicken egg and use the albumen (e.g., in a glass test tube) as a very sensitive detector for coagulation (yes, a non-reversible process that will happen to your eye, too). Better yet, spread a thin layer of albumen on a dark low thermal conductor to witness the coagulation.

On the other hand RF is often used in special suits for treating hypothermia: <<http://adsabs.harvard.edu/abs/2002SPIE.4916...95J>>.

Another item is your magnifying glass lamp. If this is a fluorescent lamp, you should be aware of the UV radiation, especially if the lamp (bulb) itself does not have a secondary envelope. The British Health Protection Agency recommends max. One hour/day if this kind of single envelope CFL is closer than 30 cm to human skin (e.g., the hopefully still functional backside of your hands). See: <<http://www.hpa.org.uk/NewsCentre/NationalPressReleases/2008PressReleases/081009Emissionsfromcompactfluorescentlights/>>.

The general sensitivity of RF especially in the decametric wavelength region is not uncommon: Getting a type of headache from RF from open waveguides is something I saw repeatedly in some of my former colleagues. This involved typically 5–20W being radiated from an open waveguide or small dish at C band. They clearly identified after a period of time an open waveguide in the vicinity, but out of sight. I am pretty sure this has some bearing on the relationship between cranial dimensions and the wavelength in question. Or maybe some nerve structure is resonant at C or X band? Wish I had the time and resources to measure the S21 of my head.

Another aspect is the energy waveform envelope, such as pulsed RF (e.g., radars etc.). I have many times heard directly from microwave professionals their auditory experience of PRF frequencies.

Now then, to put all this into some kind of perspective frame, I hope everybody understands by now that the solar spectrum that reaches the Earth still contains a decent part of the electromagnetic spectrum even after some selective filtering of the atmosphere. And at pretty appreciable levels, after all. We do use the darn thing to generate electricity. And who has not witnessed the discoloration of objects lying in the sun, or even your CFL lamp. Or even a filament bulb for that matter. I can easily detect my 60W incandescent lamp noise at X band from 15 cm away: <<http://www.kolumbus.fi/michael.fletcher/incand.gif>>.

So, hands up, who has ever suffered from sunburn or worse?

Down under in Oz, there are rules and regulations for clothing and headware of children in order to minimize radiation effects of the sun.

Anyway, if you are really seriously concerned about excessive uncontrolled RF levels, this is the way to go: <http://www.w4dex.com/microwave/safe_microwaving.jpg>.

There are all kinds of stuff out there. It all is a question of where to set the limits and to enjoy the rest. So, time for some more coffee, despite the increased risk of pancreatic cancer.

By the way, years ago I was involved in testing and calibrating test equipment and sensors at HF frequencies. Fairly interesting to witness several amps of shortwave RF

propagating through your torso (yup, measured with a current clamp around my neck and another pair around each leg for verification). And once again, I have never been quite the same since that day.

Jerry Johnson, KØCQ, added:

An Iowa lawyer/electrical engineer by the name of Barbara K. Lunde about 20 years ago began to offer a mesh union suit for RF protection, but it was designed for VHF/UHF protection and didn't include the head or hands. I don't know if it is still offered. Technicians required to work on tall building roofs with many two-way radio antennas at roof level liked the idea because they couldn't turn of the radios that belonged to the public services or competitors while working in their near fields. Lunde's husband Paul (WØLHE) owned a central Iowa FM station in those days.

There is one other solution I've already mentioned and that is to arrange the PA to be tuned while enclosed working into a dummy load, either with internal tuners, like a string of capacitors along the input and output lines, or external enclosed tuner boxes on the input and output connectors. Keep the RF contained, and then there's no need to keep the RF out of the body during the adjustments.

Brian Yee, W6BY, wrote:

I simply use the minimum RF drive to get the tuning done. No need to run full RF power out except to verify the snowflaking was correct, and then I do that with the covers on anyway to see if there are any oscillations. Even then I ramp up the power gradually to be able to back out of a problem. Also, I am careful to reposition the snowflake only with power off, then apply DC and RF power to verify the effect of tuning.

Ben Lowe, K4QF, wrote:

Decades ago, there was a government program for High Power Microwave (HPM). As I recall, they published some handbooks, maybe through SRI that are probably around somewhere. One area addressed was the effects of HPM on sensitive parts of the human body, the eyes being one of the most sensitive areas. I believe they designated safe levels as 10 mw/cm² but not for too long of a period. The safe level is probably somewhat frequency sensitive, as there's a reason microwave ovens operate around 2.6 GHz. Water is apparently more absorptive at that wavelength than other microwave frequencies, and in spite of what others may think, you and other flesh are basically comprised of 80% water; hence the best cooking frequency. So is foliage.

In reading electronic warfare history, I saw somewhere that watchmen on ships in the North Atlantic during WW II would stand on the bow of ships and get the radar operators to beam the antenna toward them to warm them up, or thaw them out, whatever the case was. I wouldn't recommend it!

Daniel Koch, DL2IAE, summarized:

Well, it looks like there is no off-the-shelf solution to the problem. I was hoping someone would come up with some sort of protective glasses with a fine metal grid inlay or a similar solution that would attenuate microwaves effectively. My own web search ahead of this post was not very successful, thus my interest in the professional way of dealing with RF exposure. I think we can basically do three things:

1. Reduce exposure time: John Quarmby, G3XDY, suggests using a pulsed low duty cycle RF source: "Set a pulse generator to a repetition rate of 100Hz and pulse width of 100uS and then you are running at an average power of 1% of the peak power. A thermal power meter will indicate the average power so add 20dB to get the peak power for a 1% duty cycle."

An excellent idea. Modulators are cheaply available surplus, even in the 10 GHz range. Or you can also try to modulate the IF of your transverter. This should get you pretty close to the optimum. Still you will have to do the final tweak at maximum power.

2. Maximize the distance from the RF source: Use good illumination and some sort of magnification so your head is away from the RF source. Will my glasses or a magnifier increase the RF field near my eyes by focusing the microwaves, or will the glass or plastic lenses not promote this "optical" effect due to physical size or the materials used? Has anyone tried one of those USB cams?

3. Go QRP: Not really a solution.

Thanks for your thoughts and input. Discussions on the effects of RF on the human body tend to get extremely emotional very quickly, at least in the "real world" outside our hobby, and I personally try to avoid them. However, I think we all should be aware of the possible dangers.

Finally, Jerry Johnson, KØCQ, summarized the problems with snowflaking very succinctly: "Snowflaking is too expensive when eye damage can be a result." Well spoken, Jerry!

Current Contests

The ARRL VHF Sweepstakes is scheduled for the weekend of January 19–21, 2013. For ARRL contest rules, see the issue of QST prior to the month of the contest or: <<http://www.arrl.org>>.

Current Meteor Showers

The *Quadrantids*, or *Quads*, is a brief but very active meteor shower. The expected peak is around 1325 UTC on January 3, with up to 40 meteors per hour at its peak. The actual peak can occur three hours before or after the predicted peak. The best paths are north-south. Long-

duration meteors can be expected about one hour after the predicted peak.

For more information on the above meteor shower predictions see Tomas Hood, NW7US's "Propagation" column elsewhere in this issue. Also visit the International Meteor Organization's website: <<http://www.imo.net>>.

And Finally . . .

This column with its comments on RF safety has given us an interesting look at the dangers of working with RF (non-

ionizing) radiation. We all need to be cautious when working around high power.

If you have a tale to tell about your RF exposure—or anything else related to the wonderful world of the VHF-plus frequencies—please e-mail me at: <n6cl@sbcglobal.net>.

A Happy New Year to all of you, and my best wishes go to you for a safe, healthy, and prosperous 2013.

Until next month . . .

73 de Joe, N6CL

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Alaska: Why Judicial Districts instead of Boroughs?

Plus Awards from Scandinavia, Russia, and Indonesia

Alaska is unique among American states in that it does not use the traditional county (or parish) as a political subdivision. Instead, Alaska is divided into 18 "boroughs" and 11 "geographical census areas." The borough is probably the closest by analogy to a county, but even then, because of the very low population of most of Alaska, boroughs comprise less than half of the area of the state. The rest of the state is composed of census areas which were established for the 1970 Federal Census. There is a good chart on the website of the National Association of Counties (<http://www.naco.org/>) which gives an official list of both boroughs and census areas together with population and square miles covered by each. One of the least populated areas is Central Alaska (Yukon-Koyukuk Census Area), which has a density of one person per 26 square miles.

The USA-CA award was developed not long after Alaska became a state on January 3, 1959. I don't have any information in the USA-CA archives regarding the decision to use the four judicial districts instead of boroughs, but can only imagine that this was a logical existing unit that nicely divided the new state into reasonably even pieces for the award.

How hard would it be to achieve USA-CA if we required the use of boroughs and census areas instead of the judicial districts? I invite any of our

*12 Wells Woods Rd., Columbia, CT 06237
e-mail: <k1bv@cq-amateur-radio.com>



The Scandinavian Open CW Award (SOCWA) is a new award that is limited to contacts in 2013, CW contacts with some depth, such as 10 minutes worth.

USA-CA Honor Roll

500

F5POJ.....3595	UX1UA.....3598
9A3ST.....3596	VE6VLV.....3599
K9AAN.....3597	

1000

F5POJ.....1837

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.

Alaskan award hunters to consider sponsoring an award based on boroughs and census areas. It might be revealing to see who would be the first to work all 29 of them. Any volunteers to create this award?

The Scandinavian Open CW Award (SOCWA)

Let's start off 2013 with a new award that is limited to contacts in 2013, and not just hello-goodbye QSOs, but CW contacts with some depth, such as 10 minutes worth. It shouldn't be too difficult. Or will it be?

The object of The SOCWA is to inspire amateur radio operators in Scandinavia and elsewhere to increase CW activity on the HF ham radio bands. The intent of the award is to encourage and reward amateurs to carry on sustained CW conversations rather than short-duration CW signal reports. The award sponsors are the Öland Island Radio Amateur Society, SK7RN and The Scandinavian CW Activity Group, SCAG.

Participants: SOCWA encourages CW communication by and between licensed amateur radio stations in the Scandinavian countries of Denmark, Finland, Greenland, Iceland, Norway, and Sweden. The prefixes OY, JX, JW, OHØ, and OJØ also count as Scandinavian countries.

Amateur radio operators from non-Scandinavian countries who register on the award website listed below are welcome to participate and qualify for the award. In this regard, qualified QSOs must involve a station in the aforementioned Scandinavian countries.

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Period of activity: This award will be available to successful participants during calendar year 2013, starting on January 1. The SOCWA encourages unlimited CW activity between participating stations. The award will be available to those stations and operators who register and report confirmed contacts as described below. The program may be extended beyond calendar year 2013.

How to register: SOCWA participants register on line at <www.socwa.se>.

Bands: According to the IARU's HF band plan.

Call: A response to calling "CQ SAX" will initiate contact with a station within the SOCWA sphere.

Logging: QSOs should be logged at the SOCWA home page. To qualify for the award, QSOs must a minimum of 10 minutes. Both stations have to log the QSO on the website. The time stamp (GMT) of each station logged on the website must match each other.

General rule: Repeated QSOs between two stations are permitted as long as there is no more than one QSO every 24 hours but on different HF bands. Band variation is desired and encouraged. Always consider the CW speed of your contacted station. If your counter party is sending at a lower speed, reduce your speed to reduce errors and to eliminate the risk of confusion.

Fees: For Scandinavian radio amateurs, after 52 or more verified QSOs, the radio amateur will be awarded the SOCWA via postal means by payment of SEK50. The fee also entitles the amateur to participating in a lottery with many prizes. Each confirmed QSO earns one lottery ticket in the final draw. The lottery prizes are shown on the award website. The number of prizes will depend of the number of participants. Lottery tickets and prizes, however, are limited to Scandinavian radio amateurs. For non-Scandinavian radio

amateurs, after 52 or more confirmed and approved QSOs, you can print, free of charge, the SOCWA Award directly from the home page. Internet: <<http://www.socwa.se/regler.php>>.

Gallery of the Great Genius of Russia

This is a series of awards with certificates that are the most beautifully designed and executed ones I have ever seen from any sponsor. UA6MM based the series on famous Russian leaders of the past. The images are taken from works of art depicting these leaders and the parts they played in key battles in Russian history from the year 850 to 1813. Complete details of each of the seven awards can be found at: <<http://www.dxawards.com/UA6MM.htm>>. The awards are sponsored by the Amateur Radio Union of Russia "SRR," together with the Taganrog club "TDXEC" (Taganrog DX-Expedition club). Collectively, the awards are known as the Gallery of the Great Genius of Russia. This program offers a certificate for one set of requirements, and a plaque for additional requirements as noted in the rules.

There isn't enough room in this column for all seven, so I am presenting just one of them.

Anniversary of Peter I, the Great (the first Emperor of all Russia). This award is issued in connection with the 340th anniversary of the birth of "The Great Son of the Russian Land, the Emperor Peter the Great, Peter I" (1672–1725). He was the founder of the first Russian military base "port city," "Fortress of Taganrog" in 1698, and the new northern capital of the Russian Empire, the city of St. Petersburg, in 1703.

1. Russians need 20 QSOs and all others need 10 QSOs with any different stations in the following Russian regions or countries associated with the life of Peter the Great: UA1A, UA2F, UA3A, UA4, UA6L, DL, ES, EW, G, LY, OE, OH, OHØ, OJØ, OZ, PA, SM, SM1, SP, TA, UR, UU, YL, 4K.



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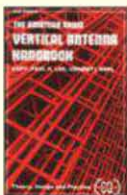
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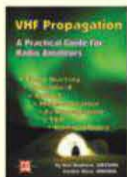


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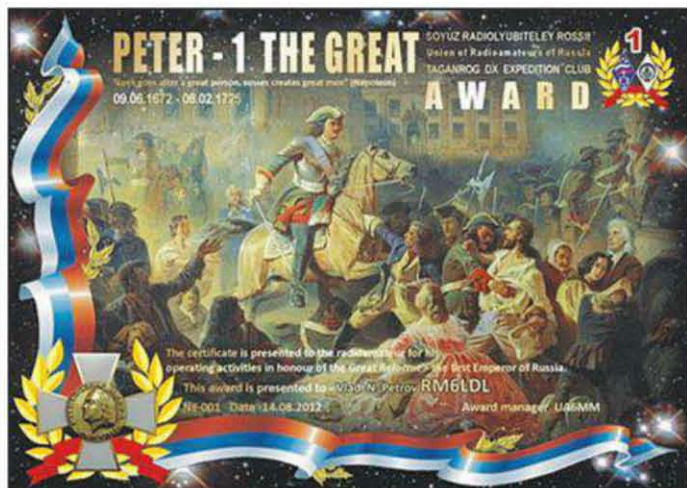
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The Anniversary of Peter I award is issued in connection with the 340th anniversary of the birth of "The Great Son of the Russian Land, the Emperor Peter the Great, Peter I" (1672–1725).

2. Earn at least 340 points from the list of stations in areas below. Each city, region, or country = 10 points per contact:

a. Cities associated with the activities of Peter I: Moscow, Taganrog, Azov, St. Peterburg, Kronshtadt, Voronezh, Arkhangelsk, Pereslavl-Zaleskiy, Sergiev-Posad, Petrozavodsk, Poltava (Ukraine) Tula, Derbent, Baku, Kaliningrad, Amsterdam, Narva, Viborg, London, Istanbul, Hannover .

b. Regions: LO (Leningrad region), KL (Curly), AR (Arkhangelsk), VO (Vologda), PS (Pskov), MU (Murmansk), KA (Kaliningrad), MO (Moscow), SM (Smolensk), TL (Tula), RO (Rostov), DA (Dagestan), SV (Sverdlovsk), PM (Perm), SL (Sakhalin), PK (Maritime Territory), KT (Kamchatka).

3. Countries: DL, ES, EW, G, I, JW, LA, LY, OE, OH, OHØ, OJØ, OZ, PA, R1FJL, R1MVI, SM, SM1, SP, TA, UT, UU, YL, 4K = 10 points .

Repeated QSOs on different bands or modes count for the award. No mixed mode QSOs.

Bonus QSOs: Any QSO with special event GGGR station and RK1AN, RZ1AWZ, UA2FDM, RV3DA, UA3AHA, UA4LAQ, RK6AH, RU6BS, UA6MM, UA9AV = 50 points each, and other members of the TDXEC = 25 points each.

Application: Send log extract with the specific award and/or plaque being requested, a list of stations contacted, and the QSO information. The fee for the paper award is \$US10 and the cost of each plaque is \$US40. Mail applications to: Nick M. Ermolenko UA6MM, PO Box 73, Taganrog, 347902 Russia. E-mail <ua6mm@yandex.ru or ua6mm@mail.ru>, internet: <<http://www.ua6mm.narod.ru>>, also: <<http://www.grz.com/UA6MM>>.

Indonesia's Nusantara Award

Indonesia is sometimes known as a country that is made up of islands—lots of islands. In fact, the sponsors of this award make available a listing of the 13,200 different islands comprising Indonesia.

All of your QSOs with Indonesia are available for award credit, since contacts since 1945 are valid. Too many awards are not only tough, but require you to start all over when the sponsor establishes a starting date, such as the current year. Another good feature of this award is that for US applicants, the custodian is in New Jersey.

The Nusantara Award is issued to licensed amateurs and SWLs for making two-way contacts on HF bands 160–10m),



Indonesia's Nusantara Award is issued to licensed amateurs and SWLs for making two-way contacts on HF bands 160–10m, including WARC bands, with a minimum of 10 different islands of Indonesia on or after August 17, 1945.

including WARC bands, with a minimum of 10 different islands of Indonesia on or after August 17, 1945. Repeater, satellite, eQSO, Echolink, or other relay methods are not permitted. The 10 islands must include a minimum of five out of the six main islands of Jawa/Java, Sumatera/Sumatra, Kalimantan/Borneo, Sulawesi/Celebes, Irian/Papua, and Bali.

Endorsement stickers are issued in increments of 10 for additional islands worked. All islands claimed for the award must appear on a map and have a name. Each QSL card must have the printed name of the island from which the operation took place. For major or large islands, the name of a town or city on the island, or grid locator may be sufficient. Please contact the award manager when in doubt. Not all islands in this program may have an IOTA (Islands On The Air) Reference Number. Small islands, individual coastal islands, islands in a bay, in a lake, in a river, or in an estuary, or any that cannot be classified in the IOTA Program might still be accepted for this award. Groups of islands with the same IOTA reference count for separate islands for this award—e.g., Bangka and Belitung are two separate islands for this award (OC-144).

Your claim must be accompanied by certified list (GCR) showing the call signs of stations worked, dates, times, bands, modes, and island name. Alternatively, a list of stations worked with a copy of the QSL cards can be used as well. Applicants using e-mail may attach the list and scans of the QSL cards. All QSL cards must be in possession and must be produced upon request for inspection.

Use the official application for the

award, which is found on the website listed below.

For DX stations, the award fee is 8 IRCs, \$US6, or 5 Euros for the basic award. The endorsement fee is 1 IRC, \$US1, or 1 Euro regardless of the level claimed. The fee covers the award and postage. There is no fee for handicapped operators or for SWLs. Payment can be made by PayPal (preferred) or cash/IRC (at your own risk). Send the application and fee to Award Manager.

DX Stations should apply to: Stephan

Busono, W2FB, 3 Margaret Drive, Somerset, NJ 08873; e-mail /PayPal: <sbuson@gmail.com>.

Indonesian and DX should apply to: Adhi Widodo, YB3MM, PO Box 6, Pandaan 67156 Indonesia; e-mail/PayPal: <yb3mm@mdxc.org>. Internet: <http://www.nusantaraaward.com/>

We are always interested in learning of new awards for publication in this column. Please contact me with details and a sample at the address shown on the first page of this column.

73, Ted, K1BV

REFLECTIONS III

by Walter Maxwell, W2DU

Here's a sampling of what you'll find inside this fully revised and updated third edition!



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Reviewing New CQ Contest Reporting Dates

Editor's note: Contesting Editor George Tranos, N2GA, was unable to write his column this month due to flooding at his home from Hurricane Sandy. He expects to be able to resume writing the column next month. We wish George and Diane, N2DO, all the best in getting their house—and their lives—back in order.

As we begin 2013, we also begin the transition period during which we will phase in earlier reporting of the results of most CQ-sponsored contests. Complete details are in the October 2012 issue, so we will not repeat them here. However, we will review the new schedule of contest results, both for this year and for 2014 and beyond, once the transition is complete. We will also include the issues in which the rules for various contests will appear, although that schedule is not changing.

In addition, please remember that the log submission deadline for nearly all CQ-sponsored contests is now **5 days after the end of the contest**. Preliminary indications (from the CQWW DX SSB weekend) are that the new deadline is having a negligible effect on the numbers of logs submitted.

The only exceptions to the 5-day rule are: CQ DX Marathon (10 days) and the CQ WW Foxhunting Weekend (flexible, along with activity dates).

Finally, thank you again to all of our contest directors and their committees for the added work that has gone into making this accelerated results reporting possible, and Happy New Year from all of us at CQ.

2013 Schedule of Contest Results & Rules

Issue	Contest Results	Contest Rules
January	2012 WPX SSB	2013 WPX RTTY
February	2012 WPX CW	2013 WPX (SSB & CW)
<i>Winter CQ VHF</i>	2012 CQ WW VHF	
March	2012 CQWW DX RTTY	
April	2012 CQWW DX SSB	2013 CQWW Foxhunting Wknd
May	2012 CQWW DX CW	
June	2012 CQ DX Marathon	2013 CQWW VHF
	2012 CQWW Foxhunting Wknd	
July	2013 WPX RTTY	2013 CQWW DX RTTY
August	2013 CQWW DX 160	
September	2013 WPX SSB	2013 CQWW DX (SSB & CW)
October	CQWW DX All-Time Records	
November	2013 WPX CW	2014 CQWW DX 160
December		2014 CQ DX Marathon

2014+ Schedule of Contest Results & Rules

Issue	Contest Results	Contest Rules
January	2013 CQWW VHF	2014 WPX RTTY
February	2013 CQWW Foxhunting Wknd	2014 WPX (SSB & CW)
March	2013 CQWW DX RTTY	
April	2013 CQWW DX SSB	2014 CQWW Foxhunting Wknd
May	2013 CQWW DX CW	
June	2013 CQ DX Marathon	2014 CQWW VHF
July	2014 WPX RTTY	2014 CQWW DX RTTY
August	2014 CQWW 160	
September	2014 WPX SSB	2014 CQWW DX (SSB & CW)
October	CQWW DX All-Time Records	
November	2014 WPX CW	2015 CQWW DX 160
December		2015 CQ DX Marathon

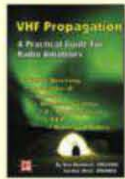
Calendar of Events

All year	CQ DX Marathon http://bit.ly/vEKMWD 2012 Logs Due by January 15, 2013
Jan. 1	SARTG New Year RTTY Contest http://www.sartg.com/contest/nyrules.htm
Jan 1	AGCW Happy New Year Contest http://bit.ly/PACdVl
Jan. 5-6	ARRL RTTY Roundup http://www.arrl.org/rtty-roundup
Jan 5-6	EUCW 160m Contest http://www.eucw.org/eu160.html
Jan. 12-13	Hunting Lions in the Air http://lionshuntingintheair.lionwap.org/
Jan 12-13	MI QRP January CW Contest http://www.miqrp.org/
Jan. 12-13	North American CW QSO Party http://bit.ly/GLPfXz
Jan. 13	DARC 10-Meter Contest http://bit.ly/VZScLN
Jan. 19	LZ Open Contest http://bit.ly/NXeEnZ
Jan. 19-20	Hungarian DX Contest http://bit.ly/NXewVk
Jan. 19-20	North American SSB QSO Party http://bit.ly/GLPfXz
Jan. 25-27	CQ WW 160M CW Contest http://bit.ly/uB0wFb
Jan. 26-27	BARTG RTTY Sprint http://bit.ly/Snijln
Jan. 26-27	REF CW Contest
Jan. 26-27	UBA SSB Contest http://bit.ly/W0gZiE
Feb. 2	Minnesota QSO Party http://bit.ly/P2zALC
Feb. 2-3	10-10 Int'l Winter Contest http://www.ten-ten.org/calendar.html
Feb 2-3	Mexico RTTY Int'l Contest http://www.fmre.org.mx/
Feb. 2-3	Vermont QSO Party http://www.ranv.org/vtqso.html
Feb. 2-3	Delaware QSO Party http://www.fsarc.org/qsoparty/qsohome.htm
Feb. 3	North American CW Sprint http://www.ncjweb.com/sprinrules.php
Feb. 9-10	CQ WPX RTTY Contest http://bit.ly/uYC0gp

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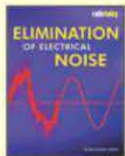
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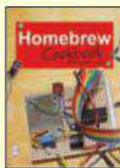


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Good Conditions Predicted for 2013

A Quick Look at Current Cycle 24 Conditions

(Data rounded to nearest whole number)

Sunspots

Observed Monthly, October 2012: 53
 Twelve-month smoothed, April 2012: 65

10.7 cm Flux

Observed Monthly, October 2012: 123
 Twelve-month smoothed, April 2012: 126

Ap Index

Observed Monthly, October 2012: 9
 Twelve-month smoothed, April 2012: 8

One Year Ago: A Quick Look at Solar Cycle Conditions

(Data rounded to nearest whole number)

Sunspots

Observed Monthly, October 2011: 88
 Twelve-month smoothed, April 2011: 42

10.7 cm Flux

Observed Monthly, October 2011: 137
 Twelve-month smoothed, April 2011: 100

Ap Index

Observed Monthly, October 2011: 7
 Twelve-month smoothed, April 2011: 8

CQ WW SSB How Did You Do?

How did you fare the weekend of the CQ WW DX SSB Contest on October 27 and 28, 2012? My original forecast called for stable conditions, which proved true. Both days saw very low geomagnetic activity, with moderate, though declining 10.7-cm levels. Ten meters was a player this year with hot activity throughout the daylight hours. I'd like to hear reports from you about the contest weekend so we can get a good picture of how all of the solar activity impacted your operation.

Here is an overview of expected propagation conditions on each amateur band between 6 and 160 meters for 2013.

6 Meters: This band will see very little *F*-region propagation, even though this might be the peak of the current solar cycle, Cycle 24. Nevertheless, the summer season will bring the usual troposcatter and sporadic-*E* activity. Aurora will still play a major role during spring and fall.

10 and 12 Meters: These bands will be good during the DX seasons, but will suffer during the summer, except during times of sporadic-*E* activity. Expect most DX openings to be mostly on north and south paths.

*PO Box 27654, Omaha, NE 68127
 e-mail: <nw7us@nw7us.us>

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for January 2013

Propagation Index.....	Expected Signal Quality			
	(4)	(3)	(2)	(1)
Above Normal: 2-6, 9-12, 14-21, 23-27, 29-31	A	A	B	C
High Normal: 13	A	B	C	C-D
Low Normal: 1, 28	B	C-B	C-D	D-E
Below Normal: 7-8, 22	C	C-D	D-E	E
Disturbed: N/A	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 good (B) to fair (C) on Jan. 1st, excellent (A) from Jan. 2nd through the 6th, poor (D) to fair (C) on the 7th and 8th, 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.

15 Meters: This band will be fair to good, seeing worldwide openings during the daylight hours of all seasons. Most openings, though, will be short, except for the strong and frequent north/south path openings.

17 Meters: This band should behave much like 15, but you will find it open more often, with it remaining open for DX an hour or two longer than 15 meters.

20 Meters: Twenty is going to be the main player during this year of moderate solar activity. Expect good conditions during the daylight hours, with worldwide DX openings possible throughout the year. DX conditions on this band tend to peak for a few hours after local sunrise and again during the sunset period. During the summer, expect this band to remain open for DX several hours after local sunset, occasionally later into the night. In the winter months of 2013, nighttime DX openings are expected.

30 Meters: This will be an exciting band for those low-power digital signals. Winter brings longer

nights, providing the right mix for exceptional worldwide DX.

40, 60, 80, and 160 Meters: These are nighttime DX bands. Great worldwide DX should continue on 40 meters from about two hours before sunset to approximately two hours after sunrise during all seasons. Expect coast-to-coast DX on 60 meters. DX openings on 80 and 160 should peak during the early spring, late fall, and winter months. Expect somewhat stronger signals than those of the last few years.

January Propagation

We are in the heart of the winter season, with very short daylight hours. Average daily maximum usable frequencies (MUFs) are at their seasonal lows, but so are noise levels. During the winter months the maximum usable frequencies are generally higher during the daylight hours than during the summer daylight hours. This provides short but strong openings on higher shortwave bands during the day in winter. Then at night the MUF dips down much lower than what would be seen during the summer nights. Summertime MUFs are generally higher during the night time hours than during the winter nights, in part because the ionosphere stays energized through the short nights. Winter nights are longer, so recombination of the ionosphere (which results in a lowering of the MUF) is more complete.

This also means that the *D*-region of the ionosphere is less ionized during the winter, allowing mediumwave and shortwave frequencies to propagate through the *D*-region and off the *E*- and *F*-regions. Finally, the seasonal decrease in weather-related noise makes it easier to hear the weaker DX signals on lower frequencies. With thunderstorms few and far between, storm-related static and noise are greatly reduced.

Because atmospheric noise levels will be at seasonally minimum levels in the Northern Hemisphere during January, the 80 and 160 meter bands should also be hot. Expect some good openings to many parts of the world on 80 meters during the hours of darkness and the sunrise period. Short-skip openings between distances of 50 and 250 miles should be optimal on 80 meters during the daylight hours. During the later afternoon and early evening hours short-skip openings should increase to between 250 and 1500 miles and by nightfall openings up to and beyond 2300 miles should be possible.

Expect some DX openings on the 160-meter band during the hours of darkness. Openings toward Europe and the east should peak at about midnight. Openings toward the South Pacific and in a generally southerly direction may be possible just before daybreak, as well as openings into Asia and North Pacific. Short-skip openings up to 1300 miles should be possible during the hours of darkness, and frequently the skip will extend out as far as 2300 miles. During the daylight hours intense ionospheric absorption will severely limit openings, although some may be possible at times up to 150 miles or so.

Expect 60 meters to play a significant role in nightly DX across the United States. With very low noise levels this month, the weaker signals of 60 meters will be easy to copy.

The optimum band for DX conditions during the hours of darkness should be 40 meters. Expect openings to most

areas of the world from shortly before sundown, through the hours of darkness, and until shortly after sunrise. Signal levels may be exceptionally strong at times. During the daylight hours, short-skip conditions should be optimal for openings between approximately 100 and 600 miles. Skip will lengthen during the late afternoon, and by nightfall short-skip conditions should be optimal for openings between 800 and 2300 miles.

Twenty meters is expected to be a solid band with excellent around-the-clock openings for both DX and short-skip. DX conditions should peak during a window of an hour or so right after sunrise and again during the late afternoon and early evening hours. Short-skip openings between approximately 1300 and 2300 miles should be possible from just after sunrise to as late as midnight. Shorter distance openings should also be possible from mid-morning to mid-afternoon.

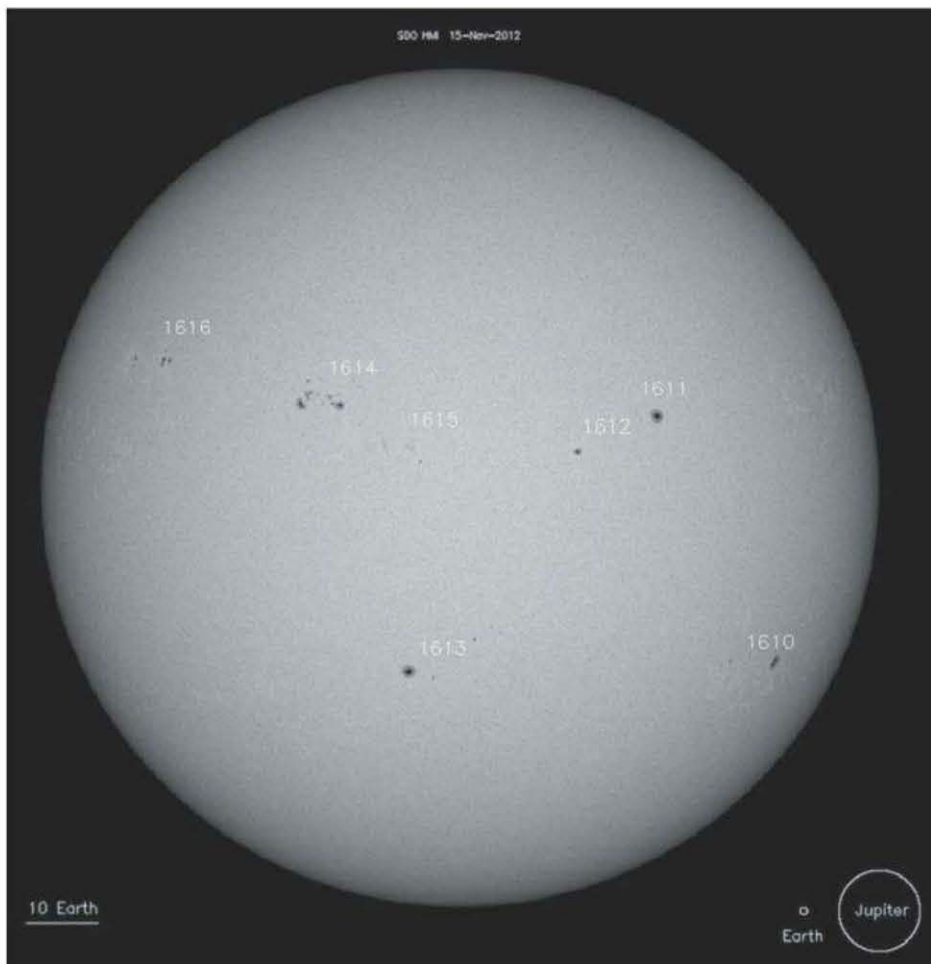


Fig. 1— While many are speculating that sunspot Cycle 24 has already reached its peak, and a dismal one at that, there are others postulating that the cycle is just very prolonged and slow on the uprise. November saw a bit of healthy sunspot activity, and time will tell as to the truth about this cycle's peak level. (Source: NASA)

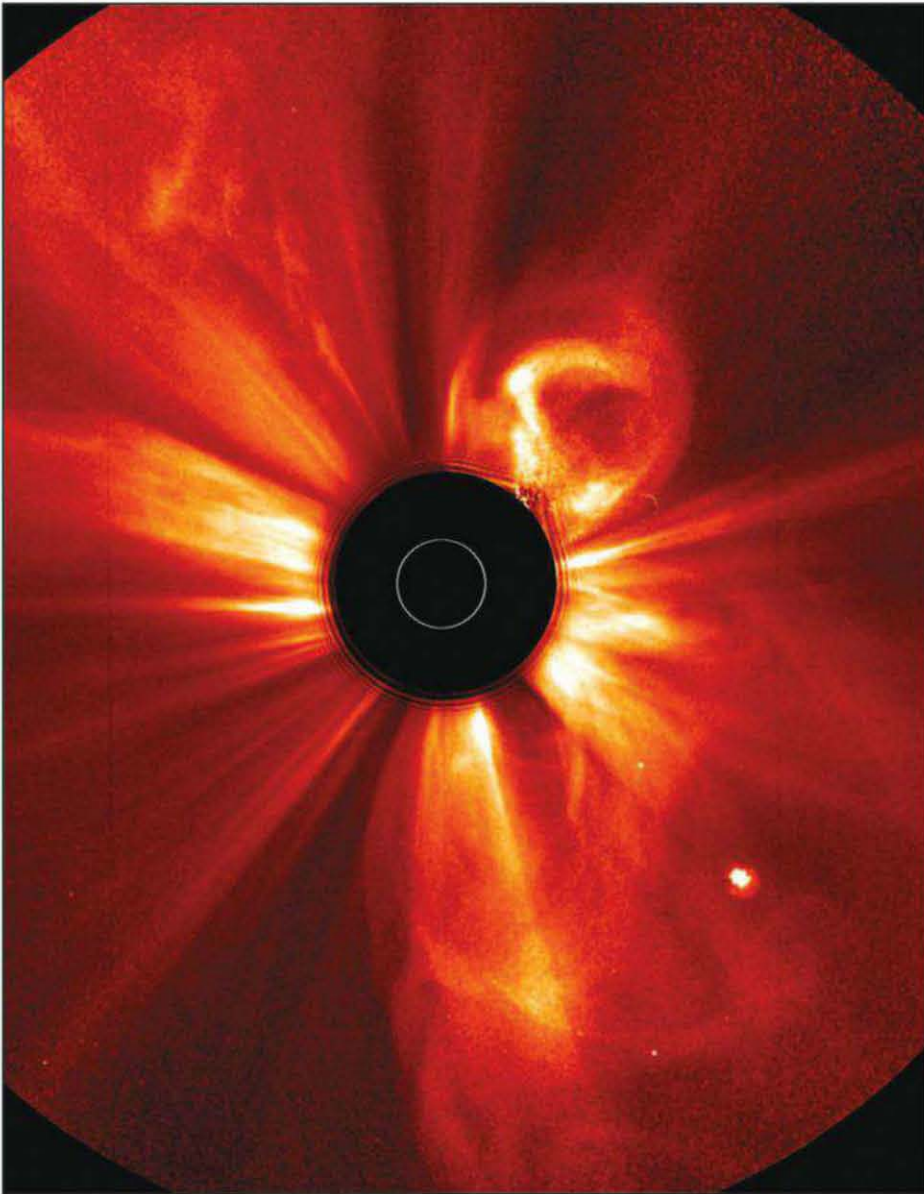


Fig. 2— The Sun produced a series of at least eight coronal mass ejections (CMEs) over a two-day period (Nov. 2–4, 2012). Some of them overlapped each other as the Sun burst some of them into space in a rapid-fire style. The series (see the movie: <http://g.nw7us.us/RH9jQV>) was taken by the STEREO Ahead spacecraft with its COR2 coronagraph, in which the Sun is blocked out by the black disk (Sun represented by the white circle) so that we can observe activity in the corona. These expanding clouds of charged particles also carry magnetic field into space. In the movie, the bright object moving from right to left below the Sun is the planet Mercury. (Source: NASA/STEREO)

It should be a toss-up between 15 and 17 meters for some great DX propagation openings during the daylight hours. These bands should open to most areas of the world, often with very strong signals. Fifteen meters may have a slight edge before noon, with 17 meters taking the lead after noon and becoming the optimum DX band during the late afternoon hours. Short-skip openings between distances of about 1200 and 2300 miles should be excellent during

the daylight hours. Excellent short-skip openings are expected on 15 and 17 meters from shortly after sunrise through the early evening hours for distances between 1000 and 2300 miles.

VHF Conditions

Sporadic-E can occur during January, so be on the lookout. Very little aurora is likely to occur, however, so don't expect auroral-E propagation. The

Quadrantids meteor shower is the major meteor shower for January, and it can appear any time during the first week of January. This sometimes can be quite intense, so it may be a good ideato set up some 2- and 6-meter schedules. Morning meteor openings may be the best bet during this month.

Check out the *CQ VHF* magazine "VHF Propagation" column for an in-depth look at propagation on VHF and above.

Current Solar Cycle Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for October 2012 is 53. The 12-month running smoothed sunspot number centered on April 2012 is 65. The lowest daily sunspot value during October 2012 was recorded on October 7 with a count of 28. The highest daily sunspot count for October was 83 on October 15. A smoothed sunspot count of 81 is expected for January 2013.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 123.3 for October 2012. The 12-month smoothed 10.7-cm flux centered on April 2012 is 125.8. The predicted smoothed 10.7-cm solar flux for January 2013 is about 136, give or take about eight points.

The observed monthly mean planetary A-index (*Ap*) for October 2012 is 9. The 12-month smoothed *Ap* index centered on April 2012 is 8. Expect the overall geomagnetic activity to be quiet to stormy during January. Refer to the Last-Minute Forecast for the outlook on the days this might occur.

I welcome your thoughts, questions, and experiences regarding this fascinating science of propagation. You may e-mail me, write me a letter, or catch me on the HF amateur bands. Please come and participate in my online propagation discussion forum at <[http:// forums.hfradio.org/](http://forums.hfradio.org/)>. If you are on Facebook, check out <<http://www.facebook.com/spacewx.hfradio>> and <<http://www.facebook.com/NW7US>>. Speaking of Facebook, check out the CQ Amateur Radio Magazine fan page at <<http://www.facebook.com/CQMag>>.

Now that the new solar cycle is active, I'll be keeping my ears to the radio, hoping to hear you on the air. Happy DX!

73, Tomas, NW7US

*KD7HXN	216	12	12	*KA9CLP	9,796	69	62	VE3TA	207,260	288	241	*RA9AEA	136,324	248	197		
*KUTY	27	3	3	*K905V	9,100	75	70	VA3FP	21	182,528	280	248	*R9UYF	124,929	221	189	
*K7ULS	82,160	23	13	*K907V	7,920	53	48	VE3RZ	7	127,501	201	173	*R9SD	119,784	202	168	
*N7BK	17,301	89	73	*W9SMT	5,535	45	41	*VA3SWG	A	2,066,012	1054	593	*UAJUNT	114,266	241	184	
*WN7Y	1,281	22	21	*K9TCD	3,672	36	36	*VA3UG		960,526	745	437	*UAGR	67,326	183	147	
*N7FLT	21	152,558	270	*K9VGG	975	28	25	*VE3FH		702,506	596	361	*RV9CM	65,212	152	137	
*W7UPF		68,716	175	*N91FG	208	14	13	*VE3NNG		420,138	443	306	*RV9MB	56,718	172	137	
*K7XB		26,768	124	*K9TDR	4,368	44	39	*VA3DBT		151,620	277	210	*RA9J	54,120	168	123	
*N7RXL		1,920	30	*W9YB	4,368	44	42	*VA3DG		127,264	242	194	*UA9JFH	53,325	162	135	
*W7JFF		1,155	21					*VA3KAI		121,776	230	172	*RA9SKL	42,939	137	117	
*KDTJS	14	152	8	*K9GHM	126	11	9	*VE3TU		100,245	201	163	*RX9DJ	41,820	133	123	
*KBTQND	3.7	12,382	130	*K9P	21	48,910	14	*VA3GK		92,862	186	154	*RASAM	38,396	121	108	
				*W9EBK	14	19,082	105	*VE3NE		80,400	147	34	*UA9ODE	27,472	110	101	
W08CC	A	3,459,324	1847	*K9C9D	7	13,968	73	*VE3RCN		80,256	183	152	*UA9AX	20,967	95	87	
				*W9S9S	7	2,077	31	*VE3WG		31,581	116	99	*R9US	20,181	98	93	
K8WT		1,477,965	1043					*VA3PAW		30,452	111	92	*UA9UX	15,120	75	70	
WD8EOL		902,176	794					*VA3OV		22,776	88	78	*RX9CET	3,276	28	28	
N8BL		874,144	708	KU1CW/Ø	A	8,764,784	3120	*VA3FN		15,180	75	66	*R9UG	2,054	31	26	
N8IV		389,532	430	KØFØ		7,530,886	2885	*VE3OIL		8,640	63	54	*UA9AOL	364	13	9	
W8JRK		253,092	371	ACØB		2,056,788	1836	*VE3VID		4,760	40	40	*UA9JSJ	126	9	13	
W8JGP		163,689	271					*VE3AJ		3,007	33	31	*RV9D	28	1,016,892	867	466
K8BRPV		128,390	243					*VA3DDX		2,550	30	30	*RZBU	448,970	516	323	
N8MSA		108,780	198	NAØCW		1,546,745	1136	*VE3AT		240	10	10	*W9D	252,255	336	251	
W8ITM		63,048	166	KØDFW		1,476,034	1147	*VE3IAE	14	89,858	189	179	*UA9OAT	224,020	330	230	
K8BZ		39,078	131	W8UJZK		388,752	513	*VA3JG		50,697	142	129	*R9SFT	35,424	134	123	
K8VE		38,500	121	NØCB		301,938	389	*VE3AJO		1,904	28	28	*R9AGP	26,352	116	108	
AL7BAW8		22,500	108	NØHTV		125,028	266	*VE3SWS	7	146,190	183	165	*UBØQA	16,936	85	73	
N8BI		1,988	29	KØØVTJ		100,890	235	*VE3PYJ		7,840	42	40	*R9RA	856,215	669	477	
W8LIG		1,275	26	KØØAJ		81,015	190	*VE3JEDY	1.8	8,140	50	44	*RX9CJ	406	336	336	
KØZMM	21	181,248	292	W8ØA		63,600	193						*R9MT	100,479	215	187	
KØBSS	14	92,500	202	KØSIX		49,980	159	VE4VT	A	3,916,360	1676	788	*UA9MRY	14	190,762	288	253
W8JMF	3.7	11,232	49	W8ØVPJ		27,071	117	VE4KZ	14	178,852	324	244	*R9MJ	104,992	197	193	
*W8BTLI	A	1,317,942	891	WØRIC		14,271	70	VE4YU	A	379,431	440	299	*R9SAC	5,324	47	44	
*N8AV		1,191,768	934	WØBØ		9,453	112	VE4TH		221,961	328	241	*RW9DX	532	14	14	
*K8EUN		681,548	655	KØVØ		6,664	60						*UA9UKL	429	13	13	
*K8BUJZ		470,054	541	NAØBR		6,325	57	VA5LF	A	155,540	270	220	*R9AU	12	2	2	
*AC8GJ		435,400	539	KØØGVO		4,520	41	VE5G	A	119,970	269	186	*R9SA	7	18,239	63	61
*K8PG		421,824	501	WØDH	28	5,007	33	*VE5U		65,888	190	142	RWØU	A	865,260	922	601
*N8BV		408,830	531	WØK	21	52,334	144	*VE5K	28	148,858	311	86	UAØA	*	410,550	493	345
*W8KØH		338,034	484	NØZC	14	5,724	57	*VE5Z	21	634,920	612	429	RAØB	*	291,323	443	317
*KØDNØ8		314,032	413	NYØT	7	22,841	93						RØUØL	*	246,740	340	260
*W8FRE		270,535	428	*WIØWA	A	1,284,792	1084	VA6U	A	861,816	716	447	RWØUØ	A	10,659	60	57
*W8ASA		194,040	339			1,028,920	104	VE6KD		377,152	442	332	RØX	21	2,539,116	1428	753
*N8SBE		175,017	305					VE6FN		50,518	153	134	ØØØ				
*AC8JF		151,748	289	*WØTØR		491,538	587	VE6EX	A	2,354,136	1550	564	RNØCF	*	1,856,025	1252	657
*K8KBE		150,200	276	*K8HDEØ		224,460	422	VE6S		208,236	417	268	RØA	*	775,992	732	447
*K8FB		139,598	309	*WØVØM		207,315	327	VE6SI		208,210	354	235	UAØIB	*	113,292	232	182
*KØBØD		106,090	190	*KØØK		180,732	355	VE6AM		94,500	211	180	RTØR	*	30,858	125	111
*W8GOC		110,188	204	*W8ØLJM		167,040	304	VA6AN		5,670	49	42	KØUØT	14	87,894	197	171
*N8HAM		104,517	227	*WØGN		166,972	312						*RØAØ	A	5,171,096	1892	856
*W8KNO		93,617	235	*KØSØD		166,105	299	VE7CC	A	9,117,154	2787	1081	*RØA	*	544,500	507	375
*W8BE		82,668	192	*KØBAM		134,922	289	VA7ST		2,553,759	1385	657	*RAØJBL	*	481,492	579	353
*K8VUS		63,248	164	*NR9AØ		133,980	272	VE7VR		58,695	184	129	RØUØL	*	246,740	340	260
*A8AN		52,003	159	*KØIØ		128,702	300	VØ7R	14	5,664,204	2494	988	RWØUØ	A	10,659	60	57
*W8IDM		50,250	155	*WØTØP		102,800	253						RØX	21	2,539,116	1428	753
*K8EUN		46,750	141	NØDØ		86,730	246	*VE7RSV	A	57,268	151	139	RØAØ	*	188,244	380	252
*W8BØZØ		43,827	143	*WØØA		73,032	222	VE7VA		3,572	37	30	UAØC	*	158,559	397	284
*K8CR		43,065	160	*NØGØS		66,810	226	VE7TI		2,736	28	24	*R9SØB	*	131,461	282	209
*KØBHG		30,906	111	*KØNEB		66,220	171	*VA7CRZ	14	133,042	249	221	*RØAØHC	*	82,302	165	131
*K8BUH		27,824	110	*KØJØ		52,000	144	*VA7M		645	15	15	*UAØACG	*	57,116	166	131
*K8BNJW		26,182	125	*WØZØ		40,095	138	*VA7M2		108	6	6	*RØAØWM	*	26,108	126	107
*NR8R		26,051	123	*KØØZ		39,195	134	*VE7YU	3.7	10,712	58	52	*RØXØC	*	24,153	102	77
*W8SDF		24,104	98	*KØØKIM		24,274	122						*RØØSV	*	16,093	88	77
*N8HX		23,660	96	*KØØL		22,533	134	VE8ØW	A	19,178	88	86	*UAØLNL	*	5,750	59	50
*K8FO		17,052	90	*KØØK		20,418	96	*VE8ER	A	316,008	434	297	*UAØZS	*	5,474	51	46
*N8VFO		14,184	74	*WØNFS		17,472	92	*VE8NE		2,700	40	36	*RØZØW	*	1,096	36	36
*W8TE		13,760	85	*WØØT		14,337	91						*RØAØBI	28	67,064	290	166
*W8BWNV		13,505	80	*NØUJT		12,087	87	*TE2M	28	25,730	124	83	*UAØØD	*	53,700	221	150
*N8BY		12,629	77	*W8SSWNØ		11,242	76						*UAØØX	21	798,930	694	495
*W8CZ		11,084	80	*NØAX		9,856	68						*UAØJK	*	483,527	540	389
*K8JTD		9,362	69	*AEØAR		9,842	90						*UAØAX	*	47,320	188	130
*K8BRKJ		9,027	61	*ADØH		8,684	64						*RØAØY	*	45,560	153	136
*K8AM		8,892	61	*KØØDS		5,130	46						*UAØS	7	177,970	217	185
*N8TZ		8,768	55	*KØØK		4,432	44						*TA7EB	A	99,825	197	165
*K8MS		6,565	60	*KØØKØS		4,095	46						*YØØKØ	*	68,761	155	133
*K8GØNR		3,952	39	*NØZØD		2,849	41						*TA7AO	14	10,126	63	61
*W8KH		3,311	46	*WØJEC		2,720	34						*TA4ED	*	8,990	64	58
*N8FM		2,958	36	*KØØCVØ		2,613	40										
*K4CIS/8		2,812	42	*NØWY		2,432	40										
*K8ØJAM		1,166	22	*KØØØYR		2,400	33										
*N8CN	28	46,566	152	*KØØNS		946	22										
*K8BYØX		2,640	33	*KØØF		840	28										
*W8AM/Ø8		1,406	14	*NØØI		5	46										
*N8FJ	21	221,680	297	*WØPPF	14	26,100	129										
*K8GØZ		97,427	203	*KØØNEØ		20,453	154										
*K8JO		35,046	126	*KØØØKH		1,566	31										
*AF8C	14	14,399	83	*KØØLAF	7	24,738	99										
*K8BR		4,100	43	*N9HDEØ		4,512	59										
*N8SGD		144	9	*KØØØRH		4											

IT9XTP	21	1,558,375	1177	685	*UY2IG	A	1,874,698	1458	746	Y09GSB	.	9,519	61	57	K7JAN	.	183,513	355	249		
*IT9AHU	21	192,072	445	318	*UT8EM	.	481,960	614	433	BY1SK	.	7,265	63	55	N7LRL	.	83,790	233	171		
*IT9IMJ	14	37,008	151	140	*UT8RS	.	465,580	642	410	FF4FG	.	6,065	55	42	WC5B/8	.	139,832	303	227		
*IR9Z	14	10,509	99	93	*UT8SERV	.	376,842	525	347	3Z3Z	.	5,250	45	42	(OP: S03ET)	.					
*IT9JHJ	3.7	139,200	260	232	*UX7IE	.	359,970	560	355	RX3AU	.	3,708	39	36	KD9ST	.	4,563,870	2362	894		
Slovak Republic																					
OM7PY	28	9,072	56	54	*UX7CN	.	163,784	283	236	LUG6VU	.	2,686	34	34	KORH	.	2,889,789	2321	713		
*OM8DD	A	854,128	806	506	*UR5XFO	.	159,960	340	258	J3CJU	.	2,144	32	32	KQJDD	.	1,009,944	832	507		
*OM4O	.	444,266	592	382	*UX8FX	.	138,425	325	245	OM8JP	.	1,449	23	23	KC0DWX	.	26,085	124	111		
*OM4AQP	.	211,002	360	270	*UT2VZ	.	57,128	172	148	DF7LS	.	1,176	21	21							
*OM0DX	.	60,060	196	165	*UT4WA	.	9,990	62	54	JR1USU	.	66	6	6							
*OM8LA	21	54,769	157	143	*UL8JW	28	5,762	50	43	JA1POS	.	9	3	3							
Slovenia																					
S51DX	A	321,222	486	341	*UL8LO	21	526,128	595	452	EI4H	21	117,898	268	233							
S51AF	.	316,958	580	361	*UR6JG	.	167,895	310	273	EI1CJ	.	109,068	276	244							
S57W	.	248,254	369	278	*UT2AB	14	724,895	926	565	SP4LVK	.	92,571	241	177							
S57S	.	5,280	50	48	(OP: US0YW)	.		858	22	22	WA6GFW	.	91,455	224	195						
S53F	14	5,149,956	2332	1038	*YU5ZI	.		858	22	22	JH3DMQ	.	79,325	200	167						
S50G	.	2,891,904	1764	886	*YU5ZL	.		858	22	22	IV3AOL	.	64,872	174	153						
Spain																					
S51CK	.	1,913,330	1386	730	*YU5ZL	.		858	22	22	I3N3VU	.	46,800	165	150						
S53M	.	1,549,863	1210	657	*YU5ZL	.		858	22	22	MW8T	.	44,988	160	146						
Wales																					
S55X	07	3,454,297	1487	791	GW9T	A	6,915,090	2957	1105	Wales	.										
*S50XX	A	3,156,849	1707	799	*MW0BMAU	21	11,455	85	79												
*S52W	.	60,372	198	172																	
*S55Z	.	31,320	133	120																	
*S53NW	3.7	243,837	394	297																	
EC1AE	A	84,360	206	190																	
EA1XT	21	513,166	595	379																	
EA1EA	3.7	134,829	241	213																	
ED1Q	1.8	6,625	62	53																	
*EF1W	A	804,972	785	510																	
*EA1YG	28	380,915	520	355																	
*EA1GWM	3.7	4,988	44	43																	
EC2DX	A	9,440,957	3035	1147																	
*EA2CE	A	116,550	833	225																	
EB3CW	A	8,096,272	2944	1136																	
EE3A	.	4,514,610	1877	915																	
EA3XL	.	185,000	317	250																	
EA3CEC	.	46,648	157	136																	
EE3R	21	976,773	853	579																	
EA3BO	A	396	12	12																	
*EA3AKA	3.7	94,500	212	189																	
ED4A	A	1,516,455	1235	705																	
EA4ETW	.	347,014	550	386																	
EA4AK	14	231,914	390	359																	
*EA4EU	A	390,855	501	367																	
*EA4ZK	.	864	19	16																	
EA5EV	A	1,072,746	888	549																	
EA5AX	.	281,430	387	295																	
ED5J	28	110,290	259	205																	
ED5N	3.7	491,720	515	380																	
*EC5AN	14	5,610	68	66																	
*EA5HSI	7	345,779	383	329																	
EA7ZY	28	112,772	300	233																	
EC7ZK	7	582,400	534	417																	
EA7EU	3.7	622,566	573	426																	
*EA7HQJ	A	148	16	16																	
*ED7C	28	21,736	96	76																	
*EF7W	14	425,898	642	478																	
Sweden																					
SJ2W	A	6,281,184	2465	1092																	
SE6E	.	2,500,000	1505	800																	
SM0B50	.	720,954	780	507																	
S1ZE	.	66,144	185	159																	
SM5CZQ	.	2,754	28	27																	
SJ6A	28	53,430	147	130																	
S80C	14	1,889,264	1282	606																	
*SE5S	A	752,640	708	490																	
*SM6MVE	.	343,285	505	355																	
*SH0G	.	93,870	245	210																	
*SE5E	.	78,873	221	183																	
*SM3L	.	286	11	11																	
*SD6N	7	49,392	170	144																	
Switzerland																					
HB8CSA	A	6,404,905	2493	1055																	
*HB9DHR	28	66,792	185	138																	
Ukraine																					
EM2G	A	4,593,493	2374	1069																	
UW5IM	.	2,493,517	1558	767																	
UR5AS	.	2,295,984	1634	744																	
UT0U	.	1,710,000	1080	720																	
US3IZ	.	531,118	629	413																	
UT0EO	.	270,522	451	339																	
UT7NY	.	51,600	138	129																	
UJ2JQ	.	40,230	139	135																	
UZ5ZV	.	37,674	132	117																	
UT7DF	28	225,081	344	267																	
UV0I	21	2,277,986	1754	794																	
UT7U	.	992,993	843	487																	
UX1UA	.	668,682	667	406																	
US1I	14	6,520,784	2950	1208																	
EO3Q	.	3,768,498	2143	1025																	
US1MY	.	7,290	85	81																	
UT80Q	7	81,954	193	174																	
UW5ZM	3.7	853,461	743	483																	
UY3AW	.	81,993	196	181																	

KD4RF	167,320	288	235	*KT4ZB	1,949,935	1225	655	*K1VU	41,697	125	113	EE3A	4,514,610	1977	915	UA9FGJ	484,802	517	446		
K440TB	166,100	(OP: W9ED)	289	*NX6T	1,920,810	1403	645	*W0ZF	40,095	138	135	EO5M	4,205,362	(OP: EA6ATM)	1929	917	JE1LFX	452,920	460	335	
AASB	155,763	404	243	*W7ZZR	1,558,752	1166	624	*N6VND	35,088	158	129	SV5DKL	4,178,160	(OP: ON5Z0)	2123	1008	GW9X	449,748	(OP: MW1LCR)	578	403
N3WD	148,674	251	213	*W88TLI	1,317,942	891	531	*W7VR	30,636	104	92	EW2A	4,097,236	2195	988	DL1NEO	427,800	502	372		
KR2E/7	147,744	291	228	*KB90WU	1,082,943	770	513	*N6ZE	29,920	126	110	UA4FEN	3,889,458	1985	906	B04CO	410,670	584	338		
WA30FC/4	147,586	226	218	*KB90WU	978,112	1077	493	*K6CSL	27,063	118	97	EW2A	3,149,664	1708	872	ES21PA	403,256	594	379		
W4V4U	141,316	228	196	*N1AP1	875,996	736	463	*W6VN	24,843	106	91	EU1AZ	3,141,861	1708	872	4U1GSC	361,344	558	384		
K6ATZ	138,600	261	200	*N1W2K	758,961	818	441	*AK4NZ	23,023	97	91	EV1R	2,913,801	1580	759	EA4ETW	347,014	550	386		
AJ4HW	134,136	261	207	*KD3HN	743,785	656	395	*N0RZT/4	19,844	100	82	UA05R	2,683,535	1588	655	R2DW	346,527	450	417		
W47PRC	129,690	280	198	*W1MA	692,580	634	420	*AB1OP	19,623	96	93	C02GG	2,349,900	1175	630	UT5UKY	340,736	468	352		
N4MM	127,779	244	191	*K2SLL	658,140	652	420	*AA6EE	19,920	106	88	J01WKO	2,185,690	1273	731	FINZC	338,100	437	350		
W4Y4	126,352	271	212	*AA6K	657,360	606	415	*N2CO	16,999	95	89	OK2BXE	2,178,495	1367	815	J47X	331,272	448	344		
K4ED1	121,520	231	196	*K8BL	618,068	485	484	*N2GXJ	15,876	86	81	F4FFH	1,905,557	1140	693	DL8EAQ	325,827	525	369		
W7ON	106,860	262	195	*W7SO	552,375	590	375	*AA4LR	14,007	78	69	Y03APJ	1,861,880	1328	712	RV1CC	(OP: SV7BMV)	382	320		
N000	92,169	215	171	*W7FYW	499,995	578	369	*N0AX	9,856	68	64	G0VXE	1,795,682	1223	658	ZW5V	314,600	395	286		
K16A	78,546	220	159	*NN6DX	495,132	578	372	*N2JJ	9,792	67	64	OE6MDF	1,668,576	1150	672	(OP: P5YKA)	(OP: P5YKA)	395	286		
KBY7	68,832	197	144	*W80TSR	491,538	587	366	*AD0H	8,684	64	52	ED4A	1,516,455	1235	705	AL7KZ	296,442	386	258		
WJ1R	67,728	159	136	*AD1C/0	483,552	535	368	*K7TR	7,800	60	50	S07DOX	1,220,184	1204	538	JF9JTS	286,832	377	248		
WG7X	64,242	212	166	*NK7L	470,400	451	320	*W8DM/5	6,630	54	51	9A202JK	1,205,028	926	612	JAG0Y	258,283	390	271		
N31X	61,073	185	157	*K2GV	449,242	481	362	*K14YK	4,452	58	53	VE9AA	1,298,286	864	498	NH6WZ	253,422	360	234		
AJ7T	60,384	217	148	*KS2G	411,156	519	324	*K14HHK	4,223	42	41	9A207T	1,237,086	859	558	IK2TDM	244,362	331	278		
K7CS/4	59,492	174	139	*N3ALN	407,507	507	358	*K8BUR	3,952	39	38	EY0A	1,234,548	970	497	RA3BL	213,465	304	285		
N8AGU	55,640	151	130	*W1SID	408,120	507	358	(OP: K5IID)	3,738	43	42	EY0A	1,234,548	970	497	BD4KYA	202,300	505	238		
WB7BBQ	55,160	164	140	*KC0DEB	402,784	510	328	*K7DAC	3,552	40	37	S07DOX	1,220,184	1204	538	PA7AL	200,616	442	312		
N3XUD	53,448	152	131	*NK7L	384,130	575	359	*K7RPO	3,306	39	38	9A202JK	1,205,028	926	612	JA2XLV	197,292	328	246		
W6FB	48,990	166	142	*N7MZW	379,088	691	344	*KG7P	2,278	45	34	LN3C	1,192,620	1139	572	VE1JS	188,340	260	219		
NJ2F/4	45,136	134	124	*AD1L	339,434	408	314	*WA4PGM	1,971	31	27	LA7GNA	1,191,344	945	616	EU3JA	164,338	324	254		
K7MY	44,732	119	106	*K9JE	332,280	432	312	*AE5MO	990	22	22	LY2MM	1,171,810	1052	565	GOBAMD	163,185	347	253		
W1GD/2	39,962	111	106	*KS4X	294,048	382	288	*N6AJR	646	18	17	Y03RU	1,107,700	1014	583	DF5BX	155,034	320	243		
K4GM	39,131	129	109	*K4NC	291,720	414	264	*N1HO/4	595	17	17	EA5EV	1,072,746	888	549	JA1WPX	153,786	251	213		
NSFO	33,063	108	107	*WA1FXK/2	267,582	396	277	*N4LKE	180	9	9	SN5V	1,046,653	856	589	I2SASZ	148,392	260	229		
W6S2N	31,625	134	115	*WA2TML	265,136	404	292	*KES5NJ	28	16,344	85	72	OG4T	1,044,110	867	526	JA1EFP	144,060	299	245	
K1PH	26,400	98	88	*AB4SF	246,980	338	265	*N1VVV	2,304	33	32	VO1KVT	993,884	748	482	I2SNSH	143,314	345	262		
W6PK	23,852	98	89	*AJ4VE	241,965	347	283	*KM4HI	21	425,632	448	376	VO1KVT	993,884	748	482	RF6RI	141,062	298	251	
NF9V	22,784	94	89	*K6AAB	223,780	395	268	*K03T	38,256	405	348	UA9AA	978,836	668	428	IR7R	135,460	341	260		
W85C	22,692	120	93	*KATEKR	188,660	308	228	*NF8J	221,680	287	278	IK8UND	964,320	993	560	M0RNR	129,285	255	221		
K90C	22,090	94	94	*N6DZR	180,311	305	237	*WA4AXT	173,990	288	254	DF7FE	919,100	796	505	R01B	125,030	308	253		
K90C	22,090	94	94	*N8SBE	175,017	305	227	*KG9ZT	97,427	203	187	R3ZV	889,875	895	525	GGT	125,100	264	225		
K90C	22,090	94	94	*K7HP	167,134	309	214	*N5DTT	94,272	202	192	EV4MM	873,600	883	520	(OP: G4MFKP)	993,884	748	482		
N4DX1	9,020	59	55	*KK0SD	166,105	299	239	*K7XE/6	71,786	181	143	EA4MM	873,600	883	520	PK9KWI	125,048	250	203		
W2YE/4	8,816	62	58	*KV2R	162,396	285	234	*W7UPF	68,716	175	164	EA4MM	873,600	883	520	JN3SAC	119,930	227	179		
A16Z	6,240	54	52	*NG4L	147,446	272	214	*AE5VY	36,704	145	124	EA4MM	873,600	883	520	VA7FC	115,455	244	179		
WB9B	4,773	45	37	*W4BAB	142,688	271	208	*K4NVJ	14,874	75	74	EA4MM	873,600	883	520	G6NHU	111,360	244	240		
WN1GIV/4	28	903,378	919	471	(OP: N48P)	140,128	281	232	*N6BHX	9,408	76	64	EA4MM	873,600	883	520	PA0JNH	109,824	230	208	
KU8E/4	349,875	545	311	*N41J5	133,980	272	203	*N5I	1,782	36	33	EA4MM	873,600	883	520	DG2MKV	103,752	245	198		
K4NV	174,300	423	210	*NR9A/0	131,820	271	195	*W7JFF	1,155	21	21	EA4MM	873,600	883	520	EW8DX	99,216	249	212		
K06S	89,776	281	181	*NVAJ5	130,764	252	204	*KG1E	14	1,036,630	795	590	EA4MM	873,600	883	520	SM6NOC	83,257	758	487	
K6LL/7	21	2,080,880	1345	740	*N5Z5	123,977	246	199	*NN5Z	331,653	533	357	EA4MM	873,600	883	520	DF09B	808,848	741	492	
K25J	724,710	769	493	*K4FTO	110,188	204	163	(OP: K5PX)	26,100	129	116	EA4MM	873,600	883	520	(OP: DL1MAJ)	778,092	759	471		
N2YBB	408,478	416	358	*W80CO	101,061	228	171	*W0PPF	14,399	83	77	EA4MM	873,600	883	520	EA4MM	720,954	780	507		
N2YBB	408,478	416	358	*W00Q6/4	96,654	211	181	*AF8C	152	8	8	EA4MM	873,600	883	520	EA4MM	704,696	694	472		
ND5T	328,650	565	350	*KAGMOM	81,696	201	184	*K07JS	7	84,812	231	182	EA4MM	873,600	883	520	EA4MM	704,696	694	472	
K7RF	280,761	392	299	(OP: K2RD)	79,341	197	159	*WF5E	7	84,812	231	182	EA4MM	873,600	883	520	EA4MM	704,696	694	472	
N06F	90,630	253	190	*AF5CC	78,672	205	176	(OP: W5AJ)	3,026	102	102	EA4MM	873,600	883	520	EA4MM	704,696	694	472		
NE61	2,233	29	29	*KT0A	73,032	223	179	*W1DYJ	1,828	23	22	EA4MM	873,600	883	520	EA4MM	704,696	694	472		
N8HP	14	215,460	309	285	*N4ARO	69,255	167	135	*NUIH	462	14	14	EA4MM	873,600	883	520	EA4MM	704,696	694	472	
KD8SO	92,500	202	185	*W1CRK	67,932	174	153	*K0ROH	14	1,848	23	22	EA4MM	873,600	883	520	EA4MM	704,696	694	472	
WN20	7	204,294	341	237	(OP: N2GC)	66,220	171	154	*K87QND	3.7	12,382	130	82	EA4MM	873,600	883	520	EA4MM	704,696	694	472
KX9DX	48,069	231	147	*AF5CC	64,239	198	161	EA4MM	873,600	883	520	EA4MM	873,600	883	520	EA4MM	704,696	694	472		
K7E1U	960	20	20	*ABSXZ	63,196	207	148	EA4MM	873,600	883	520	EA4MM	873,600	883	520	EA4MM	704,696	694	472		
W8JMF	3.7	11,232	49	48	58,916	174	143	EA4MM	873,600	883	520	EA4MM	873,600	883	520	EA4MM	704,696	694	472		
K4JC	10,764	55	52	*K6DSW	56,280	189	140	EA4MM	873,600	883	520	EA4MM	873,600	883	520	EA4MM	704,696	694	472		
*NR3X/4	A	2,439,441	1517	711	*K05FF	55,096	166	142	EA4MM	873,600	883	520	EA4MM	873,600	883	520	EA4MM	704,696	694	472	
				(OP: N4YDU)	48,256	149	128	EA4MM	873,600	883	520	EA4MM	873,600	883	520	EA4MM	704,696	694	472		

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JA1IZZ	42,642	130	103	UP5P	1,207,524	775	564	*EABOM	838,452	644	428	*JA1MZM	39,183	137	111	*CT1EEK	312,858	473	382	
GD0ZG	40,386	148	127					*EJ2DX	790,035	365	444	*W2B0	38,986	124	101	*UT7NW	241,293	389	299	
SP1MWN	38,804	125	116	JH0NOS	322,088	364	328	*S5SS	752,640	708	490	*S7AHC	38,907	133	131	*Y03K	237,336	395	319	
OH1B	35,264	125	116	IR5X	252,960	475	372	*GIOROK	736,223	726	479	*LY2BFB	38,016	157	128	*Z5HSC	179,025	388	275	
								*DL4WA	724,916	726	508	*DLZSBA	37,820	144	124	*R2SA	119,556	285	243	
I26RW	34,176	148	127	EA4AK	231,914	390	359	*I1EIS	708,435	677	455	*J1E1DU	36,080	139	110	*I25CM1	104,682	254	219	
RW4WZ	32,760	130	117	YV2KJ	72,562	178	146	*PA0MIR	672,948	662	324	*U9AGXG	36,064	129	112	*I81BBC	96,515	228	199	
OZ60M	31,527	125	113	PV7ZY	62,080	167	128	*LY2YS	615,276	718	422	*VK4BL	34,344	127	108	*JE2BOM	41,082	140	123	
LV3BY	30,797	111	103	RU45M	43,792	204	184	*JAZCUS	613,056	584	372	*YB7MRK	32,865	120	105	*EU4AA	40,950	149	130	
IW5SGT	25,134	91	118	SK2AZ	12,141	72	71	*OZ1AC3	613,056	584	372	*O2K7C	32,500	150	125	*UT2AB	27,336	110	102	
Y050PH	20,460	98	93					*Y1X10E	590,303	721	343	*DL3GK	32,344	137	104	*S5Q2	22,119	112	101	
Y050PH	19,178	88	86	YV1CAS	12,141	72	71	*F8AE	580,440	701	420	*Y09HRB	31,354	153	122	*DL4JYT	17,888	89	89	
Y050CLQ	16,352	102	73	MO1BA	7,440	86	80	*W3PGW	575,073	524	361	*DL2JUA	31,000	141	125	*R3D3AJ	14,508	96	93	
DJ8EW	14,872	90	88	Y060EJ	3,248	60	58	*G7AXB	573,648	697	456	*PA1QGNOM	30,702	150	129	*JRALRY	14,129	95	71	
JH10VY	11,900	71	70	RA30X	1,854,949	1236	647	*U1AUCR	556,278	676	417	(OP: PA0FAW)	(OP: PA0FAW)			*JA3BBG	9,780	67	60	
EI2GLB	10,556	54	52	IK3UN/1	738,700	803	445	*MM0BQN	555,940	619	418	*PR2W	30,485	127	91	*I8KTFN	9,450	75	75	
RC9YA	9,338	60	58	RA30A	501,421	531	389	*O1N4VDV	524,728	550	428	(OP: PT2AW)	(OP: PT2AW)			*7M1MCY	8,736	64	56	
				LY2YU	485,000	490	388	*DM2SR	524,208	591	402	(OP: PT2AW)	(OP: PT2AW)			*F4CCJ	2,204	38	38	
DL0SM	8,256	69	64	IW5ELR	259,584	424	319	*O1A03	515,024	604	404	*US7IGN	30,129	131	121	*ZL2K	1,820	28	28	
G44FJ	6,394	50	46	YV6BXN	258,494	261	192	*JAGDJ	492,102	520	351	*ON4CT	29,810	120	110	(OP: ZL2K)				
IK0UXO	4,536	43	42	ZL2CC	258,494	261	192	*UA3RF	486,390	745	465	*PA0KM	29,606	151	131	*G7RSM	35	5	5	
DJ7JGU	3,956	47	43	JY6GSY	123,824	247	218	*G8GAM	420,138	443	306	*ER3DX	29,472	107	96	*JR1AHP	27	3	3	
EA4CU	1,225	25	25	DM5GUEA	1,358,934	1146	586	*O2A8E	477,666	699	357	*I1C1CW0	29,321	129	109	*PY1ZV	14	1,287,453	854	543
LU6Q1	528	11	11					*O2A8E	460,498	658	386	*R3JAWK	29,260	159	133	*ZM3T	1,036,074	780	481	
IK3PQG	270	10	10	YT4A	1,243,200	953	555	*9A2Z0G	456,252	615	394	(OP: RUSALH)	(OP: RUSALH)			*S5T9	453,840	663	465	
WE2FXL	243	9	9					(OP: Y11AA)				*J1JLRD	27,936	130	96	*XR11	445,284	480	342	
4X8A	28	2,609,750	1503	650	9A2R	784,665	764	477	JM1LR0	454,346	513	367	*JA4BDY	27,451	118	97	(OP: CE1KR)			
									*M5SJB	451,526	380	401	*K3MHRW	27,448	106	94	*EF7W	425,898	642	478
9A2U	576,240	611	392	EA7EU	134,829	241	213	*OZ1AC3	426,904	568	344	*SM0HBV/3	26,904	133	114	(OP: CE2KW)				
				OR5N	130,804	277	212	*B8GAM	420,138	443	306	*SP6FX	25,721	98	89	*OK6RA	371,840	629	415	
WP4WW	339,756	589	276	*VE3NN	1,938	19	17	(OP: ON1CB)	393,470	498	365	*F8CRS	24,605	104	95	*IQ2DN	371,234	560	419	
				KH6GJ	253,968	433	296	*S1J7M	392,040	551	363	*PPTLL	24,510	117	95	(OP: IZ2JQP)				
RA4WC	300,390	531	323	I25M0Q	7,257	63	59	*IK0XB	391,590	481	342	*RX0SC	24,153	102	97	*Y2AAA	341,523	588	417	
SV9DJO	214,935	359	267	*ZL3IO	6,182,904	2283	894	*H31T	377,300	517	308	*JR1MRG	23,639	114	77	*DL9ZP	320,000	519	400	
I24GEW	92,105	219	169	*R7RS	3,285,816	1437	696	*H89WY	374,960	504	344	*I24RYS	23,265	105	99	*UA3VB	311,236	497	391	
ON6NL	88,810	204	186	*T07BC	3,172,628	1478	727	*K7RXU	363,216	454	376	*S15W	22,792	93	88	*OG3P	273,424	553	368	
LY2AE	69,275	172	163	*IB1B	2,966,194	1386	847	(OP: DL7BC)	352,253	411	341	*OZ1AC3	22,032	122	108	(OP: DH3P)				
OG7M	31,209	116	103	*E21EC	2,846,340	1525	753	*SM6MVE	343,285	505	355	*IK2QIN	19,710	96	90	*I28FEO	219,240	490	384	
I225NQ	10,540	72	68	*XQ7UP	2,216,865	1238	645	*OZ4NA	338,826	515	343	*SPAJZT	19,437	97	93	*JR4GPA	215,975	338	265	
R7MK	10,540	72	68	*E21EC	2,216,865	1238	645	*JH0NEC	334,184	411	296	*SM6VJ	19,344	107	104	*G3VAO	192,060	394	330	
PY5KC	2,376	38	36	*XQ7UP	2,216,865	1238	645	*RL6MA	325,360	548	332	*I21HBC	19,008	107	96	*UA9MRY	190,762	288	253	
ZS1LL	45	5	5	*I02Z	2,028,285	1270	705	*OK7N	319,853	395	317	*I24AFW	17,064	82	79	*VA7CRZ	133,042	249	221	
4X9A	21	3,505,614	1651	*UR4U	1,862,091	1272	693	(OP: IK2DN)	317,220	434	311	*M05FR	16,849	91	83	*EE1X	101,255	300	263	
								(OP: IK2DN)				*PA0B	15,750	105	90	(OP: EB1EVX)				
SV9GPV	2,878,092	2306	846	*OK2BZE	1,510,625	1285	625	(OP: UR4UJ)	310,072	436	343	*7J6AA	15,120	84	73	*VE3IAE	89,858	189	179	
VY1EI	917,888	1005	481	*DL6NDW	1,482,848	1142	596	*OES1L	308,691	389	309	*SP8EN	15,120	12	105	*Y3AGUJ	85,697	142	129	
EB5KT	674,424	851	522	*EW5W	1,482,848	1142	596	*US7IA	290,274	462	303	*UA9UX	15,120	75	70	*JA3DAY	22,820	128	116	
				(OP: EA5KV)				*UA6HHE	283,200	480	300	*JR4SF/3	14,528	90	64	*RV6AC	18,860	88	82	
0Q4B	576,400	620	440	*PY2VZ	1,434,860	945	554	*LY2N	281,710	427	286	*JR2JTC	14,325	93	75	*IR9Z	10,509	99	93	
				(OP: ON4BH0)				*JH1DYU	276,940	381	244	*I25SG	14,162	78	73	*PY2VM	6,018	53	51	
EA1XT	513,166	595	379	*EE7R	1,165,794	954	574	*IW9FI	253,761	458	337	*UA1CBM	13,585	108	95	*I25MXX	5,600	61	56	
RA/RESJA	424,252	604	367	*LU7HW	1,133,719	850	491	*UASAW	245,949	341	257	*CE3WVZ	13,206	75	71	*I26NHX	3,240	55	54	
R9DA	410,742	451	342	*ERLX	1,121,900	985	542	*B6SLU	240,264	446	282	*JR3S2Z	12,870	93	68	*VE3AUO	1,904	28	28	
I25NFD	208,453	334	307	*LY2SA	1,102,900	967	538	*OZ1KVM	236,778	401	231	*JW6FC	12,805	88	65	*VKJUE	176	10	8	
EA5GS	133,682	234	211	*J11EAQ	1,061,548	781	466	*PA9WOR	217,848	435	313	*I18SFB	12,347	79	63	*N1B/KH2	12	2	2	
I23NVR	46,800	165	150	*P43E	1,046,560	858	422	*E4GXB	212,667	360	273	*SH30	11,424	71	68	*E1MC	7	845,435	708	479
Y08RAC	16,470	99	90	*PD9X	1,004,792	976	568	*PA3DBS	212,472	407	312	(OP: SM3TLG)	(OP: SM3TLG)			*VY2MG/3	685,640	637	281	
U2P2TT	10,416	64	62	*UA3ABJ	992,351	917	551	*V6SD	208,210	354	235	*I3V3DP	11,172	85	76	(OP: VE3MG)				
JA6WEQ	1,430	27	26	*PV7M	963,500	791	470	*DL3LSM	203,931	370	285	*CTE1EM	10,586	76	67	*IQ1BD	283,974	414	308	
9A203B	14	2,720,133	1793	871	(OP: PT7ZT)			*NH6AB	203,732	318	212	*VE20XA	10,200	61	60	(OP: I1ZDGG)				
								*FD73X	196,196	424	308	*R54F	8,080	62	60	*VE3SWS	146,190	183	165	
RY3D	2,187,516	1580	866	*E1G5SB	948,170	771	530	(OP: PD2MR)	(OP: PD2MR)			*R54F	7,473	53	53	*Y2CWF	134,811	154	121	
S51CK	1,913,330	1282	806	*MIJUTT	948,024	765	462					*R54F	7,473	53	53	*D0WIG	98,732	146	137	
859C	1,889,264	(OP: SM0MPV)		*OM8DD	854,128	806	506					*I3V3ZG	7,353	57	57	*M0VWK	21,902	100	94	

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Amateur Radio

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- Sparks in the Snow
- CW Results, 2012 CQ World-Wide WPX Contest
- An HF Modem Autoswitch

Upcoming specials: QRP (March), Take it to the Field (June), Emergency Communications (Oct.), Technology (Dec.).

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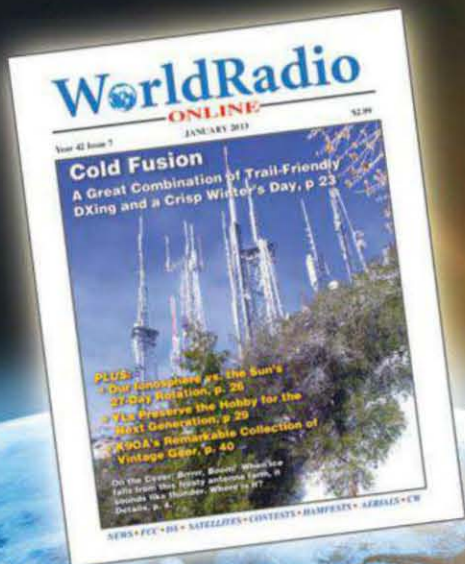
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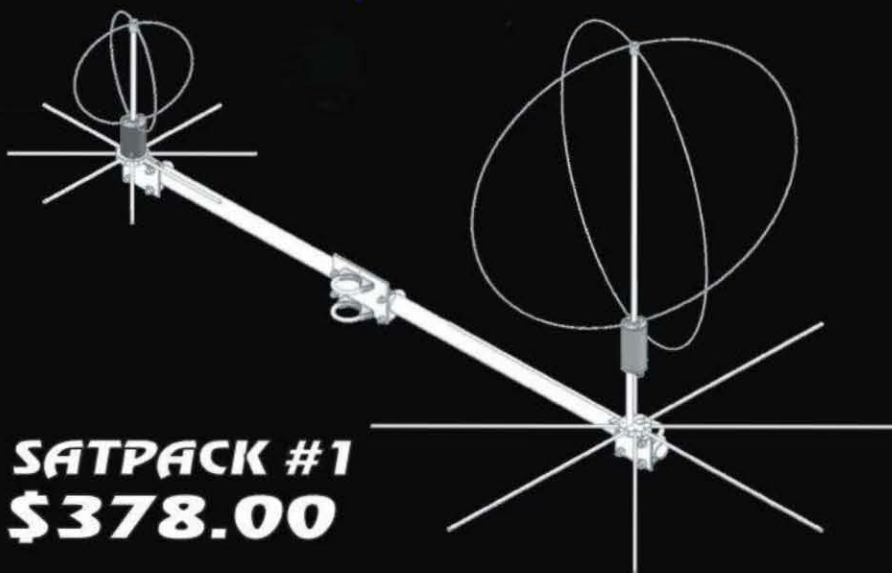
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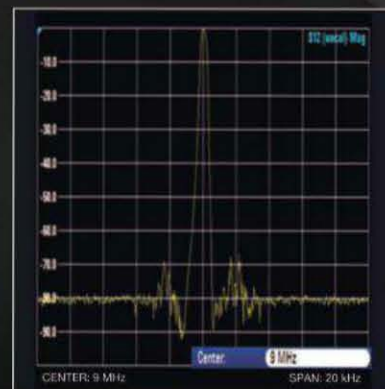
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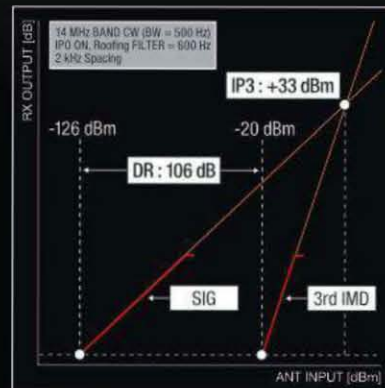
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